Treasures Underfoot:
Preserving Venice's Church Floor Artifacts

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Authorship Page

All members of the project team contributed equally to the writing and editing of this report.

Abstract

With one hundred forty four churches spread throughout Venice and its lagoon, churches are an important aspect of Venetian culture. While many of these churches have been closed or repurposed, 88 churches are still active for tourist visits, services, and other religious activities. Many of these churches were established as early as the tenth century and have since undergone several reconstructions and renovations. Each reconstruction dramatically changed the architectural style of the church's exterior, while the interior often maintained some of the original features. In many churches, the floors have remained consistent and many contain artifacts such as tombs and plaques. While these artifacts are made of stone, years of wearing from parishioners walking over the artifacts combined with flooding as a result of *acqua alta,* have worn down many of the artifacts' inscriptions and designs. Since 1999, Worcester Polytechnic Institute has cataloged and assessed the condition of the church floor artifacts in Venice and its Lagoon. This project consolidated all past data and artifact assessments to create a ranked damage score list as well as a database of all churches and church floor artifacts on Venipedia. This database can be easily modified to include updated information about a church or artifact as the conditions and city of Venice are constantly evolving.

Executive Summary

Elaborately decorated churches are a tradition in Venice as old as the city itself. Some churches seen today were founded as early as the 9th century, and while they have undergone several reconstructions, churches have retained a strong presence in the city. While some have come and gone, there are currently 144 churches in the city of Venice and its Lagoon islands. Many were constructed to house works or art as much as they were built as places of worship. These works of art were not limited to the walls, but are on the ceilings, floors and façades. Lots of money was donated to the churches by wealthy merchants to construct facades, which draw attention to the church. These donations were often commemorated on a plaque on the church floor, along with tombs of nobles or wealthy donators. These plaques and tombs are still in the church floors, in varying conditions of damage.

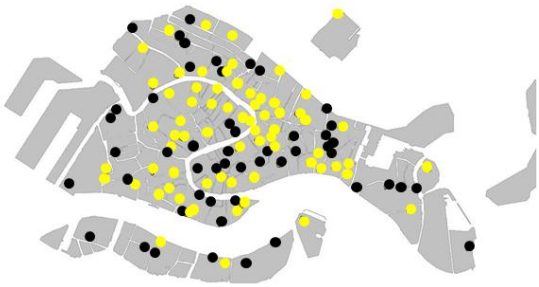

Figure 1: Churches in Venice with Artifacts

Hundreds of years of parishioners and tourists alike walking through the churches as well as flood water, or *acqua alta*, for which Venice is famous has caused these artifacts to be damaged. Since 1999, five project groups of Worcester Polytechnic Institute students have worked to create a catalog of 2,221 church floor artifacts in the city of Venice. They recorded the artifact's location on a church floor plan, took a photograph of the artifact and assessed the artifact's damage condition. In Figure 2 below, the height of the bars represent the number of artifacts in each church. The largest number of artifacts in a church is 207 in Santi Giovanni e Paolo.

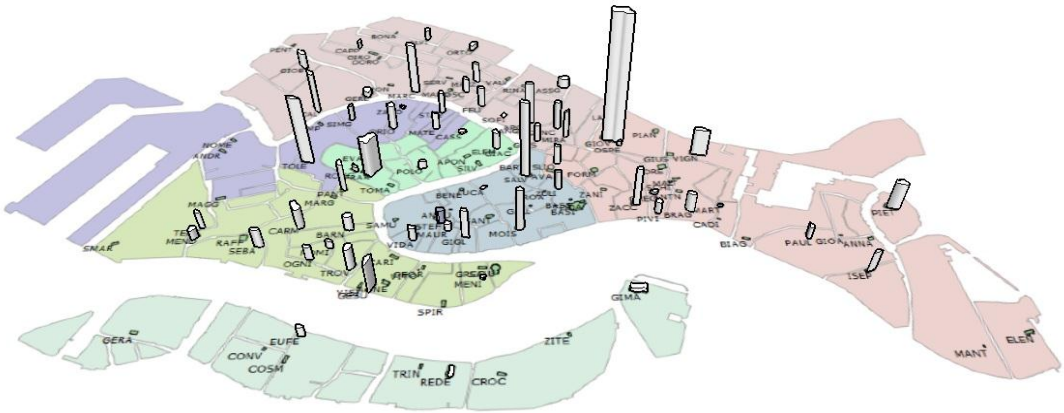

Figure 2: Number of Artifacts per Church

Since past projects already collected this data, the main focus of our project was to consolidate and update this information into a single database. In order to do this, we needed to organize the data from past projects and update the church information to make the database complete to the best of our ability. Before arriving on site, we mostly completed the first objective and developed a plan to collect updated information on the churches. Once in Venice, we visited all 144 churches and recorded updated information on the church's service times, open status and a picture of the façade.

Next we looked at the artifact assessment scores, and realized the artifacts had been evaluated on five different types of damage, but the scales for these assessments were not uniform, and the artifacts had not been given a total score summarizing the results of the five damage types. The types of damage past projects chose to evaluate the artifacts on were fading and wear, text readability, cracks, holes and joint gaps. It is important to note this assessment does not take into consideration inscription content or historical value of the artifact, just the overall damage sustained by the artifact. We developed an equation that takes into account all five assessment points to standardize the scores and gave the artifacts a new value between 0 and 1. We divided the ranked list of artifacts produced by this equation into five categories representing varying degrees of damage. Categorizing the artifact's conditions make it much easier to understand how this artifact compares to other artifacts in the city. For instance, classifying an artifact as high damage verses intermediate damage leaves less room for interpretation than a numerical value alone. Figure 3 shows the distribution of artifact damage into five categories.

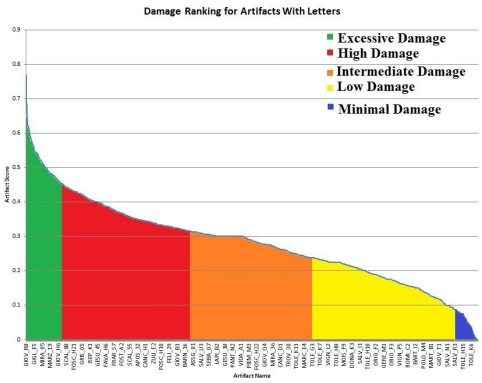

Figure 4: Artifact Damage Condition Assessment

After conducting some analysis, we were able to determine that Santi Apostoli has one of the highest numbers of artifacts in the high damage category as well as one of the highest percentages of high damaged artifacts, demonstrated in Figures 4 & 5. As a result of this, we were able to determine that Santi Apostoli is the church in Venice that deserves the highest priority for preservation. Other churches

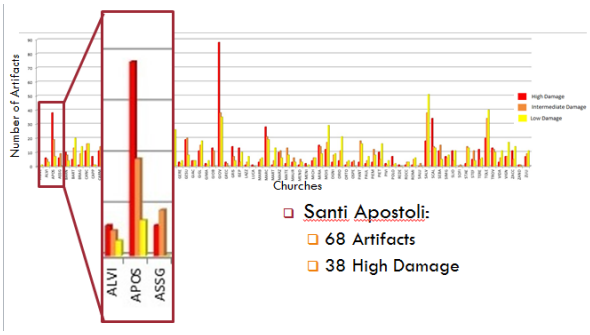

Figure 3: Santi Apostoli, Number of High Damage Artifacts

deemed to be in need of preservation according to our analysis are San Salvador, Gli Scalzi, I Tolentini, La Fava, San Marcuola, Le Cappuccine, San Giorgio dei Greci, San Luca, San Paolo Apostolo, and Santissimo Redentore.

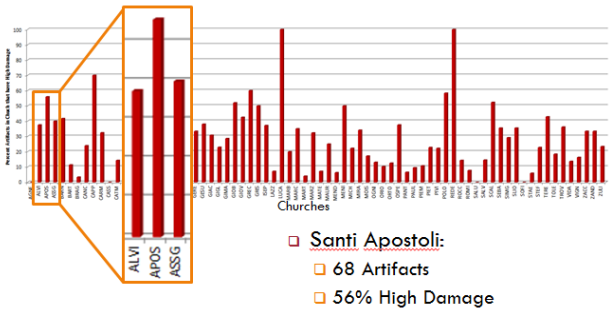

Figure 5: Santi Apostoli, Percentage of High Damage Artifacts

The culminating product of our data collection and assessment analysis was to produce Venipedia pages for every church and church floor artifact. To achieve this accomplishment, we used the databases of church and church floor artifact information we had complied at the beginning of the term to upload the information using the City Knowledge Console. The individual church pages include a picture of the church façade, information about the church that we collected, and links to all of floor artifact pages that lie in the floor. See Figure 6, or Appendix D for a full size image. The artifact pages contain a picture of the artifact, basic information about the artifact collected by past projects and a transcription of the artifact's inscription. A Venipedia page has been created for 139 churches and all 2,221 church floor artifacts, as well as a churches main page and church floor artifact definition page, resulting in the Churches section of Venipedia to increase in size by 2,362 pages.

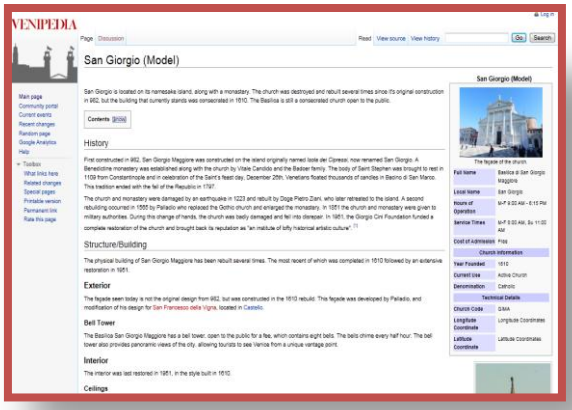

Figure 6: Example Venipedia Page

Although we were able to accomplish creating so many Venipedia pages, we would like to see church floor artifacts continue to be monitored so they can receive accurate damage condition evaluations and receive attention for preservation. We would like to see a large portion of the artifacts revisited, either to be photographed again or reevaluated. For some of these artifacts, it has been ten years since they were cataloged and photographed, and several of the images are of poor quality. We would also like to see church floor artifacts be added to the Venetian Public Art Application. As of now, the application does not have church and church floor artifact information added to it, but we would like to see the application format work similarly to the structure of the Venipedia pages we created. Maintenance of church floor artifacts

is an ongoing process, and with continued monitoring and awareness the history contained in their inscriptions can be preserved.

1 Introduction

Relics from ancient civilizations are treasured pieces of cultural significance; they are windows into the practices and cultures of our ancestors. These artifacts give insight into the practices of civilizations that otherwise would be speculative.[1] Many relics of past cultures have remained intact through the combined efforts of historians, archaeologists and preservation societies. Although these efforts have been valiant, many more artifacts have been forgotten or neglected. A large percentage of these pieces have sustained damage from various sources including natural causes as well as human intervention. In extreme cases, natural disasters have washed away meaningful markings describing a historical event, while in other cases war bombings have destroyed entire cities, such as Dresden, Germany, during World War II.[2] More commonly though, artifacts are slowly worn away over time, due to exposure to natural elements or wear from foot traffic. In either case, historical artifacts that once existed can never be replaced, and knowledge about past cultures could be lost forever.

The unique characteristics of Venice, Italy's location and the city's cultural history have created a reason for world aid organizations to become an active presence in the city. Around the 1500's, when most of the city was developed, Venice was a prosperous trading city that was home to many rich merchants, who showed their wealth through ornate buildings and public squares of their home city. In 1966, the city of Venice was devastated by a large flood which left much of the city under nearly a meter of water. This flood caused wide spread damage to buildings as well as several pieces of artwork. Soon after, the United Nations Educational, Scientific and Cultural Organization, UNESCO, organized an effort to catalog the damage caused by the flood. UNESCO's response to the flood has demonstrated the need for a complete record of the historic and cultural artifacts in the city of Venice. Approximately two thousand two hundred relics are embedded in the floors of 144 churches on the lagoon islands. Since the city floods several times per year, these artifacts are still in danger of being compromised by the rising water. Additionally, 18 million tourists flock to the city every year, causing increased foot traffic on and around the artifacts.[3] This general wear and tear is accelerating the degradation of the artifacts in the church floors.

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[1] An artifact is defined as "a handmade object… characteristic of an earlier time or cultural stage". (Dictionary.com)

[2] Biddle, Tami Davis. "Sifting Dresden's Ashes." *The Wilson Quarterly (1976-)* 29, no. 2 (Spring, 2005): pp. 60-80. <http://www.jstor.org/stable/40260966>

[3] "Traffic," Venipedia. 13 December 2010. 6 September 2012. <http://venipedia.org/index.php?title=Traffic#.3DThe_problem_of_water_transport;_the_urban_factor>

In 1987, UNESCO declared Venice a cultural site and the city was added to the World Heritage List.[4] Since then, many private preservation organizations have collaborated through UNESCO to continue preserving the Venetian treasures. They coordinate with La Soprintendenza, a division of the Italian Ministry of Heritage and Cultural Activities, who carries out restoration projects annually across Italy. These preservation efforts are often concentrated on pieces of public art, such as statues or fountains, which are easily located; the artifacts on the floors of churches are not as well-known and therefore are not a priority. This lack of attention could be attributed to the absence of a complete list of all the artifacts that are located in the church floors. Several project teams of Worcester Polytechnic Institute students have visited the churches, taken pictures of artifacts, cataloged their condition, and plotted their location on church floor plans. These project teams have also worked to provide an overall assessment of the condition of each church floor.

Although previous WPI project teams have made great progress, they began cataloging the artifacts' conditions ten years ago. Many data points and pictures they collected are outdated and need to be replaced. The artifacts given a high damage rating may have deteriorated to an even more critical state. On the contrary, some of the artifacts may have undergone restoration since they were last evaluated and as a result their condition may have improved. Even with correct data, the information was not easily updated or accessed. To make the information about churches and church floor artifacts accessible, we expanded Venipedia, a wiki-style website which focuses on Venice, to include over 2,000 pages relating to churches and their contents.

Our project worked to consolidate past projects' data on Venetian church floor artifacts and completed the information on the "Church Floors and Churches of Venice" section of Venipedia. We completed this task by reviewing the data collected by previous WPI project teams and restructuring it into a web-friendly format using the City Knowledge Console. Each church and church floor artifact was assigned its own Venipedia page that includes all information collected about the item and a picture for easier identification. These pages present all information available about the churches and artifacts which was previously unavailable to online users. This web based system allows for easy updates and additions from anywhere in the world, allowing for a greater understanding and appreciation of the church floor artifacts.

[4] "Venice and its Lagoon" UNESCO. 10 September 2012. <whc.unesco.org/en/list/394/>

2 Background

Churches are a common feature in most squares, or *campo*, throughout the city of Venice. 144 churches can be seen in the city's skyline, with a few recognizable landmarks, such as the bell tower at Saint Marks' Basilica, standing out. While some of the other churches have been closed or sold and converted to other uses, many still hold religious services weekly. Several of these share their daily mass schedule with the other churches in the parish. Within these churches are countless works of art and other religious symbols in various conditions. One form of art that holds cultural significance is floor artifacts, either tombs or plaques that typically are inscribed with information about the deceased or pieces of the church's history. There are more than 2,200 floor artifacts that have been documented in the city of Venice.

2.1 Churches of Venice

Many of the buildings that exist in Venice today were constructed hundreds of years ago. As the city expanded, additional islands were added to the city limits. Each island built its own community and churches, which were often the first buildings to be constructed.

> Churches also served to display majesty of the state, to exhibit the influence of religious order, and to glorify the importance and wealth of patrician families. Beginning in the early Renaissance period, affluent families of Venice were able to express their wealth and love for their city by serving as benefactors for the construction of churches.[5]

Since churches were the first buildings to be constructed, many of them are still in existence today.

In 1500, Jacopo De'Barbari drew maps of Venice from the tops of bell towers and combined the sketched maps into a master wood carving. The remarkable thing is that many architectural features of the city have remained intact, largely due to the fact that since 1500, Venice went through many changes in political rule, preventing any one group from making the city its own.[6] While rulers came and went, not many were able to make a significant impression beyond what was already constructed. The

[5] S. Hoey, M. Kahan, P Marchetti, K Mazza. *Convents, Palaces and Churches: Transformation of Historic Buildings and the Impact on Venice's Neighborhoods* An Interactive Qualifying Project for Worcester Polytechnic Institute. 2003.

[6] Schulz, Juergen. "Jacopo de' Barbari's View of Venice: Map Making, City Views, and Moralized Geography before the Year 1500" *The Art Bulletin* , Vol. 60, No. 3 (Sep., 1978), pp. 425-474 <http://www.jstor.org/stable/3049817>

main statement these rulers made was to destroy landmarks in a demonstration of power instead of building in their own style as a display of authority.

During the seventeenth century, people were flocking to Venice to earn their share and become a part of the floating city. Attention was not only drawn by those who wished to seek their fortunes, but by political threats. In 1797, Napoleon invaded Venice in his quest to become the leading European power. While there, he demolished three churches in order to make room for public gardens. Even though the gardens benefitted the city, he destroyed a piece of Venetian history, a history that cannot be replaced through reconstruction. Under Napoleon's rule, the city continued to thrive, but his influence ended when the Treaty of Campoformio was signed, giving custody of Venice to Austria. This political change had a devastating effect on the economy and landscape of the city. Austria had never ruled a foreign city and therefore did not know how to keep it running smoothly.[7] The economy crumbled, construction was halted, and the cost of living increased dramatically.[8] Over the course of Austrian rule, three leaders tried their hand at turning the economy around, but they all failed and in 1866, Venice was once again returned to the Venetians.[9]

2.2 Venetian Church Floor Artifacts

One of the reasons visitors choose to enter the churches of Venice is to view the artwork they contain. The artwork is not limited to sculptures and paintings displayed at eye level on the walls of building or on podiums in public squares. Many of Venice's relics are found below eye level, in the floors of churches. Venetians used the materials available to decorate all aspects of their lives, including the ground they walked on. As Elena Bassi states in her introduction to *Decorative Floors of Venice*

> They [the floors] provide us with a sort of concentrated history of art that passes from the minute detail of ancient *opus tessellatum* to the broad facets and generously proportioned panel of the sixteenth-, seventeenth- and eighteenth-century geometrical compositions adorning the buildings designed by such architects as Andrea Palladio, Baldassare Longhena, Antonio Gaspari and Giorgio Massari.[10]

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[7] Pertot, Gianfranco. *Venice Extraordinary Maintenance*, Gianfranco Pertot and Paul Holberton Publishing (2004),13

[8] Van Zanden, Jan L. "Wages and the standard of living in Europe, 1500–1800 European Review of Economic History" (1999) 184.

[9] Pertot, 13

[10] Sammartini, Tudy. Decorative Floors of Venice. London: Merrell, 2000. p. 11

Some of these artifacts go unnoticed by visitors because they are overwhelmed by the other sights around them and forget to look at what is below them. Overlooking the floors of churches has not only allowed these pieces to slip out of the minds of visitors, but has also led to neglect in their care and protection.

2.2.1 Church Floor Materials

Venice cultivated trade relationships that allowed for the importation of a variety of building materials. Materials such as stone and polychrome marble were imported for use as floors in many buildings throughout the city. Stone was chosen as a material for floors because it provides relief from hot temperatures, as well as being moisture resistant. A hardwood floor would not survive the yearly flooding without sustaining severe water damage. Venetians could show off their wealth by using a floor material as expensive as high quality stone to build their homes, churches and other public buildings.[11] Another display of Venetian wealth was the inclusion of ornate floors including mosaics, or *terrazzo.* Mosaics allow an artist to craft more than geometric patterns with tile; they allow the artist to create an image or tell a story using tiny pieces of colored stone or glass. A mixture of lime and stucco is used as mortar to hold the pieces in place. The practice of creating large images with this technique is usually a family secret, passed from generation to generation through present day artisans.[12]

Figure 7: Sample Floor Style

2.2.2 Types of Artifacts

In the floors of Venetian churches, several types of artifacts can be found; one of the more common artifacts is a tombstone, marking a Venetian's final resting place. These markers are left from when burials were still allowed inside city centers and usually contain the individual's full name, date of birth and date of death. Other information, such as the person's occupation, can be found on some of the

[11] Sammartini, Tudy. Decorative Floors of Venice. London: Merrell, 2000. p. 5
[12] Sammartini, Tudy. Decorative Floors of Venice. London: Merrell, 2000. p. 20

Figure 8: Example of a Plaque

more elaborate pieces. Additionally, plaques are inlayed in church floors which contain information about important events, such as the beginning of construction or prominent contributors, as evident in Figure 8. Many of the artifacts in the church floors are carved into tiles, usually marble, to match the surrounding floor pattern. Different color marbles, such as red, white or black, were used to set the markers apart from the rest of the floor while still keeping a uniform appearance throughout the church.

2.2.3 Catholic Burial Practices

During much of Venice's history, members of the upper class were buried within churches, as seen in Figure 9. The burial of bodies under church floors became problematic during the summer months when the heat would cause the bodies to smell and spread infections throughout the city. As a result, under the rule of Napoleon, it was required that cemeteries be established away from the crowded city centers and churches. In 1813, a cemetery on the island of San Cristoforo was opened in the northern part of the lagoon, which helped prevent the spread of disease that had caused problems in the past.[13]

Figure 9: Example of a Tomb

2.3 Venetian Church Hierarchy

Figure 10: Catholic Churches in Venice

98% of the churches in Venice are Catholic, and therefore fall under the rule of the Vatican and the hierarchy of priests and bishops. As Venice is such an old city and is home to such a large number of churches, special positions exists in the Venetian church hierarchy that are not seen everywhere else in the world. There are two components to the Church. The first is the

[13] Plant, Margret. Venice Fragile City. New Haven: Yale University Press, 2002. p. 65.

order of positions, or the standing of different priests and how many churches each level oversees. The second is the various departments of the church who administer different aspects of the church's activities.

2.3.1 Patriarch of Venice

The Catholic Church is divided into several small geographical regions, each called a diocese and led by a bishop. In some cases, a diocese may be large or consist of smaller dioceses. In that case they would be given the title of archdiocese and led by an archbishop. Each archdiocese has more importance than an ordinary diocese due to either its size or historical significance. There are five archdioceses that hold great historical significance and are given the name of patriarchate. The five patriarchates oversee the Diocese of East Indies, Jerusalem, Lisbon, Rome and Venice. The archbishops that lead these five patriarchates are called patriarchs. The only difference between patriarchs and bishops and archbishops is patriarchs hold a higher place of honor in papal processions.

Venice is one of the five patriarchates because there are more than one hundred consecrated Catholic churches located within the city and its Lagoon. It is subdivided into several parishes consisting of one or more churches, each named for a patron saint. The main church of a parish, generally the largest or most centralized, typically shares its name with the parish. Each parish is led by a head priest who organizes all parish activities and other priests, and in turn, takes direction from Venice's patriarch.[14]

2.3.2 Departments of the Church

There are several departments and congregations that exist, each in charge of different aspects of the Church's functions. Some deal with the church's philanthropic endeavors while others maintain the church buildings or preserving they're traditions. The Congregation for the Doctrine of the Faith is a subdivision of the Roman Curia. It is one of the nine congregations under the Roman Curia, whose main role is to promote and preserve the Catholic Faith in the Church. The Congregation of the Clergy, a smaller congregation, oversees matters pertaining to priests and deacons. Operating under the Clergy is the Pontifical Commission for the Preservation of the Artistic and Historical Patrimony of the Church.

[14] Mandonnet, P. (1911). Order of Preachers. In The Catholic: Robert Appleton Company. Retrieved December 4, 2012 from New Advent: http://www.newadvent.org/cathen/12354c.htm

This Commission focuses on preserving the heritage of the entire Church and therefore, all preservation efforts need to be accepted before the process can begin.[15]

The Chorus is an association of the Patriarchate of Venice that contributes to the safeguarding, conservation, restoration, and valorization of the architectural and artistic heritage of churches in the city of Venice.[16] They are responsible for opening churches to visitors and supplying visitors with information about the art housed in them. Only sixteen churches in Venice are under the Chorus' control. In order to gain access to these sixteen churches, visitors can purchase a pass that will allow them to enter each church.

2.3.3 Monastic Orders of Catholicism

Within the hierarchy of the Roman Catholic Church, various groups of priest that have organized themselves formally into orders based upon additional vows or ways of life that monks share. Additionally, these communities usually have monasteries associated with them where monks of the same order live and gather for the celebration of Mass. For example, the Jesuits, or Society of Jesus, are a well-known Catholic sect for their work in the field of teaching; they are best known for running Catholic high-schools and colleges. Churches built by many of these orders can be found throughout Venice and its Lagoon.

One order or monks in the Roman Catholic Church is the Franciscans, or followers of Saint Francis, who own and operate the Church of the Frari, found in San Polo, Venice. Franciscan monks, or Friars, live a communal life of poverty without personal possessions which centers on their mission "of living the Gospel through common prayer, meals and fraternity."[17]

The Church of San Giovanni e Paolo, located in Castello, Venice, is considered to be the great church of the Dominican order within the city.[18] The primary goal of the Dominicans, or "Order of Preachers" is "preaching and the salvation of souls."[19] A Dominican monk's goal is to have a strong personal relationship with God, as their founder, Saint Dominic did. Additionally, these monks have a special devotion to the Rosary, as it is often attributed to St. Dominic.[20]

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[15] "The Roman Curia." accessed October 7, 2012, <http://www.catholic-pages.com/vatican/curia.asp>
[16] Association for the churches of the Patriarch of Venice. "Chorus." accessed October 7, 2012, <http://www.chorusvenezia.org/>
[17] "Our Mission" *Conventual Franciscans*. 10 July 2011. 4 December 2012. <http://www.franciscans.org/index.php/en/who/conv-franc/mission/172-mission>
[18] Lorenzetti, Giulio. "Venice and its Lagoon: Historical-Artistic Guide" Edizoni LINT S.R.L. Italy. 1994
[19] Mandonnet, P. Retrieved December 4, 2012
[20] IBID

The Benedictine order, named after Saint Benedict of Nursia, owns and operates the Catholic Church of Saint Elena. While this church is Catholic, the Benedictine order is not strictly Roman Catholic; the Anglican and Lutheran denominations also have orders of Benedictine priests. Catholic Benedictine monks take many vows, such as obedience and stability, which together make up the "Benedictine Vow". Part of the Benedictine life involves a strictly scheduled day to make the best use of time to do God's work. While a vow of silence is not part of the Benedictine Vow, much of their day is spent in silence and conversations are limited to times set aside for recreation.[21]

The church of Saint Steven the Prophet in Castello was founded in the 13th Century by a group of Augustinian Monks.[22] Augustinian monks take "scripture as a guide for truth, and specifically followed the example of the first Christian community described in the Acts of the Apostles."[23] As a result, Augustinians are often involved in public service such as mission work or education. They differ from other monastic orders in that the priests do not take a vow of stability, meaning that they move to different communities every several years.[24]

2.4 Preservation of Venetian Church Floor Artifacts

Drawbacks of restoration are that it can be expensive, time consuming, and potentially dangerous to the value of the relic itself. Experts assess the value of an artifact to determine whether or not it has a high priority to be restored, in order to preserve a culture's history. All artifacts do not have the same priority and as a result, specialists must decide which relics are most historically significant and in need of immediate aid.

Some people in modern society do not see the value in preserving the older or more rundown parts of a city. In an interview, Francesco Siravo, an architect and conservation planner, states that "the world's urban heritage is shrinking dramatically and that there is sufficient evidence to state that our

[21] Alston, G.C. (1907). The Benedictine Order. In The Catholic Encyclopedia. New York: Robert Appleton Company. Retrieved December 4, 2012 from New Advent: http://www.newadvent.org/cathen/02443a.htm

[22] Lorenzetti, Giulio. "Venice and its Lagoon: Historical-Artistic Guide" Italy. March 1994.

[23] "Augustinian Values." The Augustinians. 2010. 4 December 2012. <http://www.augustinian.org/who-we-are/the-augustinians/augustinian-values>

[24] Heimbucher, M. (1910). Hermits of St. Augustine. In The Catholic Encyclopedia. New York: Robert Appleton Company. Retrieved December 4, 2012 from New Advent: http://www.newadvent.org/cathen/07281a.htm

great grandchildren may not see much of it left."[25] The longer preservation efforts are set aside for other projects or goals, the fewer artifacts there will be when the need to save them is realized. In Venice particularly, there is a great need for restoration and preservation. Thousands of relics can be found scattered throughout the buildings of Venice. While these artifacts are not in danger of being demolished for new construction, they face a losing battle against the yearly floods and rising sea levels. A city project is currently underway to construct flood gates that will block incoming tides rising 1.1 meters above a given location,[26] effectively limiting the severity of floods. While this effort may help to prevent some of the more severe damage from occurring, the damage that has already occurred must be addressed.

2.4.1 Venetian Process for Restoring Artifacts

La Soprintendenza is a branch of the Ministry of Heritage and Cultural Activities, an Italian government organization that oversees all restoration efforts involving culturally significant artifacts across Italy. They have isolated four categories of culturally significant artifacts including archives, monuments, works of art and archeology. If a building, monument, or piece of art is in one of these categories, the Soprintendenza dictates all restoration projects that the item may undergo, regardless of if the item is publicly or privately owned. Even buildings that have been converted to private homes are susceptible to evaluation by the Soprintendenza. The subjects of our project, church floors and churches, have been categorized as monuments and are therefore under the jurisdiction of the Soprintendenza. Annually this organization releases a 'wish list' of restoration and preservation projects they have deemed a high priority. Typically, several small projects are carried out each year, such as cleaning a façade or replacing a roof a church, in Venice alone, even though the Soprintendenza is responsible for all of Italy. The majority of their funding comes from tax donations call the *octo mille*. This donation takes an additional 0.008% of your taxes and applies the money towards restoration projects for various churches across Italy. Although the Soprintendenza does receive funding, the number of churches they are responsible for restoring is too many each to receive their due attention. [27]

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[25] Matero, Frank. "Historic Cities and their Survival in a Globalized World." Changes Over Time. Vol. 1 Issue 1. Spring 2011. pp. 110 – 127. <http://muse.jhu.edu/journals/change_over_time/v001/1.1.siravo.html>

[26] "American Geophysical Union; AGU: Venice hasn't stopped sinking after all". The business of global warming(1945-5917), (2012) p. 50.

[27] Soprintendenza B.A.P. di Venezia e Laguna. 2012. 7 Oct 2012 <http://www.soprintendenza.venezia.beniculturali.it/>

The United Nations Educational, Scientific, and Cultural Organization, UNESCO, is a second platform for providing funding to restore churches. After the great flood which took place 3-4 November of 1966, an international campaign was established by UNESCO to aid Florence and Venice in raising funds to help with some of the damage caused by *aqua alta*, or high water. Around the globe, there are nearly twenty private organizations dedicated to funding preservations projects for Venice. Annually, UNESCO sends these organizations the Soprintendenza's request list to determine which projects they will be funding for the following year. After their decision has been made, they make a donation to UNESCO in order for their desired project to be carried out. UNESCO serves as the middle man, handling the paperwork and observing the logistics of the restoration processes onsite. Worcester Polytechnic Institute project teams have worked tangent to UNESCO to catalog the progress of these restoration projects, and make a record of all the artifacts that lie within the islands of Venice.[28]

2.4.2 Venetian Public Art Application

In order to make these artifacts available to a wider audience, the UNESCO Venice office supported the development of a PreserVenice's Venetian Public Art smart phone application in the summer of 2012. As of right now, a pre-alpha Android version of the application is available for an online download; however, it is not yet available through the Google Play application store. This public art application is only useable if the smartphone itself is in Venice because it uses GPS location to determine where a person is in reference to the Venetian works of art. AgentsCloud technology is used to send notifications to users who are in close proximity to a piece of art. These notifications may alert the user to a variety of options, including a need for updated information, a new image, or even a donation to further the artifact's restoration. Clicking on an object in the application will allow you to open *preservenice.org* to donate to a particular piece of art. Although this application has already been created, it is severely lacking in information and images. The artifacts in the church floors are not included in this application, yet are considered Venetian public art. The church floor artifact information and images will need to be added to the application data before it can be made available to the public through smart phone application purchases.[29]

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[28] UNESCO-ROSTE. " Historical Facts: Introductory Notes about the Regional Bureau for Science in Europe Starting from the Disastrous Flooding of 1966 Till Today." , accessed September 8, 2012.

[29] Carrera, Fabio. "Public Art App". *Fabio Carrera.* 5 September 2012. 15 September 2012. <https://sites.google.com/site/carrerafabio/works/public-art-app>

2.5 Assessment of Church Floor Artifacts

In year's past, four other WPI project teams have worked on the church floors and floor artifacts project and produced pictures as well as condition assessments for these artifacts. In 2004, that team compiled the two previous year's work into one database, containing data collected in 2002, 2003 and 2004. These three years all used the same nomenclature and assessment criteria when evaluating the church floor artifacts. The first four letters represent a unique identifiable code assigned to the specific church. They then divided the church floors into subsections, to more easily locate the artifacts in on floor plans. These divisions are reflected in the nomenclature they used when naming the artifacts and their photos. They assigned each section of the church a letter, and then number the artifacts within that section from left to right. The code for an individual artifact looks as follows:

Figure 11: Artifact Nomenclature Code

The 2005 team did not subdivide the church floors into sections, but instead just numbered the artifacts on the floors. They still noted the artifact's locations on the floors, but did not provide a floor plan to give a visual aid in locating the artifacts. All four years did conduct condition evaluations on the artifacts that were completed in the same manor. They selected five categories of damage and rated the artifacts on a scale designed for year type of damage. They chose to look at fading and wear, text readability, cracks, holes and joint gaps. [30]

2.5.1 Fading and Wear

Regardless of whether an artifact has text or not, it is still subject to fading or wearing by either human intervention or natural causes. The amount an artifact has worn or faded will be given a value. In this case, the scale from 0 to 4 is described as follows:

0 – The artifact has no fading or wear. It is in perfect condition.
1 – The artifact is somewhat worn. There is possible need for restoration due to evident wear and tear although color and/or design are still visible.
2 – Artifact is moderately worn or faded. It is in need of restoration as the color and/or design of the artifact are not completely visible.

[30] Santos,Luiz G.Student author -- MIS, Petrowski,Craig Peter Student author -- MIS, Kristant,Elaine Hazel Student author -- ME, Delaive,Amanda Leigh Student author -- MIS, Carrera,Fabio Faculty advisor -- ID, DiBiasio,David Faculty advisor -- CM, and Mello,Natalie A.Staff advisor -- ID. *The Church Floors in Venice, Italy -- an Archeological Study and Analysis* 2002

3 – The artifact is extremely worn. Immediate restoration is needed due to the barely visible color and/or design.

4 – The artifact is unrecoverable. The artifact has lost all signs of color and design.

For this assessment, the percent of the artifact under each rating are found in the same way as for the letters. Each percent are then be multiplied by the number it was given on the scale. All of these values are then be added together to find an overall fading amount for the artifact, shown in Equation 1 below. The number should be between 0 and 4 and then compared to the fading rating of the other artifacts.[31]

$$\left[4 \times \frac{area\ of\ surface\ in\ 4}{total\ surface\ area}\right] + \left[3 \times \frac{area\ of\ surface\ in\ 3}{total\ surface\ area}\right] + \left[2 \times \frac{area\ of\ surface\ in\ 2}{total\ surface\ area}\right] + \left[1 \times \frac{area\ of\ surface\ in\ 1}{total\ surface\ area}\right]$$

Equation 1: Fading and Wear

2.5.2 Text Readability

Several artifacts, such as tombstones and engravings, in the church floors contain text that has been worn down since its inscription. In some cases, the text is the only source of information regarding births, deaths, and other key facts of Venetian religious history. Text readability of an artifact is an important factor in its prioritization for restoration because it is such a key piece of information. The assessment of the letters are counted and ranked according to the following:

Figure 12: Example of Text Readability

3 – Letters which are completely unreadable. Most of the letter is gone because of water damage or wearing.

2 – Letters are readable, but slightly damaged. In this category, the letters are legible but have some damage.

1 – Perfectly readable letters. There must be no damage on the letter whatsoever to be in this category. These letters are given the lowest weight because they require no restoration.

The number of individual letters in each of these categories are divided by the total number of letters on the entire inscription and multiplied by one hundred in order to find a percentage of letters in each

[31] *The Church Floors in Venice, Italy -- an Archeological Study and Analysis* 2002

category. A sample tile with all three letter conditions is shown above in Figure 12. These percentages are then weighed against each category above. This is shown in Equation 2 below:

$$\left[3 \times \frac{\#\ letters\ in\ category\ 3}{total\ \#\ letters\ in\ inscription} \times 100\right] + \left[2 \times \frac{\#\ letters\ in\ category\ 2}{total\ \#\ letters} \times 100\right] + \left[1 \times \frac{\#\ letters\ in\ category\ 1}{total\ \#\ letters} \times 100\right]$$

Equation 2: Text Readability

The letters in category 3 are given the highest amount of weight because the letters have the most damage. Category 2 has the next highest weight because these letters are only slightly damaged and still readable. Since the letters in category 1 are perfectly readable, they have the lowest weight for restoration need due to the already perfect condition of the letters. The overall scale for an artifact is from 100 to 300. Artifacts with a rating between 100 and 200 have a low damage rating and artifacts with a rating between 200 and 300 have the most damage. [32]

2.5.3 Cracks

Figure 13: Example of Cracks

In addition to unreadable letters and fading of color and design, each artifact has the possibility of being cracked in some way. Cracks are a serious problem because they indicate weakness in the floor or artifact and can be problematic. For example, if a significant amount of weigh were to be put on an artifact with a crack in it, the artifact could crumble into more pieces due to its weaker state.

When the cracks are assessed several factors are taken into consideration, such as the size of the cracks and the likelihood to become larger or problematic, as seen in Figure 13. After finding the cracks in an artifact, they are counted and the lengths added up to find the total length of cracks in the artifact. This is then given a percentage of the artifact which is cracked.[33]

[32] *The Church Floors in Venice, Italy -- an Archeological Study and Analysis* 2002

[33] *The Church Floors in Venice, Italy -- an Archeological Study and Analysis* 2002

2.5.4 Holes and Joint Gaps

Another concern for the degradation of the artifacts is the presence of holes and joint gaps. In addition to fading or wear, further surface damage may occur. This surface damage is assessed by finding the percentage of surface area of the artifact which is damaged. The number of holes with a depth greater than 1.5 centimeters are counted as well. Since artifacts were placed into the floor, there is a possibility that the edge where the artifact and floor connect may contain a gap. If these are discovered, each gap width and length will be measured in order to find the total area which needs to be caulked. [34]

Figure 14: Examples of Holes & Joint Gaps

[34] *The Church Floors in Venice, Italy -- an Archeological Study and Analysis* 2002

3 Methodology

The final goal of the Venice Church Floor project of 2012 is to assist in preserving the artifacts in church floors throughout Venice with the creation of a database that can be easily modified to include information about an artifact which can be used to prioritize future restoration efforts.

Project Objectives:

1. Organize and validate information on artifacts in church floors from previous IQP groups into a central database.
2. Update the information for churches that have not yet been visited.
3. Assess the condition of artifacts and provide a ranked listing highlighting those that require immediate attention.
4. Integrate the collected information onto Venipedia.

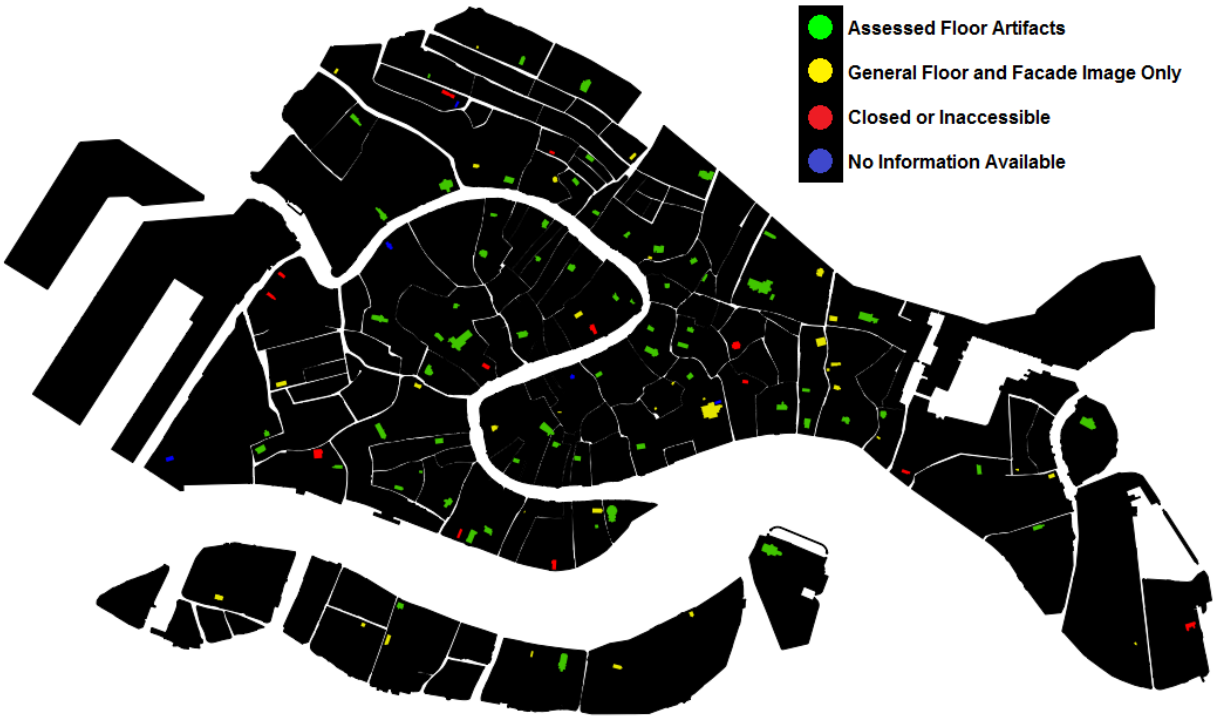


Figure 15: Church Information Status Map

Prior to our arrival in Venice, we compiled the existing data from past projects and determined which churches have yet to be recorded. The churches were categorized based on the cataloged status of their artifacts, which can be seen in Figure 15. During our time in Venice, we visited the churches

highlighted in yellow and collected information pertaining to each artifact. Once we had all of the data, Comma Separated Value files were created and uploaded to City Knowledge Console. City Knowledge Console used the CSV files to create Venipedia pages for every church and every floor artifact. These pages are the first deliverable of our project. Since the City Knowledge Console is also compatible with the smart phone application, our second deliverable is the addition of church floor artifacts to the Venice Public Art application. We then worked on creating a priority list for the Soprintendenza based upon a standardized ranking system.

3.1 Organizing Existing Artifact Data

One of the most significant objectives of our project is organizing data from previous WPI projects. There have been many projects completed in Venice, specifically on gathering information on the church floors and artifacts. Our first task was to find the data previous project teams have already accumulated and then identify what was missing.

3.1.1 Gathering Existing Data

Existing artifact data was saved on compact discs and organized it in Microsoft Access and HTML documents. The Microsoft Access files contain reports that have the details of each floor artifact, including their location and damage assessment. The Access files from each previous church floor project need to be exported into one Microsoft Excel file. The 2004 project team compiled the 2002, 2003 and 2004 artifact assessment data into one spreadsheet, arranged alphabetically by church code. The 2005 project team created a new spreadsheet containing only their artifact assessment findings. We merged the two spreadsheets into one list, confirming that all the previously collected artifact data is available to us. The number of floor artifacts per church can be seen below in Figure 16, according to the height of the 3-Dimensional columns. The images and raw data are also stored on the CDs and can be found using the item's specific code, a four letter abbreviation of the churches name, followed by a unique alphanumeric identifier.

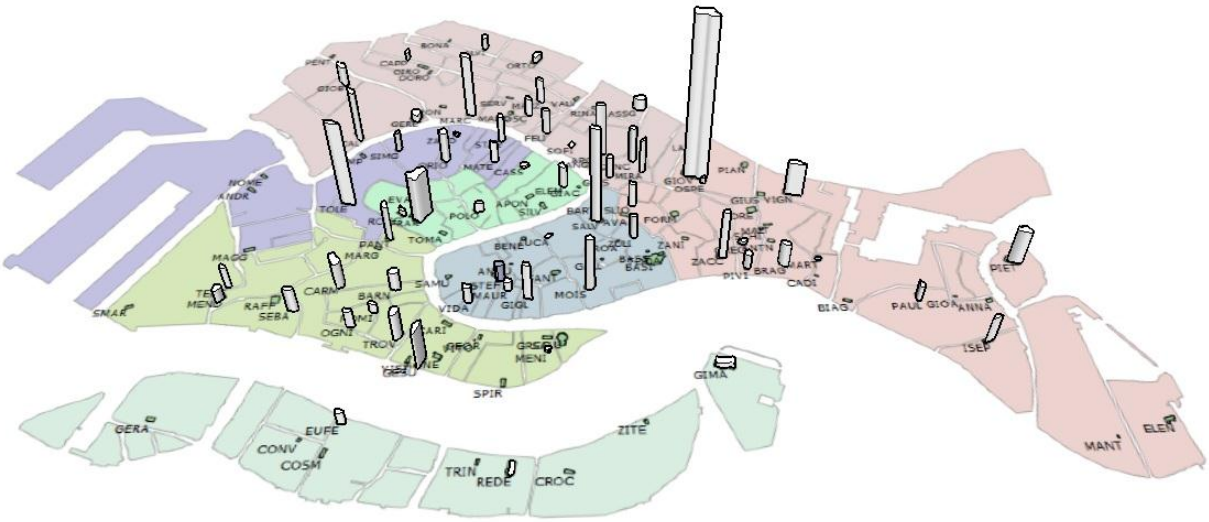


Figure 16: Number of Floor Artifacts per Church

Once all of the files have been compiled, we sorted through the data and determined which churches have not yet been assessed. In order to do this, we compared the artifact information found in the Access files to the images saved on the CDs to confirm that every artifact that has been assessed, has also been entered into Access. From here, we were able to determine which churches we need to visit while in Venice to complete the Venipedia database to the best of our ability.

3.1.2 Preparing for Data Collection in Venice

From what we have discovered in the files from previous WPI projects, most of the churches in Venice have either been evaluated or are unable to be viewed by the public. Currently there are 144 churches still standing in the city and within these churches lay thousands of artifacts that have been cataloged and photographed by four previous teams. Most of the visible artifacts' have been recorded in detail by previous WPI projects.

We anticipate most of the data that remain to be collected was pictures of the church façades. Photographs were included in reports since the 1990's and several have not been updated. Since the original photographs were taken, technology has advanced to produce much higher quality photographs. We updated the photographs of the façades of churches in order to provide the most accurate image for Venipedia users.

3.2 Updating Information on Venice Churches

A large portion of our work was conducted before arrival in Venice, as described in section 3.1, however there are holes in the data due to previously inaccessible churches. In order to complete the dataset of all the churches, we needed to continue collecting data in Venice. We completed the churches section of Venipedia so that each page contains, to the best of our ability, a uniform amount of information.

3.2.1 Visiting Venetian Church

In preparation for data collecting, we decided to photograph the church facades by *sestier*. Each night we mapped out the locations of the churches we planned to visit the following day in order to be efficient in our data collection. By this plan, we should be able to complete the picture within the first two or three weeks of our time in Venice. When visiting a church, we took pictures of the sign, to ease filing as well as several angles of the façade so as to capture the best picture for Venipedia. We also collected information about the church history, service hours, admission price as seen in Appendix A. This information is also included on the church Venipedia pages.

When data collection for a day was completed, we organized our data into folders and spread sheets. The pictures are sorted into folders based on *sestier* and church code then renamed to reflect the nomenclature set forth by previous projects. Every photograph is named using a four digit code that represents the church, and then a short description of the picture such as front, left, right etc. The information collected on each church is also organized into a spread sheet so that it can be easily converted to CSV and uploaded to Venipedia. The spread sheet is organized by *sestier* and church codes for consistency. The information is completed to the best of our ability, in order to achieve uniformity across all the Venipedia pages.

3.3 Ranking Artifact Damage Assessments

In order to create a ranked list of the damage of church floor artifacts, we created a scale based on importance of each individual category used for assessment.

$$(0.30)\left(\frac{Readablility-100}{200}\right)+(0.25)\left(\frac{Fading\ and\ Wear}{4}\right)+(0.20)\left(\frac{Length\ of\ Problem\ Crack}{Longest\ Problem\ Crack}\right)+$$
$$(0.15)\left(\frac{Joint\ Gap}{100}\right)+(0.05)\left(\frac{Length\ of\ Minor\ Crack}{Longest\ Minor\ Crack}\right)+(0.05)\left(\frac{Number\ of\ Holes}{Maximum\ Number\ of\ Holes}\right)$$

Equation 3: Priority Rating

Our prioritization list is a scale from 0-1, and artifacts with a score of 1 have the most damage. Initially, we thought the highest emphasis should be on text readability, a weight of 30%, because the inscription holds all of the information about the history of the artifact. Fading and wear of the artifact was given the second most weight, 25%, because it is an overall assessment of the surface damage. Problem cracks have a 20% weight because large cracks compromise the stability of the piece. A weight of 15% is given to joint gaps because large joint gaps could cause the relic to become unseated in the floor. The length of minor cracks and the number of holes did not get very much weight, both 5%, because they do not compromise the integrity of the artifact nor do they prevent researchers from reading the engravings.

3.3.1 Evaluating Artifact Condition

The previously assigned weights were then tested using the generated equation in an excel spreadsheet and comparing the generated score with the image to see if the score accurately portrayed the damage level of the artifact. This test revealed a flaw in the equation; artifacts without text were given an incorrectly high rating since we gave them a perfect score in the *Readability* field. To account for this discrepancy, we decided to create two equations that will be used side-by-side, one for artifacts with text one and one for those without. Furthermore, this will allow for a more fine-tuned equation. In addition to the text scores skewing the data, the weights provided were incorrect.

While looking at some artifacts in actual church floors, we noticed that the *Fading and Wear* and *Joint Gap* sections of the equation had too much influence over the equation. The *Holes* category on the other hand was not weighted enough, as we had misunderstood the previous meaning of *Holes*. By adjusting the values, as well as using some trial and error, we were able to create the equation which can be seen in Equation 4 for artifacts with text and Equation 5 for artifacts without text. The new equations produced a more even distribution of the artifacts. The data produced by these equations

arranges the artifacts in a way that agrees visually with the damage seen in photographs of the artifacts. The new equation also eliminates the separation of *Problem Crack* and *Minor Cracks*, due to the lack of consistent data over the past projects. By creating one field for cracks, the equation can be applied to the data from all past projects rather than needing a new equation for each year that would all need to be matched to the same scale.

$$(0.25)\left(\frac{Readablility-100}{200}\right)+(0.30)\left(\frac{Fading\ and\ Wear}{4}\right)+(0.20)(Cracks)+$$
$$(0.05)(Joint\ Gaps)+(0.20)(Number\ of\ Holes)$$

Equation 4: Rating Equation for Artifacts with Letters

$$(0.25)\left(\frac{Fading\ and\ Wear}{4}\right)+(0.35)(\ Cracks)+(0.05)(Joint\ Gaps)+$$
$$+(0.35)(Number\ of\ Holes)$$

Equation 5: Rating Equation for Artifacts without Letters

3.3.2 Evaluating the Equation

In order to ensure that our equation did not favor a single aspect of the artifact too much while ignoring another aspect, we created two tests. One test was a simple optical test. What opened some of the artifact images and organized them according to how we thought they should be ranked and checked our results with the equations ranking. Our second test was to make a custom sort of all of the artifacts in Excel. This sort was simply an order of importance, no numerical values associated with the condition categories. First we ranked by surface damage, then readability, and then we continued sorting according to the weights of the equation. This sort changed the order a little, for example the highest ranked artifact was switched with the second artifact. However, we realized this was because our custom sort could not put equal weights on cracks and holes, while our equation could. After these tests, we concluded that our new equation was now a functioning, accurate representation of the overall damage rating of the artifacts.

3.4 Integrating Church and Artifact Data onto Venipedia

With data collection and analysis comes the obstacle of devising a way to share the results of the research to interested parties. The information must be presented in a manner that is easily understandable, but not so simplified that the meaning or fine details of the work that was done is lost. In addition, the information must also be stored in such a way that allows for easy access and modification.

3.4.1 Updating Venipedia through the City Knowledge Console

The City Knowledge Console is a 'middleman' of sorts; it handles uploading and storing all of the data that will be collected and used for the Venipedia pages. This system uses online storage solutions, such as those provided by Amazon Cloud®, to allow access to the information remotely. City Knowledge Console uses a firebase system that allows for real-time updates of information which is valuable because of its compatibility with the development of a mobile application. The compatibility of the database is essential to allowing both webpages and the mobile application to share the same information. Without this compatibility, separate databases would need to be created or more complex code written for use with the mobile application. The City Knowledge Console will accept data in CSV format, as well as JPEG files and the files associated with GIS maps, a program that uses layers to build an image of a geographical area. All of this information can be implemented with pre-designed templates which will be used to automatically generate Venipedia webpages for each church and floor artifact that is uploaded.

The use of the City Knowledge Console makes the database, Venipedia, more user-friendly. Since the database is updated in real-time and uses templates to generate each webpage, any changes in data will take effect immediately. The information only needs to be edited in the CSV files and the changes will update in all of the programs linked to the file. Our team cooperated with the team working on Venipedia to generate templates for each page we created. We have had several meetings with the Venipedia project team to determine the best way to maintain a uniform appearance across the Venipedia.org website, while still meeting the individual needs of the various webpages. The hierarchy for the Churches page and the related church and artifact pages we implemented is shown

below in Figure 18. Sample templates for our Venipedia pages can be seen in Appendix B-E.

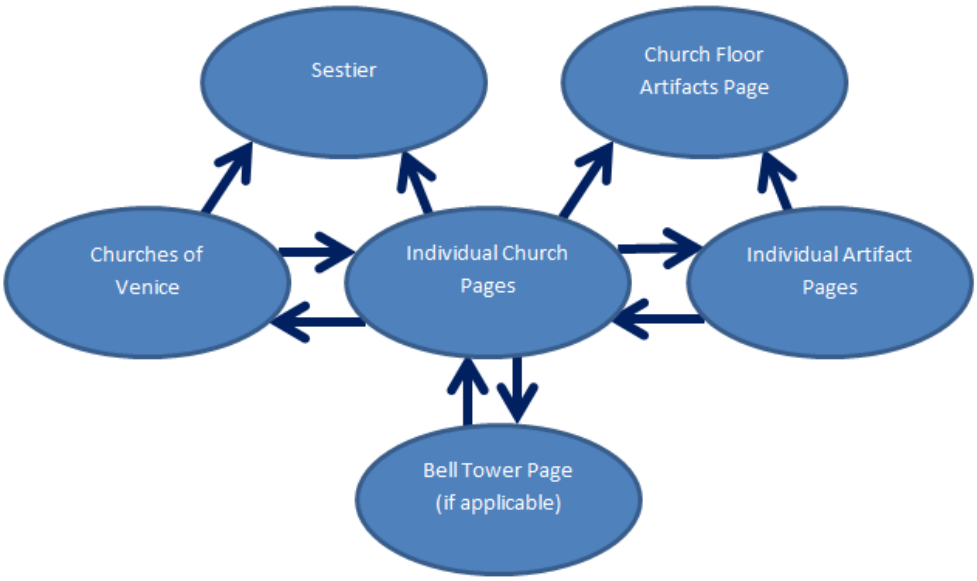


Figure 18: Hierarchy of Venipedia Pages

In order to generate our team's Venipedia pages, eight separate CSV documents were created to upload information to City Knowledge: one for each sestier, one for Giudecca and one for all the islands in Venice's Lagoon. The pictures of the church facades and floor plans were also uploaded in groups using the same method. This was done to allow the merging process to function properly within the City Knowledge platform. Artifact images were uploaded based upon what church they are in, and then combined to reflect the eight divisions used for the church data upload. The artifact images had to be uploaded by church and combined after upload due to the size restriction on the uploading process. A sample of some of the uploaded groups is found in Figure 19. The Venipedia pages themselves were made with merged data and image groups that used the previously designed template to automatically generate the webpages. These pages were inserted into the Venipedia.com site immediately upon their creation.

CARM Artifact Images
CASS Artifact Images
CATM Artifact Images
Cannaregio FP Images
Cannaregio Facade Images All
Cannaregio GM
Castello FP Images
Castello Facade Images All
Castello GM
DONA Artifact Images
Dorsoduro FP Images
Dorsoduro Facade Images All
Dorsoduro GM
ELEM Artifact Images
EUFE Artifact Images
EVAN Artifact Images

Figure 19: Example list of Uploads to City Knowledge

3.4.2 Creating Venipedia Pages

There are four different types of Venipedia pages pertaining to churches: a church floor artifact page, a churches page, individual church pages and individual artifact pages. These pages are created with the help of templates, outlines of what every page will look like when completed. The Venipedia project team assisted us in creating three templates, one for each type of page we plan to create. The church floor artifact page is a standalone page that will be referenced from all pages and therefore did not need a template. The templates are what will allow us to automatically generate pages using CSV files.

3.4.2.1 Church Floor Artifact Page

Past teams have determined an artifact as either a tomb or a plaque. This page will have sections for each of the two classifications and give an explanation of the condition evaluation criteria. Currently, a church floor artifact is any marker on the floor that is made of a different material or color stone that has an inscription, whether it is a tomb or plaque. This page contains example pictures for both tombs and plaques to give the reader an idea of the difference. This section will be followed by an explanation of the condition evaluation, as elaborated upon in section 3.3. Each individual church page and artifact page will refer back to this definition page to provide the reader with a more in depth explanation of what constitutes an artifact and how the condition evaluation was determined. The Church Floor Artifact Venipedia page can be seen in Appendix B.

3.4.2.2 Churches Template

There are two heading sections on the Churches page, each including general information that applies to all the churches of Venice. First, there is a history section that will outline the history of religion in Venice. The second section of the Churches page will be a map, containing a Google map of Venice with flags representing the location of every church in the city. Currently, we are not able to make this sort of map, but have included it as a recommendation for future projects. Links to the individual Church pages will also be included underneath the map. See Appendix C.

3.4.2.3 Individual Church Template

The individual Church pages have more information and look more like typical Wikipedia pages. There is an information box in the upper right hand side of the page, giving short facts about the church, including name, hours of operation, location, cost of admission etc. All of the information in the information boxes is the data that our team collected when visiting the churches. See Figure 20 to the left. Immediately following the title is a written summary of the information provided in the information box. Information that is included in this paragraph is that which will not change frequently, such as the full name, year consecrated and if it is open to the public. The headings for the Church pages will be listed in contents box, and include a more detailed history about the specific church if applicable, and then details about the church structure, see Figure 21. We plan to break the description into two large sections, exterior and interior. The exterior section will have a picture of the façade and a link to the corresponding Bell Tower page, if one exists. The exterior section also includes a description of the façade, and how its design reflects the century in which it was built, drawing on explanations provided in the architecture section of the Churches plural page. The Bells project team was responsible for creating the Bell Tower pages. Our Church pages only have one or two sentences describing the tower, and then provide a link to the full bell tower page.

San Giorgio (Model)

The façade of the church.

Full Name	Basilica di San Giorgio Maggiore
Local Name	San Giorgio
Hours of Operation	M-F 9:00 AM - 6:15 PM
Service Times	M-F 8:00 AM, Su 11:00 AM
Cost of Admission	Free
Church Information	
Year Founded	1610
Current Use	Active Church
Denomination	Catholic
Technical Details	
Church Code	GIMA
Longitude Coordinate	Longitude Coordinates
Latitude Coordinate	Latitude Coordinates

Figure 21: Example Church Information Box

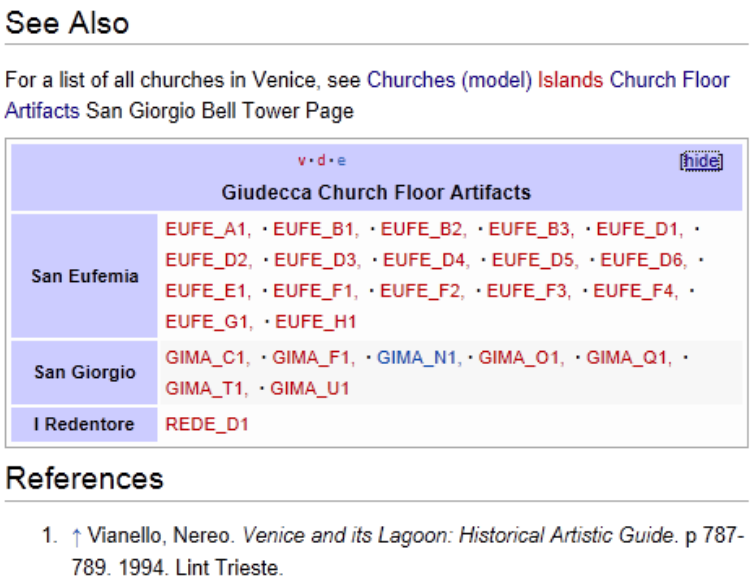
The interior section will include subsections for the ceiling, wall art, altars, which are here as place holders for now until more information can be acquired, as well as a GIS floor plan map of the church and a floors section. GIS maps have been created by past project teams to reflect the location of the floor artifacts within the floor. Although our project focuses on the floor artifacts, we will still provide sections for the ceiling, wall art and altars to show that the churches contain numerous works of art that have been preserved better than the floor artifacts, due to their low proximity to foot traffic. The floors section will include a link back to the Church Floor Artifact page. In the floor artifact section, there will also be links to all the singular Artifact pages. These links will be stand

Contents [hide]

Figure 20: Example Contents Box

alone, while a picture and explanation of the artifacts will be provided on their individual pages.

After the structures sections on the singular Church pages, there will be a Google map similar to one on the Churches page. While the previous map showed flags for every church in the same color, these maps will show the particular church in a different color, allowing the viewer to place its location within the city of Venice. Following the map will be the See Also, References, and External Links sections. These sections will include links to relevant Wikipedia pages, other Venipedia pages and other sources, and can be seen in Figure 22. The Churches Venipedia page can be seen in Appendix D.



See Also

For a list of all churches in Venice, see Churches (model) Islands Church Floor Artifacts San Giorgio Bell Tower Page

v · d · e	hide
Giudecca Church Floor Artifacts	
San Eufemia	EUFE_A1, · EUFE_B1, · EUFE_B2, · EUFE_B3, · EUFE_D1, · EUFE_D2, · EUFE_D3, · EUFE_D4, · EUFE_D5, · EUFE_D6, · EUFE_E1, · EUFE_F1, · EUFE_F2, · EUFE_F3, · EUFE_F4, · EUFE_G1, · EUFE_H1
San Giorgio	GIMA_C1, · GIMA_F1, · GIMA_N1, · GIMA_O1, · GIMA_Q1, · GIMA_T1, · GIMA_U1
I Redentore	REDE_D1

References

1. ↑ Vianello, Nereo. *Venice and its Lagoon: Historical Artistic Guide*. p 787-789. 1994. Lint Trieste.

Figure 22: Example See Also and Reference Sections

3.4.2.4 Artifact Template

The Artifact pages contain an information box with basic information about the artifact's length, width, material, classification, etc. For more details, see Appendix E. Immediately beneath the title is a brief summary of the information in the information box, along with an explanation of the artifact's nomenclature previously described in section 2.5. The navigation box contains two headings, each of which provided more details about the artifact. The first section is a condition evaluation, which will provide a numerical value to describe the restoration condition of the artifact. See Figure 23 below. This section references the condition evaluation section on the Church Floor Artifact page where a more detailed explanation can be found, as described in section 3.4.2.1.

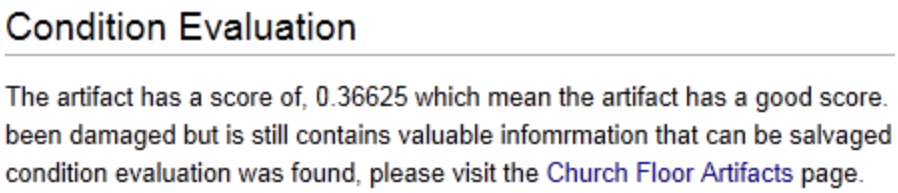


Figure 23: Condition Evaluation Section on Artifact Pages

This subsequent section includes a transcription of the artifact's inscription, if it's still legible, followed by a translation if provided. Not every artifact has a translation, since the tombs are written in either Latin or Italian, however even a transcription can provide details such as the year of birth and year of death. The translation can also provide insight into the life of the deceased, such as occupation, life expectancy, etc. See Figure 24 to the right. Following the transcription and translation, there will be links to the other artifacts in that particular church.

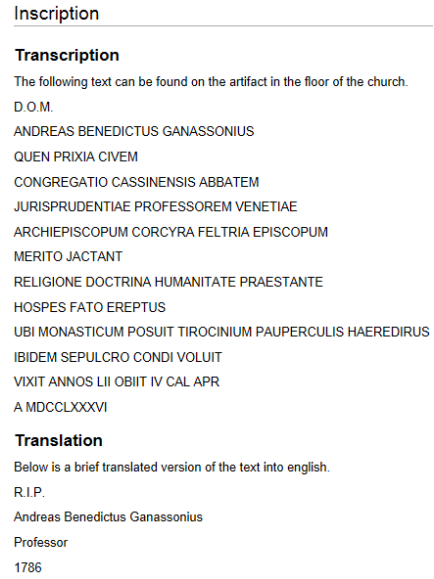


Figure 24: Example Inscription Section on Artifact Pages

4 Results

4.1 Unified Church and Church Floor Artifact Databases

The existing data that we gathered from four previous Worcester Polytechnic Institute projects was scattered over six separate compact discs, one for each year while the project team from 2005 had their data on three CDs because the image files were too large to all fit onto one disc. Overall, each project organized the data on their CDs in a very similar fashion, thereby creating a logical path for future projects to locate the same type of files on each disc. This is demonstrated below in Figure 25.

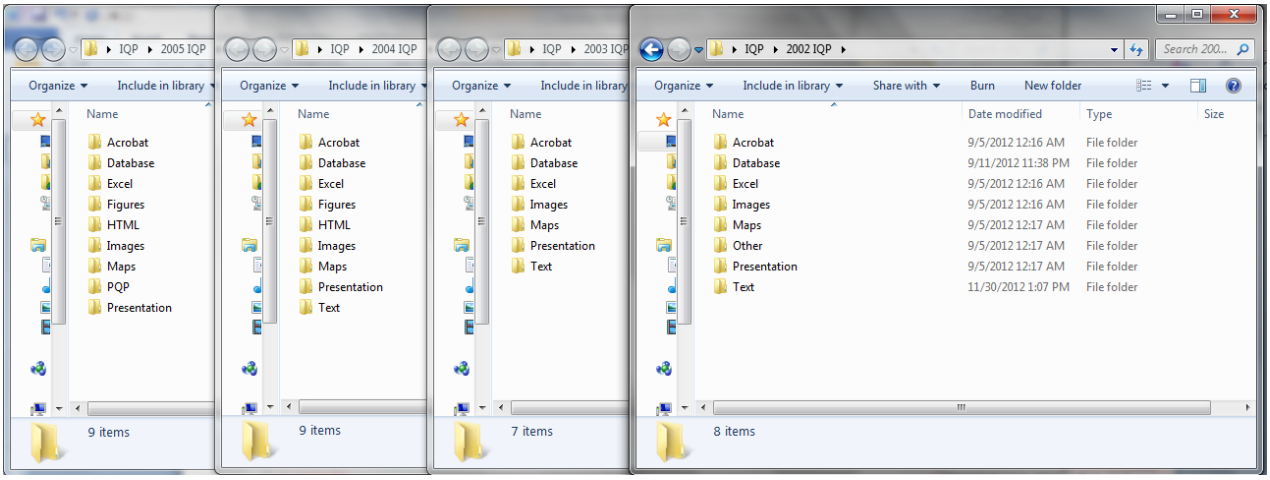


Figure 25: Organization of Compact Discs

Every year's disks contained the following folders: Acrobat, Database, Excel, Images, Maps, Presentation, and Text. In the Database folder, all four years placed their Microsoft Access database files where all of the information they collected about the churches, floors, and floor artifacts was stored. From these files we were able to compile all of the past data into one database by exporting the data into excel, and combining the spreadsheets there. This Microsoft Excel file contains all of the artifact information, including damage assessments and other artifact details, allowing the data on all 2,221 artifacts to be reviewed in one file, rather than searching through several past projects' data individually. In addition, a single Excel file containing all information regarding the churches allows for easier information updates in the future.

After reviewing each past project's data, we found that each team collected slightly different information on the artifacts. Some recorded the exact location of the artifacts on a floor plan while others focused their efforts in translating some of the artifacts inscriptions. All teams used the same

factors, such as readability, surface damage, holes, cracks, and joint gaps, to assess the overall damage of the artifacts; however, the assessment ranges they used for each factor differed slightly. The assessments themselves were also inconsistent year to year because different students were evaluating the artifacts. This is to be expected however since unless one set of eyes is evaluating every artifact, some variation is bound to occur. Luckily, past projects did maintain the same range of information collection on the churches, such as name, location, and year consecrated, as this information remains the same over time. Other fields however, such as visitation hours, practicing status and service times, are subject to change. As the last project to study churches was conducted seven years ago, this type of information was outdated and needed to be replaced in order for the database to remain current.

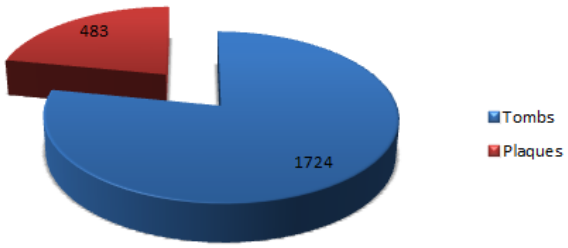


Figure 26: Distribution by Type of Artifact

Once in the excel documents, we were able to see that there are 74 churches that have been recorded to have 2,221 artifacts in their floors. Of these artifacts, there are 1,724 artifacts classified as tombs and 483 that are classified as plaques, as seen in Figure 26. We were also able to determine that every artifact that has been recorded has a corresponding picture saved in a separate file. While the two files are not linked, determining that both pieces exist was a big step in moving forward to complete Venipedia pages with pictures and information. Overall, 74 of the churches of Venice and its Lagoon contain floor artifacts that have been analyzed by Worcester Polytechnic Institute students in the past years. In Figure 27, the yellow dots represent the churches that have artifacts in the floor churches that have either not been visited or do not contain artifacts to be assessed. Of the artifacts that have been assessed, we were also able to determine that there are 1,537 artifacts with text and 684 artifacts without text. This was useful information to have when trying to determine a way to create a restoration priority list of artifacts.

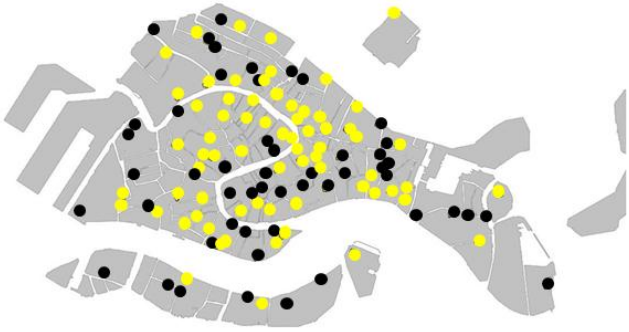


Figure 27: Distribution of Artifact Assessment

4.2 Church and Church Floor Artifact Venipedia Pages

An important aspect of our project is the presentation of information collected to the English speaking world in an easy to understand manner. The creation of Venipedia pages gives the public access to all of our data and findings from anywhere in the world with an internet connection. Through these pages, readers can learn about Venetian churches, including their architecture, history, locations, denominations and current operating status. Additionally, information regarding the artwork found in the churches is included on the church pages, with an emphasis on the floor artifacts. These artifact pages provide the reader with information regarding the artifact's physical appearance, inscription if any as well as a condition evaluation score.

List of Churches

San Marco

Church Name	Common Name (In English)	Affiliation
Patriarchal Cathedral Basilica of Saint Mark	Saint Mark's Basilica	Roman Catholic
San Bartolomeo	Saint Bartholomew	Roman Catholic
San Basso	Saint Basso	Deconsecrated
Chiesa di San Beneto	Saint Benedict	Roman Catholic
Santa Croce degli Armeni	Holy Cross	Armenian Catholic
Madonna di San Fatino	Example	Example
San Luca	Example	Example
Santa Maria Zobenigo	Example	Example
San Maurizio	Example	Example
Example	Example	Example
Example	Example	Example
Example	Example	Example
Example	Example	Example
Example	Example	Example
Example	Example	Example

San Polo

San Croce

Dorsoduro

Cannaregio

Castello

Figure 28: Previous "Churches" Venipedia Page

Our work with the Venipedia website has resulted in a more complete database encompassing the churches of Venice and its Lagoon. Prior to our project, the Churches section of Venipedia contained only a few, incomplete pages. The Churches main page contained an abbreviated list of the churches of Venice with only nine names written, seen Figure 28, five of which actually had complete information in the table. Additionally, the church pages that did have links were not complete, and were essentially bare pages without picture.

Overall, the previous Churches page contained no images and severely lacked general church information which should be included in a page that focuses on the churches of Venice. The new Churches page contains a completed list of all the churches in Venice with the full name, common name and denomination as described in the methodology above. To make the page more aesthetically pleasing, the list of Churches is broken into sections by sestier. Each section is then collapsible, which reduces the amount of unwanted information the viewer on their screen, making it easier for readers who are unfamiliar with Venice to navigate through the pages. The attributes of the new Churches page can be seen in Appendix B.

Prior to the creation of the Church Floor Artifacts page on Venipedia, there was no mention of these works of art in the Churches section. There was a Church Floors page, see Figure 29, but it focused on the floors, their styles and heights. There was little mention of the floor artifacts themselves on the page and only one image of a floor was provided for readers to understand the complexity of the designs. Our team created a new page, Church Floor Artifacts, which explains the various artifacts that can be found and provides visual examples. This page also provides an explanation of how floor artifacts can be damaged and how their condition has been assessed. A full explanation of the condition evaluation can be found in Section 3.3.


Church Floors

(Redirected from Church floors)

This page needs one or more diagrams to improve its quality. Please edit the article to insert one now.

A typical Venetian church floor

The city of Venice was founded in the fifth century, developing from a group of small island communities that each centered on a local church. From the beginning, in an effort to preserve their heritage and culture, Venetians buried priests and nobility within these churches. As time went on, this practice became routine and was expanded to include any member of the community with the appropriate resources or personal ties. Napoleon, after conquering the Venetian Republic, abolished this practice because of health concerns. To this day, however, Venice exists with many of its original churches and the artifacts contained therein.

Centuries of burials and the gradual subsidence of the city (and consequent construction of new, higher floors and pavements) have led to the stratification of the church floors, many now containing several layers of artifacts. Beneath the current surface of these floors lie hundreds of items that exist as an historical record of Venetian culture and tradition – moments frozen in time. These artifacts include tombstones, plaques, and inscriptions. The earliest "ledger" stones date back to the 11th century, covering the tomb, allowing access to the grave, commemorating the family, and displaying inscriptions and biographical information – age, date of death, and occupation – about the deceased.

A lack of burial space in the 14th century led the Venetian government to adopt different entombment methods. Sealant that had originally lined the bottom of tombs was replaced, either by wooden planks spaced three centimeters apart or an arrangement of bricks that used no mortar. In both cases, space was left to allow the natural passage of water that came with the tides. As the water passed through, the human remains within the grave decomposed and eventually were washed away by the tides – over

Figure 29: Previous Church Floors Page

A new addition to Venipedia is all the Church pages that we have created which will aid tourists in locating the churches. Some basic information about the church, including its age and number of artifacts, is provided in order to give the reader a sense of the history each church has in the city. The individual artifact pages contain a condition evaluation score which includes a need for restoration ranking. Overall, the new Venipedia Church section expands upon the previous versions and creates a more user friendly experience for the English speaking tourist interested in learning about Venice's churches and church floor artifacts. The information presented in these pages is up to date and thorough. The improvement we have made will better serve tourists as they learn more about the churches of Venice and their floor artifacts.

We were in constant communication with the Venipedia team to produce functional page templates that are formatted to fit with the rest of the Venipedia site. We produced four templates, two of which are definition pages, or those that will not change once they are created. Different pages on Venipedia will be linked to these two pages, but there is only one page that follows the same format. For instance, there are 139 different church pages that all follow the Church (model) template, but there is only one Church Floor Artifact Page.

The focus of our project was church floor artifacts, so therefore our first definition page is named Church Floor Artifact. This page contains a definition of each type of artifact, both tombs and plaques accompanied by a picture of each. In addition, an explanation of our condition evaluation can also be found on this page, to give the reader an idea of how the condition was determined, and what

the different condition categories mean. The Churches page is also considered a definition page, as it is the only one on Venipedia to follow this format. It was created manually to serve as a starting point for individual church searches and provide background information on general Venetian church history and architecture. The info box on this page contains statistics about the churches of Venice, as well as an image of the façade of St. Mark's Basilica, as it is the most recognized church in the city. Further down the page, there is a Google map highlighting the locations of all the churches in both Venice and its Lagoon. On this page there are links to every church in Venice and its Lagoon in a table that lists every church by sestier and contains the church's full and local names, as well as their denominations.

139 Church pages were created using the City Knowledge Console. Each page contains a church history and basic information about the church in the info box. The pages also have three pictures one of the church façade in the info box, a floor plan, and a map indicating where the church is located within Venice, both in the text portion of the pages. A navigation box containing links to all of the church's artifacts is located under the See Also heading of the page. Each link leads to one of 2,221 Artifact pages that were also created through City Knowledge. Basic information about the artifact can be found in the information box along with a picture. Each of the artifact pages also contains the same navigation box as that on the parent church page so that the reader is able to navigate between the artifacts easily, as well as still have access the parent Church page.

5 Analysis

5.1 Damage Assessment Analysis

Once all of the church floor artifacts had been ranked by the method described in section 3.3, we needed to decide at what point the artifacts have sustained so much damage, that they are not likely to be candidates for restoration. Conversely, we also determined at what point the artifact had not yet been subject to damage and therefore would likely not be candidates for restoration. The equation that we created assigned each artifact a score between 0 and 0.7675 for artifacts with letters on them and between 0 and 0.665 for artifacts without writing. The distribution of results for the artifacts without letters can be seen in Figure 30. The scores start out at 0.7675 and then dip down quickly and start to gradually even out around 0.50. They then stay between 0.40 and 0.20 for 917 artifacts and then the damage scores start to fall faster until they dip rapidly around 0.10 going all the way down to 0. The scores for the artifacts without letters follow a similar pattern.

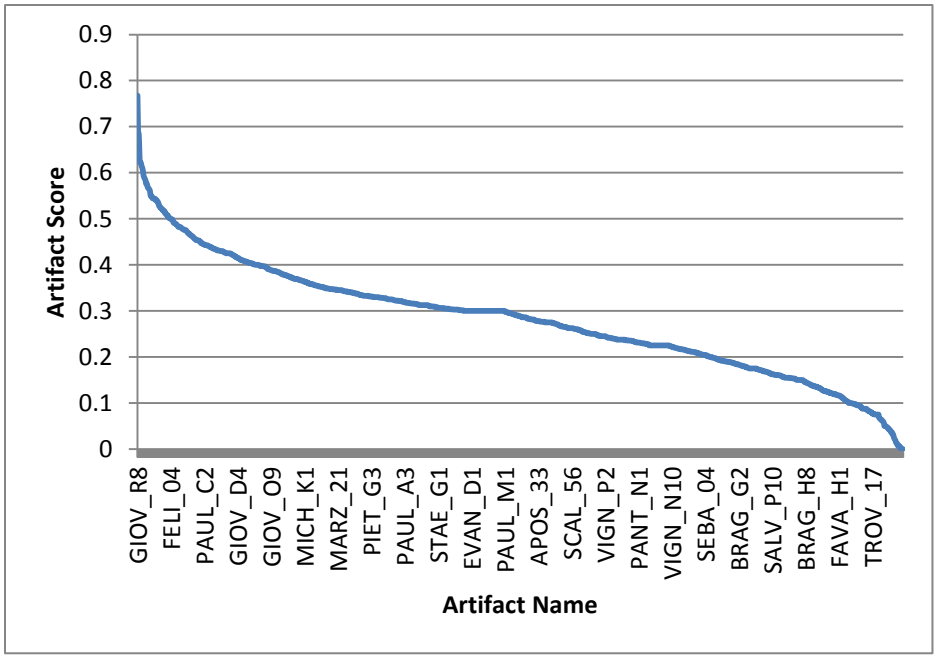


Figure 30: Artifact score for Artifacts with Letters

5.1.1 Categories of Damage

We decided that the best way to do this was to pick a score, look at the image of the artifact, and then decide if the artifact was damaged beyond repair. If it was deemed restorable, then we looked at an artifact ranked ten places higher until we found an artifact that we thought could not be restored anymore. Next we considered artifacts on both sides of the selected benchmark and narrowed down the 'point of no return' to a single damage score.

Figure 33: Artifact ELEM_20

CANC_E7 (134 : 44.458)
ISEP_L3 (133 : 44.5)
ZACC_A3 (131 : 44.68)
ELEM_20 (130 : 44.75)

==RESTORABLE==> <==PAST-HELP==

SCAL_52 (127 : 45.12)
ELEM_24 (124 : 45.25)
PIEM_L1 (116 : 45.75)
FOSC_H2 (112 : 46.21)
MICH_D1 (109 : 46.38)

Figure 31: Cut Off Points for Upper Range

Figure 32: Artifact GIOV_R1

In Figure 31, the first number in the parenthesis represents the artifacts rank and the second number in the parenthesis represents the artifacts score multiplied by 100. Everything above the line we deemed to be damaged, but to the point where it is still restorable, while all of the information on artifacts below that line was already lost because they had received excessive damage.

As seen in Figure 32, the writing on GIOV_R1 cannot be saved anymore as any information that was once on the artifact has been lost. On the other hand, Figure 33 ELEM_20 is still salvageable and the cracks on the side of the artifact can be fixed. The same process was used for the bottom end of the damage spectrum.

Figure 35: Artifact SALV_M2

SALV_U1 (1412 : 11.38)
TOLE_J3 (1418 : 11)
CATM_C2 (1425 : 10.38)
DONA_A1 (1435 : 9.9)
ROCC_I1 (1436 : 9.88)

==RESTORABLE==> <==NO-RESTORATION

SALV_M2 (1437 : 9.88)
GIGL_F3 (1442 : 9.75)
BRAG_E7 (1444 : 9.5)
PIEM_K2 (1451 : 9.38)

Figure 36: Artifact ROCC_I1

Figure 37: Lower Range Cut Off

In Figure 34, the first number in the parenthesis represents the artifacts rank and the second number in the parenthesis represents the artifacts score multiplied by 100. In Figure 35, it can be seen that SALV_M2 does not have any major damage and therefore does not have a need for restoration. Figure 36 demonstrates that there are aspects of ROCC_I1 that could still be restored, for example the holes in the top right corner of the artifact. The same process of finding an upper cutoff line and lower cutoff line was used for artifacts that do not have any writing on them. Although we are not experts in the field of artifact restoration and cannot make assumptions as to the accuracy of these claims, we are pleased with the distribution of restorable artifacts for both those with and without text.

We also divided the artifacts with letters into three regions of damage high, intermediate, and low damage as seen in Figure 38. In order to determine where the cutoff points of these regions are, we first split the whole region into thirds. Then we started looking at pictures of the artifacts until we could find significant differences in the conditions of a group of artifacts that are ranked close to each other. The break between artifacts with a high damage score and those with an intermediate damage is between MOIS_D9, rank 606, and GREC_C2, rank 613. The region between BART_B5, rank 985, and FRAR_J1, rank 986, represents the cutoff line for intermediate and low damage artifacts. The artifacts without letters were only split into two sections, high and low damage. This split happens at ORIO_J11, rank 193, and GIGL_C2, rank 203. See Appendix F for a larger image of Figure 38.

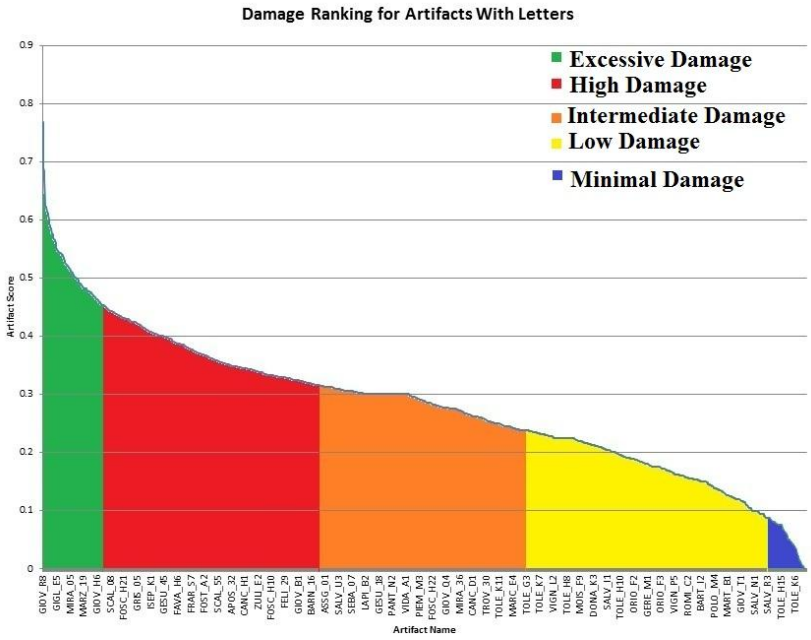


Figure 38: Distribution of Artifact Assessments

5.1.2 Artifact Scores v. Floor Height

Once each church floor artifact was given a condition evaluation score, ranked, and split into categories, all of the artifacts located within the same church floor needed to be analyzed together. Since most restoration efforts would most likely focus on preserving an entire floor rather than one individual artifact, the average score of all of the artifacts in one church is more helpful for determining which floors need to be restored first. In Figure 39 below, the average score of all of the artifacts in each church are represented by the bars on the graph.

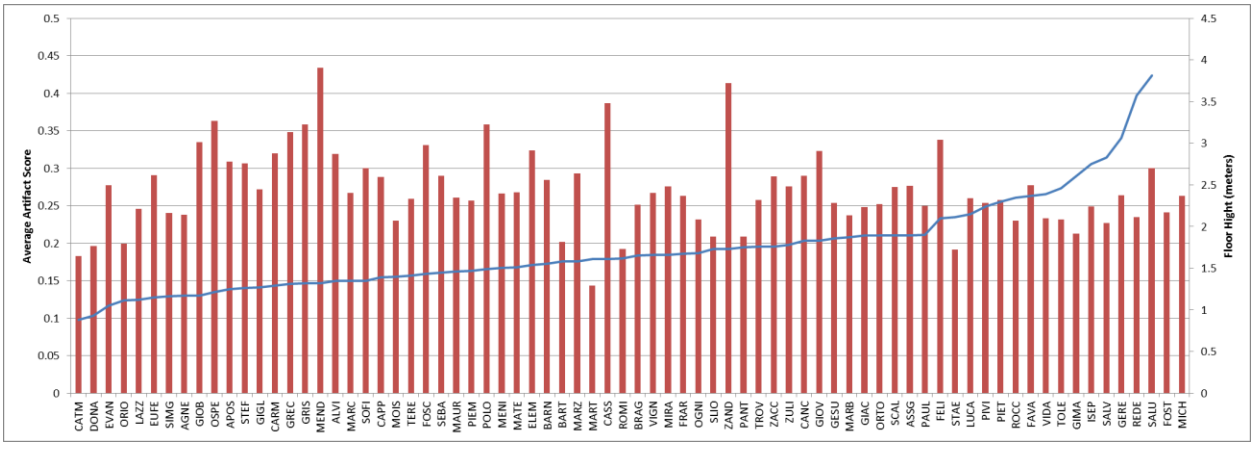


Figure 39: Average Church Damage and Floor Height

From the graph it can be seen that the three churches with the highest average damage scores are MEND, Chiesa di San Nicolo dei Mendicoli, at 0.44; ZAND, Chiesa di San Giovanni Decollato, 0.41; and CASS, Chiesa di San Cassiano, 0.39.

The blue line on the graph shown in Figure 39 represents the floor height of each church. Sorting the data by floor height prior to graphing, then plotting the floor height as a line on top of the average floor heights, allows for easier interpretation the effect floor height has on the damage score of a church's floor artifacts. While the trend may not be strong, the churches with lower heights tend to have higher average damage scores. Interestingly floors with heights greater than 2.1 meters consistently have lower average floor ratings. With only a few exceptions, the taller bars are clustered to the left side of the graph where the floor elevation is lower, while the shorter bars tend to be to the right of the graph where the elevation of the floor rises.

5.1.3 Interpretation of Artifact Scores

While the floor height graph provides information about the churches as a whole, it does not specify the number of artifacts in each damage evaluation category. For churches with only a few artifacts, one artifact with either a very high or very low damage ranking can skew the entire church score, thus distorting the graph. Figure 40, below, shows the number of artifacts in the high, intermediate, and low need categories within each church. See Appendix F for a larger Image of Figure 40

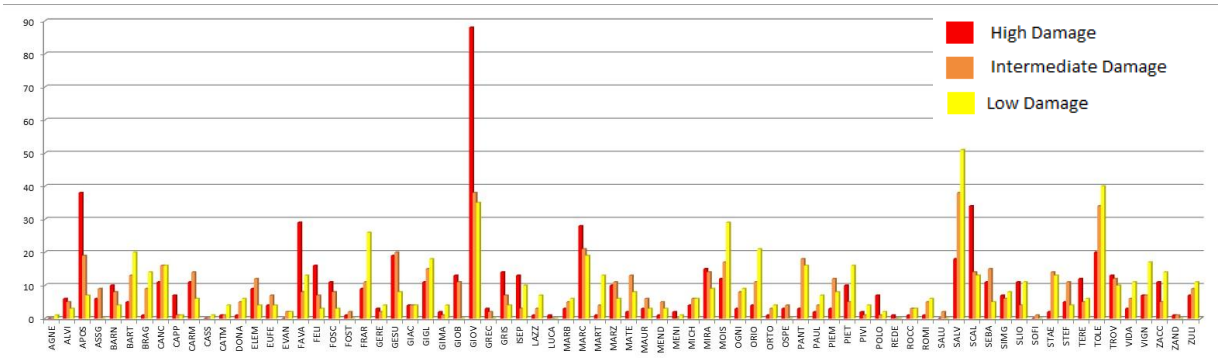


Figure 40: Damage Distribution per Church

The red columns refer to the number of artifacts in each church are categorized as highly damaged. This graph gives a more accurate representation of the damage in each church floor, allowing for a more definitive list of church floors that need immediate attention to be created. It is very clear that GIOV, Santi Giovanni e Paolo, has the highest number of artifacts in both the high damage category intermediate damage, as well as on of the highest number of artifacts in the low damage category.

Therefore, the floor of this church is a strong candidate for restoration. Additionally, the churches APOS, Santi Apostoli, SALV, San Salvador, SCAL, Gli Scalzi, TOLE, I Tolentini, FAVA, La Fava, and MARC, San Marcuola, all have red and yellow columns that are significantly higher than the rest. As a result, these six churches are also strong candidates for immediate floor restoration.

The graph shown in Figure 41 is not enough to make an informed decision as to which churches have the most damaged floors and therefore require more immediate attention. Further analysis of Figure 41 revealed that the seven churches with the most 'high damage' artifacts are also the seven churches with the most artifacts. To account for this bias, we analyzed the percent of artifacts in each

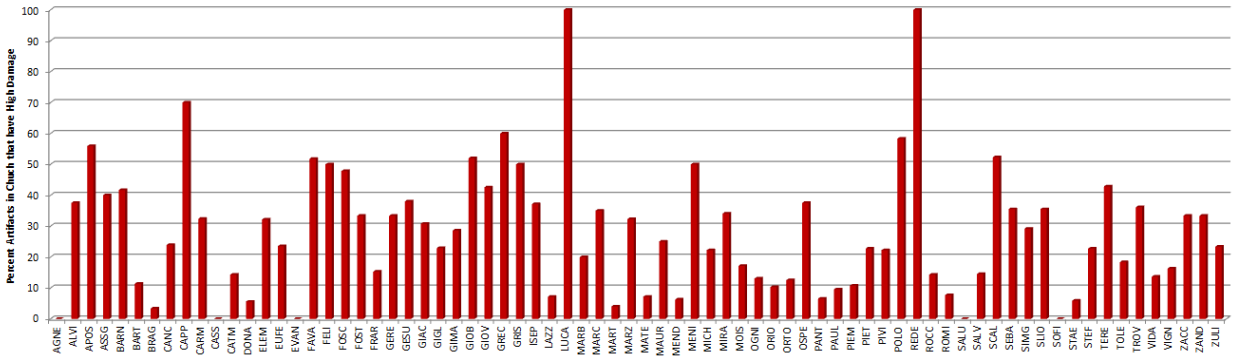


Figure 41: Percent High Artifact Damage

church that are categorized as high priority, see Figure 42. In this case, the taller bars represent churches with a higher percentage of their artifacts falling into the high damage category. Six churches stand out of this data; APOS, Santi Apostoli, CAPP, Le Cappuccine, GREC, San Giorgio dei Greci, LUCA, San Luca, POLO, San Paolo Apostolo, and RENE, Santissimo Redentore. While these churches have a high percentage of highly damaged artifacts, this data is also biased. According to this graph, 100% of the artifacts in both San Luca and I Redentore, are categorized as highly damaged, but each church only has one artifact. See Appendix F for a larger image of Figure 43.

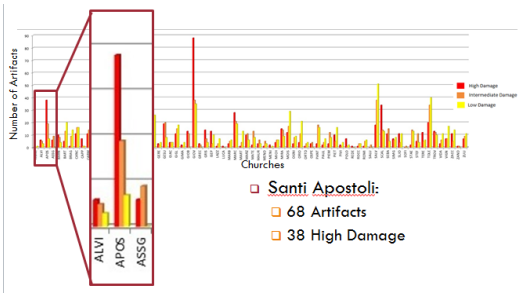


Figure 42: Santi Apostoli High Number of High Damge Artifacts

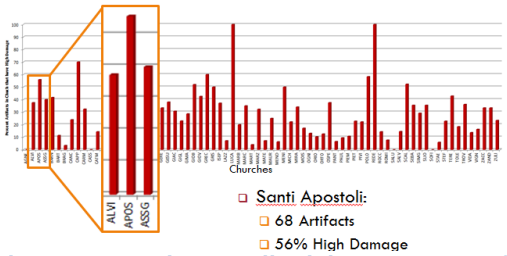


Figure 43: Santi Apostoli, High Percentage of High Damage Artifacts

Considering the conclusions from Figure 42 and 43 into account, a general list of churches to be with a large portion of highly damaged artifacts can be determined.

The tall bars in Figure 43 must be checked against the number of artifacts in the church to separate tall bars such as those found for Redentore and San Luca from those similar to Santi Apostoli, which has a high percentage and large number of artifacts. The one definitive conclusion that can be drawn from these two graphs is that Santi Apostol is a strong candidate for floor artifact restoration. Additionally the other eleven churches mentioned here should be given additional assessments to further the information available for a more accurate artifact evaluation.

6 Conclusions and Recommendations

In conclusion, our project made a lot of progress in preserving the artifacts in the floors of churches. We organized all of the previously collected information into one data set. Then we updated the information former IQP teams had found on 139 churches in Venice. Also, we developed an equation that could combine all of the types of damage that were ranked into one overall damage score. After all of that was done, we integrated all of the data about the churches and their artifacts into their own respective Venipedia pages to make all of the information available to the public.

6.1 Artifact Images

Through our analysis of the artifact conditions and the generation of Venipedia pages, we have discovered that several of the images of the artifacts are poor quality and the webpages would benefit from the edition of new, clearer, photographs. Some current images are blurry, due to the camera being moved during the photographing process. Artifacts with readable text often have photos that show difficult to read letters or letters that cannot be seen at all. If low light levels made these artifacts difficult to photograph in the past, a tripod could be used, with the permission of the Church, to keep the camera stable during the extended shutter time to account for the lack of a flash. Additionally, several of the artifacts are obscured by other pieces of furniture that could be easily moved to allow for clearer shots of the artifact. Again, with the permission of the Church, future teams may be able to allocate a few hours in these churches when various pews or chairs could be moved to allow for clearer photos. There is a list of churches we feel would benefit from visitation in Appendix G. In order for this to occur, teams would need to coordinate prior arrangements to gain access to take the new pictures.

6.2 Artifact Condition Survey

While our equation for artifact condition has allowed for a ranked listing of the overall damage to each artifact, the need for restoration should not only be based on the damage to the artifact itself, but also the value of the information that the artifact holds and its historical significance. In order to account for these additional factors, we suggest that that a future group of WPI students takes a sampling of images with various amounts of damage, both with and without text, and provide the images of these artifacts to various departments of UNESCO and the Soprintendenza that deal with the allocation of funds for preservation. The departments should be asked to rank the images in order of

their need for restoration; when artifacts should not be restored, the individual should specify whether it is because the artifact is too damaged, not important enough, or does not have enough damage.

The ranking data can then be used to create a more accurate regression model used to calculate each artifact's need for restoration. A regression model can be generated by using the individual readability, surface damage, cracks and holes data as part of a system of equations that equal the ranks provided by the UNESCO and Soprintendenza specialists. If desired, the new ranking system can be scaled to give values from 0 to 1, as our scale currently is. Based on the artifacts UNESCO and the Soprintendenza say are not worth restoring, cut off point could again be determined for all the artifacts that should or should not be restored.

6.3 Venetian Public Art Application

The Venetian Public Art Smartphone Application is being supplemented with the information we supplied to Venipedia. In the future, this information's format should be changed to provide a better user experience on a mobile device. A major change that needs to be made to the application is the addition of more precise maps, as Google maps do not have sufficient resolution to zoom to a level where the floor of churches are visible. Google has recently added the ability to upload images of floor plans, but this feature is not available for Italy yet. We suggest that the group that undertakes supplementing the application include images of each church's floor plan, such as those found in GIS, where each artifact would be a link to its own page and watch the development of the Google floor plan add-on to see if this feature will be added for the region of Venice with sufficient functionality to use in the application.

A further goal of the application would be to allow the user to download part of the information to the memory of the smartphone to function without a satellite connection. Cell phone reception in Venice can be weak in many places or non-existent inside the church buildings themselves, making the application useless. If the application could function without a connection, the user could use the floor plan to locate specific artifacts and would still be able to learn about the artifacts in the church floors. The application could also be downloaded by tourists prior to arriving in Venice if they choose not to expand their cellphone data access to an international level; allowing the use of the application anyway.

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Appendix A: Field Form

Church Information	
Full name	
Local Name	
Code	
Island	
Location	
Date Visited	
Year Assessed	
Entered Church B 2012 (Circle one)	Yes No
# Artifacts Assessed	

Open Information	
Denomination/Use	
Service Times	
Visiting Hours	
Cost of Admission	

Extra Information	
Chorus Church?	Yes No
Bell Tower?	Yes No
Handicap Access?	Yes No
Notes	

Appendix B: Venipedia Church Floor Artifacts Definition Page

VENIPEDIA

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Church Floor Artifacts

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An artifact is anything that was inlaided into the floor after construction. Typically, they contain inscriptions or are a different shape or material than the surrounding floor. Venetian church floor artifacts can be broken down into two categories, tombs and plaques. One of the reasons visitors choose to enter the churches of Venice is to view the artwork they contain. The artwork is not limited to sculptures and paintings displayed at eye level on the walls of building or on podiums in public squares. Many of Venice's relics are found below eye level, in the floors of churches. Venetians used the materials available to decorate all aspects of their lives, including the ground they walked on. Some of these floor artifacts go unnoticed by visitors because they are overwhelmed by the other sights around them and forget to look at what is below their feet. Overlooking the floors of churches has not only allowed these pieces to slip out of the minds of visitors, but has also led to neglect in their care and protection.

Contents [hide]

Tombs

A tomb, or *tomba*, is the most common form of floor artifact. These tomb artifacts are do not always mark and actual grave, but might be a representation of a parishoner's dedication to their church. Since this is the case, a tomb marker may be either a large rectangle, giving the illusion that it does mark and eternal resting place, or a small square in remembrance of the deceased. Below is an example of both cases.

A rectangular tomb

A smaller tomb marker

Plaques

A plaque, or *placca*, is the second type of artifact. A plaque has an inscription, but is not an tomb. They often represent years of construction/restoration or prominent contributors. Plaques are less common than tombs, and are often smaller slabs. Below is an example of a plaque.

An Example Plaque from SS. Nome di Gesu

Condition Evaluation

In order to create a ranked list of artifact damage, we created an equation that takes into account five different types of damage assessed by past projects. The types of damage are fading and wear, text readability, cracks, holes and joint gaps. After using the following equation to standarize the rankings assigned to each artifact, the conditions were divided into five categories of damage.

(0.25)(Fading and wear)+(0.25)(Readability) +(0.20)(Cracks)+(0.05)(Holes)+(0.20)(Joint gaps)

The five categories of damage are as follows:

Excessive Damage- The artifact has already been restored to its fullest potential or the artifact is too far degraded that no more information would be saved if the artifact were to undergo restoration

High Damage- The artifact is in need of preservation in order to maintain the image or text visable on the artifact. The text is still readable, but is in danger of being worn away.

Intermediate Damage- The artifact has sustained some damage in any of the above types of damage, but is still mostly readable. Preservation could occur, but the artifact is not yet in critical condition.

Low Damage- The artifact has very little damage on its surface. The text is nearly flawless and only minimal efforts would need to be made inorder to maintain the condition of the artifact

Minimal Damage- The artifact has hardly any damage, all the text and art work is readable. At this time, there is no need for preservation.

See Also

Churches (model)

External Links

References

Appendix C: Venipedia Churches Page

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[1] [2]

Churches, or *chiese* in Italian, are a common feature in most squares, or *campo*, throughout the city of Venice. 144 churches can be seen in the city's skyline, with a few recognizable landmarks, such as the bell tower at Saint Mark's Basilica, standing out. Churches have become a tourist attraction in the city, with the majority of the tourists arriving in the city visiting Saint Mark's Square. While some of the other churches have been closed or sold and converted to other uses, many still hold religious services weekly. Several of these share their daily mass schedule with the other churches in the parish, with each church having daily mass about twice a week.

[1]

Churches (model)

Contents [hide]

History

One of the reasons Venice has so many churches is that each community in the city built its own place of worship, usually as a way of bring the community together. Churches were often used by wealthy merchants of Venice to showcase their wealth. Additionally, the prominent use of stone, such as marble and granite, had a two-fold benefit. The stone is durable enough to survive the seasonal flooding that is characteristic of Venice and it also keeps the buildings cool during the hot summer months. Additionally, smaller pieces of stone were used to create mosaics on all surfaces of the churches, known locally as *terrazzo*. The skills used to create these magnificent designs have been passed down through the generations to artisans today, who carry on the ancient traditions of their ancestors.

Additionlly, the churches contain tombs or plaques in their floors. These Church Floor Artifacts contain valuable information that can provide a glimpse into the Venetian past.

Map

Google map highlighting the churches.

See Also

Church Floor Artifacts Islands

See Also

Church Floor Artifacts Islands

List of Churches

Cannaregio [show]

Castello [show]

Dorsoduro [show]

Santa Croce [show]

San Marco [show]

San Polo [show]

Giudecca		[hide]
Church Name	**Common Name**	**Denomination**
Chiesa di S. Maria Maddalena Convertite	Church of San Convertite	Catholic, Closed to the Public
Chiesa di Cosma e Damiamo	Church of San Cosmo	Catholic, Public Housing
Chiesa della Croce	Church of La Croce	Catholic, Closed to the Public
Chiesa di S. Eufemia	Church of San Eufemia	Presbyterian
Chiesa di S. Gerardo	Church of San Gerardo	Catholic
Ciesa di S. Giorgio Maggiore in Isola	Church of San Giorgio	Catholic
Chiesa del SS. Redentore	Church of I Redentore	Catholic
Chiesa della SS. Trinità	Church of San Trinità	Catholic, Closed to the Public
Chiesa di S. Maria della Presentazione	Church of Le Zitelle	Catholic

Islands [show]

Appendix D: Individual Church Template

VENIPEDIA

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San Giorgio (Model)

San Giorgio is located on its namesake island, along with a monastery. The church was destroyed and rebuilt several times since it's original construction in 982, but the building that currently stands was consecrated in 1610. The Basilica is still a consecrated church open to the public.

Contents [hide]

San Giorgio (Model)

The façade of the church.

Full Name	Basilica di San Giorgio Maggiore
Local Name	San Giorgio
Hours of Operation	M-F 9:00 AM - 6:15 PM
Service Times	M-F 8:00 AM, Su 11:00 AM
Cost of Admission	Free
Church Information	
Year Founded	1610
Current Use	Active Church
Denomination	Catholic
Technical Details	
Church Code	GIMA
Longitude Coordinate	Longitude Coordinates
Latitude Coordinate	Latitude Coordinates

History

First constructed in 982, San Giorgio Maggiore was constructed on the island originally named *Isola dei Cipressi*, now renamed San Giorgio. A Benedictine monastery was established along with the church by Vitale Candido and the Badoer family. The body of Saint Stephen was brought to rest in 1109 from Constantinople and in celebration of the Saint's feast day, December 26th, Venetians floated thousands of candles in Bacino di San Marco. This tradition ended with the fall of the Republic in 1797.

The church and monastery were damaged by an earthquake in 1223 and rebuilt by Doge Pietro Ziani, who later retreated to the island. A second rebuilding occurred in 1565 by Palladio who replaced the Gothic church and enlarged the monastery. In 1851 the church and monastery were given to military authorities. During this change of hands, the church was badly damaged and fell into disrepair. In 1951, the Giorgio Cini Foundation funded a complete restoration of the church and brought back its reputation as "an institute of lofty historical artistic culture". [1]

Structure/Building

The physical building of San Giorgio Maggiore has been rebuilt several times. The most recent of which was completed in 1610 followed by an extensive restoration in 1951.

Exterior

The façade seen today is not the original design from 982, but was constructed in the 1610 rebuild. This façade was developed by Palladio, and modification of his design for San Francesco della Vigna, located in Castello.

San Giorgio Bell tower

Bell Tower

The Basilica San Giorgio Maggiore has a bell tower, open to the public for a fee, which contains eight bells. The bells chime every half hour. The bell tower also provides panoramic views of the city, allowing tourists to see Venice from a unique vantage point.

Interior

The interior was last restored in 1951, in the style built in 1610.

Ceilings

The ceiling is plain white plaster, typical of Latin style churches.

Art

Every inlet contains at least on painting by various artist, including three Tintorettos. Napoleon looted many of the paintings once hung in San Giorgio at the beginning of his reign in 1797. The most famous of which, Veronese's *Wedding Feast at Cana*, is now hanging at the Louvre.

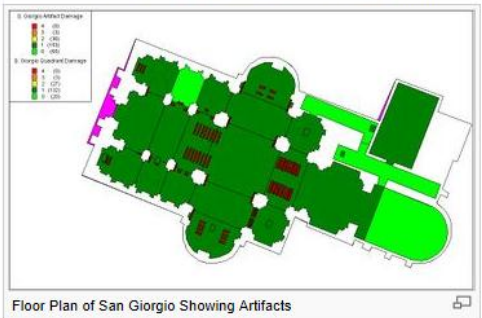
Altars

Floor Map

The image below depicts the floor plan of San Giorgio including the location of the Church Floor Artifacts. The image also color codes the damage score of each artifact as well as the overall damage to each region of the floor.

Floor Map

The image below depicts the floor plan of San Giorgio including the location of the Church Floor Artifacts. The image also color codes the damage score of each artifact as well as the overall damage to each region of the floor.



Floor Plan of San Giorgio Showing Artifacts

Floors

The floor consists of pink, black and white marble arranged in a geometric pattern to create a three-dimensional illusion. The color arraingment changes with the section of the church. There are seven church floor artifacts in the floor of San Giorgio, all of which are dated after the last rebuild.

Map

(Google Map picture showing the church's location)

See Also

For a list of all churches in Venice, see Churches (model) Islands Church Floor Artifacts San Giorgio Bell Tower Page

v · d · e [hide]

Giudecca Church Floor Artifacts

San Eufemia	EUFE_A1, · EUFE_B1, · EUFE_B2, · EUFE_B3, · EUFE_D1, · EUFE_D2, · EUFE_D3, · EUFE_D4, · EUFE_D5, · EUFE_D6, · EUFE_E1, · EUFE_F1, · EUFE_F2, · EUFE_F3, · EUFE_F4, · EUFE_G1, · EUFE_H1
San Giorgio	GIMA_C1, · GIMA_F1, · GIMA_N1, · GIMA_O1, · GIMA_Q1, · GIMA_T1, · GIMA_U1
I Redentore	REDE_D1

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1. ↑ Vianello, Nereo. *Venice and its Lagoon: Historical Artistic Guide*. p 787-789. 1994. Lint Trieste.

Appendix E: Venipedia Artifact Template

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Church Floor Artifact - GIMA N1

The floor artifact GIMA_N1 can be found in San Giorgio Maggiore. It is made of a rectangular piece of Black Marble 146 cm x 156 cm (length x width) with a Latin incription, marking the tomb of a deceased professor.

Contents [hide]

Artifact Code

Type of Artifact	Tomb
Materials	Black Marble
Shape	Rectangular
Length	146cm
Width	156cm
Artifact Code	GIMA_N1
Date Last Assessed	29-Jun-2005
Condition Category	Low Damage

Condition Evaluation

The artifact has a score of, 0.36625 which mean the artifact has a good score. This score places it the range that could be considered for restoration; it has been damaged but is still contains valuable infomrmation that can be salvaged and preserved for the future. For a more detailed explanation of how this condition evaluation was found, please visit the Church Floor Artifacts page.

Inscription

Transcription

The following text can be found on the artifact in the floor of the church.

D.O.M.

ANDREAS BENEDICTUS GANASSONIUS

QUEN PRIXIA CIVEM

CONGREGATIO CASSINENSIS ABBATEM

JURISPRUDENTIAE PROFESSOREM VENETIAE

ARCHIEPISCOPUM CORCYRA FELTRIA EPISCOPUM

MERITO JACTANT

RELIGIONE DOCTRINA HUMANITATE PRAESTANTE

HOSPES FATO EREPTUS

UBI MONASTICUM POSUIT TIROCINIUM PAUPERCULIS HAEREDIRUS EX ASSE INSTITUTIS

IBIDEM SEPULCRO CONDI VOLUIT

VIXIT ANNOS LII OBIIT IV CAL APR

A MDCCLXXXVI

Translation

Below is a brief translated version of the text into english.

R.I.P.

Andreas Benedictus Ganassonius

Professor

1786

See Also

Churches (model), Church Floor Artifacts, San Giorgio (Model)

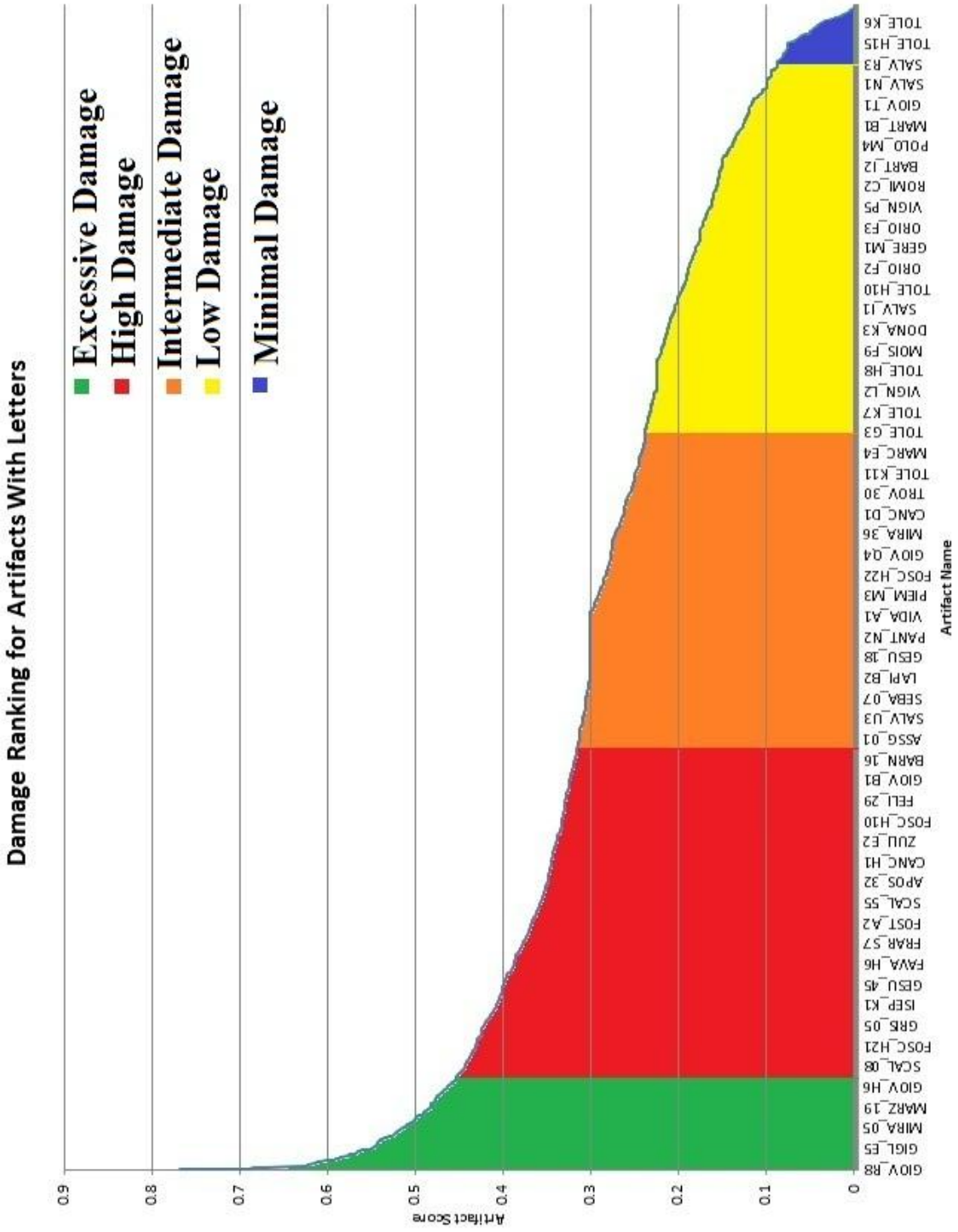
v • d • e [hide]

Giudecca Church Floor Artifacts

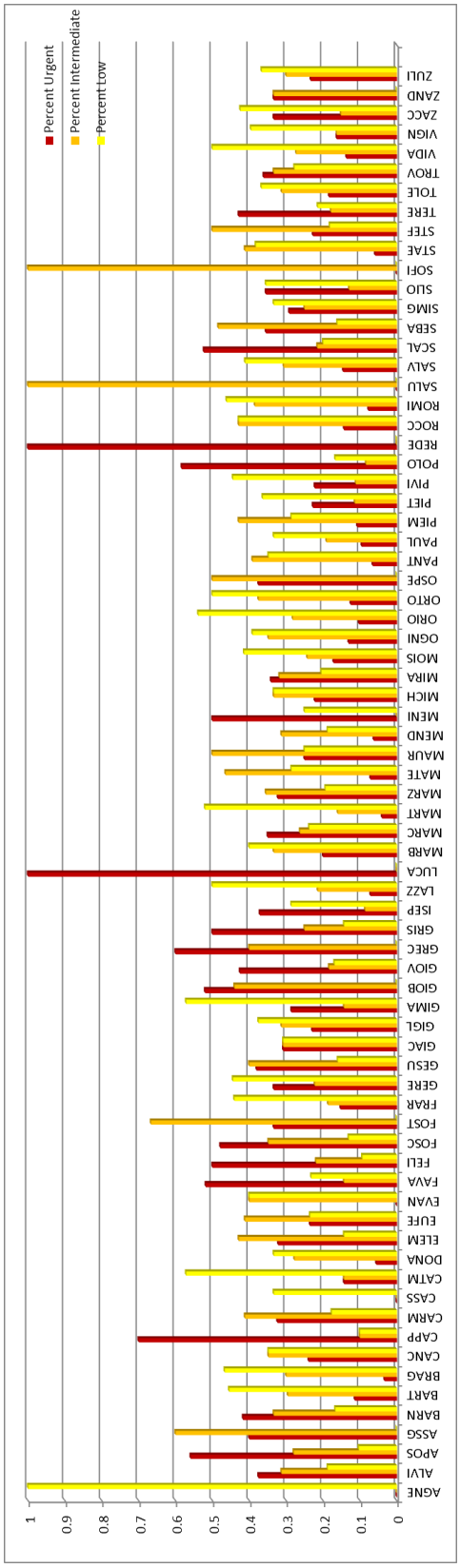
San Eufemia	EUFE_A1, · EUFE_B1, · EUFE_B2, · EUFE_B3, · EUFE_D1, · EUFE_D2, · EUFE_D3, · EUFE_D4, · EUFE_D5, · EUFE_D6, · EUFE_E1, · EUFE_F1, · EUFE_F2, · EUFE_F3, · EUFE_F4, · EUFE_G1, · EUFE_H1
San Giorgio	GIMA_C1, · GIMA_F1, · GIMA_N1, · GIMA_O1, · GIMA_Q1, · GIMA_T1, · GIMA_U1
I Redentore	REDE_D1

Appendix F: Enlarged Graphics

Damage Ranking for Artifacts with Letters



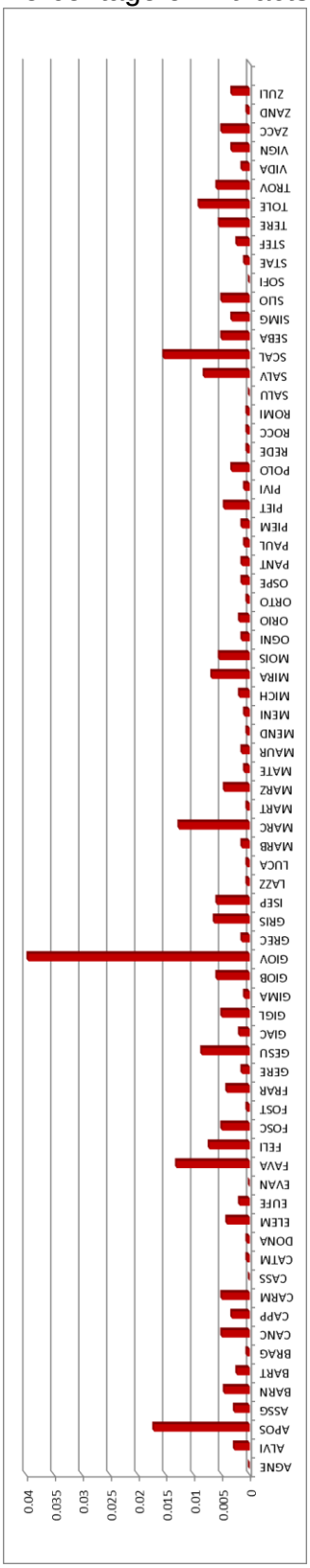
Number of Artifacts in Damage Categories per Church



Priority Churches for Artifact Restoration:

- San Salvador
- Gli Scalzi
- Tolentini
- Santi Apostoli
- Le Convertite
- San Zanipolo
- San Marcuola

Percentage of Artifacts in the High Damage Categories per Church



Le Cappuccine: 68 Artifacts, 56%	Santi Apostoli: 68 Artifacts, 70%
San Polo: 12 Artifacts, 58%	San Luca: 1 Artifact, 100%
Il Redentore: 1 Artifact, 100%	I Greci: 5 Artifacts, 60%

Appendix G: Churches to Revisit

Churches to revisit in order to retake blurry pictures:

OGNI, Ognisanti
ORIO, San Giacomo dell'Orio
SALV, San Salvatore

Churches to be revisited due to Obstructions

ALVI, Santi Alvise
CAPP, Santa Maria Madre del Redentore
EUFU, Santi Eufemia
MATE, Santa Maria Mater Domini
PAOL, San Francesco di Paola
ROMI, Eremite

Appendix H: List of Church Codes

Code	Church	Local Name
AGNE	Chiesa di S. Agnese	S. Agnese
ALVI	Chiesa di S. Alvise	S. Alvise
ANDR	Chiesa di S. Andrea Apostolo	La Zirada
ANGE	Chiesa di S. Maria degli Angeli	S. Maria degli Angeli
ANGL	Chiesa Anglicana	I Anglicana
ANGM	Chiesa di S. Angelo	S. Angelo
ANNA	Chiesa di S. Anna	S. Anna
ANNU	Oratorio dell'Annunciata	Oratorio dell'Annunciata
ANTN	Chiesa di S. Antonino	S. Antonin
ANTP	Sant'Antonio	Sant'Antonio
APON	Chiesa di S. Aponallinare	S. Aponal
APOS	Chiesa di S. Apostoli	I Santi Apostoli
ASSG	Chiesa di S. Maria Assunta dei Gesuiti	I Gesuiti
ASSM	Chiesa di S. Maria dell'Assunzione	S. Maria dell'Assunzione
ASST	Chiesa di S. Maria Assunta di Torcello	S. Maria Assunta
BARB	Oratorio di S. Barnaba di Burano	S. Barnaba
BARN	Chiesa di S. Barnaba	S. Barnaba
BART	Chiesa di S. Bartolomeo	S. Bartolomeo
BASI	Basilica di S. Marco	S. Marco
BASS	Chiesa di S. Basso	S. Basso
BENE	Chiesa di S. Benedetto	S. Benedetto
BIAG	Chiesa S. Biagio	S. Biagio
BONA	Chiesa di S. Bonaventura	S. Bonaventura
BRAG	Chiesa di S. Giovanni Batista in Bragora	La Bragora
CADI	Chiesa della Ca' di Dio	Ca' di Dio
CANC	Chiesa di S. Canciano	San Canciano
CAPP	Chiesa di S. Maria Madre del Redentore	Le Cappuccine
CARI	Chiesa di S. Maria de la Carità	La Carità
CARM	Chiesa di S. Maria Assunta del Carmelo	I Carmini
CASS	Chiesa di S. Cassiano	S. Cassian
CATM	Chiesa di S. Caterina di Mazzorbo	S. Caterina
CONV	Chiesa di S. Maria Maddalena Convertite	S. Convertite
COSM	Chiesa di Cosma e Damiamo	S. Cosmo
CROA	Chiesa della S. Croce degli Armeni	Santa Croce
CROC	Chiesa della Croce	La Croce
DONA	Chiesa di S. Donato	S. Donato
DORO	Suore Dorotee	Suore Dorotee

ELEM	Chiesa di S. Giovanni Elemosinario	S. Giovanni Elemosinario
ELEN	Chiesa di S. Elena	S. Elena
ELIS	Chiesa di S. Maria Elisabetta	S. Maria Elisabetta
ERAS	Sant'Erasmo	Sant'Erasmo
EROS	Sant'Erosia	Sant'Erosia
EUFE	Chiesa di S. Eufemia	S. Eufemia
EVAN	Chiesa di S. Giovanni Evangelista	S. Giovanni Evangelista
FANT	Chiesa di S. Fantino	S. Fantin
FAVA	Chiesa di S. Maria della Consolazione	La Fava
FELI	Chiesa di S. Felice	S. Felice
FORM	Chiesa di S. Maria Formosa	S. Maria Formosa
FOSC	Chiesa di S. Fosca	S. Fosca
FOST		
FRAR	Chiesa di Santa Maria Gloriosa dei Frari	I Frari
GALL	Chiesa di S. Gallo	S. Gallo
GEOR	Chiesa di San Georgio	St. Georges Church
GERA	Chiesa di S. Gerardo	S. Gerardo
GERE	Chiesa di S. Geremia e Lucia	S. Geremia
GESU	Chiesa di S. Maria del Rosario	I Gesuati
GIAC	Chiesa di S. Giacomo Apostolo	S. Giacometo di Rialto
GIGL	Chiesa S. Maria del Giglio	S. Maria Zobenigo
GIMA	Ciesa di S. Giorgio Maggiore in Isola	S. Giorgio
GIOA	Chiesa di S. Gioacchino	S. Gioacchino
GIOB	Chiesa di S. Giobbe e Barnardino	S. Giobbe
GIOV	Chiesa dei Ss. Giovanni e Paolo	S. Zanipolo
GIRO	Chiesa di S. Girolomo	S. Girolomo
GIUS	Chiesa di S. Giustina	S. Giustina
GREC	Chiesa S. Giorgio dei Greci	I Greci
GREG	Chiesa di S. Gregorio	S. Gregorio
GRIS	Chiesa di S. Giovanni Grisostomo	S. Giovanni Grisostomo
ISEP	Chiesa di S. Isepo	S. Giuseppe
LAZZ	Chiesa di S. Lazzaro dei Mendicanti	I Mendicanti
LEON	Chiesa di S. Leonardo	S. Leonardo
LORE	Chiesa di S. Lorenzo	S. Lorenzo
LUCA	Chiesa di S. Luca	S. Luca
MADD	Chiesa di S. Maria Maddalena	La Maddalena
MAGG	Chiesa di S. Maria Maggiore	S. Maria Maggiore
MALT	Chiesa di S. Giovanni dei Cavalieri di Malta	S. Giovanni di Malta
MANT	Chiesa delle Suore Mantellate	Suore Mantellate
MARB	Chiesa di S. Martino di Burano	S. Martino
MARC	Chiesa di Santi Ermagora e Fortunato	S. Marcuola

MARG	Chiesa di S. Margherita	S. Margherita
MART	Chiesa di S. Martino di Castello	S. Martino
MARZ	Chiesa di S. Marcilliano	S. Marziale
MATE	Chiesa di Maria Mater Domini	Maria Mater Domini
MAUR	Chiesa di S. Maurizio	S. Maurizio
MEND	Chiesa di S. Nicolo dei Mendicoli	S. Nicolo dei Mendicoli
MENI	Chiesa dei S. Giovanni Battista ai Catecumeni	I Catecumeni
MICH	San Michele	S. Michele
MIRA	Chiesa di S. Maria dei Miracoli	I Miracoli
MOIS	Chiesa di S. Moisè Profeta	S. Moisè
NICO	Chiesa di S. Nicolò del Lido	S. Nicolò
NOME	Chiesa di S. Nome di Gesu	Nome di Gesu
OGNI	Chiesa di Ognisanti	Ognisanti
ONGP	Ognissanti di Pellestrina	Ognissanti di Pellestrina
ORIO	Chiesa di S. Giacomo dell'Orio	S. Giacomo dell'Orio
ORTO	Chiesa di S. Cristoforo	La Madonna dell'Orto
OSPE	Chiesa S. Maria Assunta dei Derelitti	L'Ospedalletto
PANT	Chiesa di San Pantaleone	S. Pantalon
PAUL	Chiesa di S. Francesco di Paula	S. Francesco di Paula
PENT	Chiesa di S. Maria delle Penitenti	Le Penitenti
PIAN	Chiesa di S. Maria del Pianto	S. Maria del Pianto
PIAP	Chiesa di S. Pietro Apostolo	S. Pietro
PIEM	Chiesa di S. Pietro Martire	S. Pietro Martire
PIET	Chiesa di S. Pietro Apostolo	S. Pietro di Castello
PIVI	Chiesa La Pietà S. Maria della Visitazione	La Pietà
POLO	Chiesa di S. Paolo Apostolo	S. Polo
RAFF	Chiesa de S. Angelo Raffaele	L'Anzolo Rafael
REDE	Chiesa del SS. Redentore	I Redentore
RINA	Chiesa di S. Caterina	S. Caterina
ROCC	Chiesa di S. Rocco	S. Rocco
ROMI	Chiesa delle Eremitane	Le Romite
SALU	Chiesa di Santa Maria della Salute	La Salute
SALV	Chiesa di Ss. Salvatore	S. Salvador
SAMU	Chiesa di S. Samuele Profeta	S. Samuele
SANT	Chiesa di S. Antonio	S. Antonio
SCAL	Chiesa di S. Maria di Nazareth	Gli Scalzi
SCHI	Chiesa di S. Giorgio degli Schiavoni	S. Giorgio degli Schiavoni
SEBA	Chiesa di S. Sebastiano	S. Sebastiano
SERV	Chiesa di S. Maria dei Servi	I Servi
SILV	Chiesa di S. Silvestro	S. Silvestro
SIMG	Chiesa di S. Simeone Profeta	S. Simeon Grando

SIMP	Chiesa di S. Simeone e Giuda	S. Simeon Piccolo
SLIO	Chiesa di S. Leone IX pp.	S. Lio
SMAR	Chiesa di Santa Marta	Santa Marta
SOFI	Chiesa di S. Sofia	S. Sofia
SOFT	Chiesa di S. Sofia di Torcello	S. Sofia
SPIR	Chiesa dello Spirito Santo	Spirito Santo
STAE	Chiesa di S. Eustachio	S. Stae
STEF	Chiesa di S. Stefano Profeta	S. Stefano
TERE	Chiesa di S. Teresa	Le Teresa
TODA	Chiesa di S. Teodoro	S. Teodoro
TOLE	Chiesa di S. Nicola da Tolentino	I Tolentini
TOMA	Chiesa di S. Tomà	S. Tommaso
TRIN	Chiesa della SS. Trinità	S. Trinità
TROV	Chiesa di S. Gervasio e Protasio	S. Trovaso
VALV	Chiesa di S. Maria di Val Verde	La Misericordia
VIDA	Chiesa di S. Vitale	S. Vidal
VIGN	Chiesa S. Francesco de la Vigna	La Vigna
VIM?	Santi Vito e Modesto	Santi Vito e Modesto
VISI	Chiesa di S. Maria della Visitazione	S. Maria della Visitazione
VITO	Chiesa di S. Vito e Modesto	S. Vito e Modesto
ZACC	Chiesa di S. Zaccaria	S. Zaccaria
ZAND	Chiesa di S. Giovanni Decollato	S. Zandegola
ZANI	Chiesa di S. Giovanni Novo	S. Zaninovo
ZITE	Chiesa di S. Maria della Presentazione	Le Zitelle
ZULI	Chiesa di S. Giuliano	S. Zulian