WPI
Venice Project Center

Portali e Lunette:
A Multimedia Catalog for the Preservation of Venice's Artistic Entrances

An Interactive Qualifying Project Submitted to the faculty of

Worcester Polytechnic Institute

In partial fulfillment of the requirements for the Degree of Bachelor of Science

30 July 2002

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Authorship

We, the project team, feel as though we have all shared equally in the creation of this project proposal. Throughout the course of the term, we have all assumed responsibility for each section of the proposal. In hopes of making this document the best that we can, we have reassigned the responsibilities of those sections as necessary.

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Abstract

Among the numerous churches, palaces, and shops in Venice, there is an abundance of public art that captivates the casual observers' attention. Public art takes many forms, such as decorative doorways to buildings and courtyards, known as *portali*. Occasionally found within the arches of *portali* are pieces called *lunette*, which were the main focus of our project. These structures are quickly deteriorating due to lack of care and background information needed for restoration. In this project, we expanded upon the little existing knowledge of this public artwork, and we facilitated the preservation of lunette and portali by creating several prototypes of materials and programs to increase awareness around the city as well as world wide.

Executive Summary

Forgotten art can be found throughout the city of Venice. Tourists and locals alike view the pieces everyday, yet the pieces remain, for the most part, neglected and in need of restoration. Some of these pieces are called *portali* and *lunette.*

Portali are artistic structures built around the doorways on many buildings. The structures often contain many decorative elements which may have religious or other symbolism. The homeowner's, or previous homeowner's, coat of arms is often displayed over the door and may be incorporated with other ornamentation. Statues or other decorative elements are often contained in a half-moon shaped arch over the doorway, called a lunetta. The lunette were the main focus of our project. Due to the rarity of lunette, we felt people need to be aware of these structures and the current conditions.

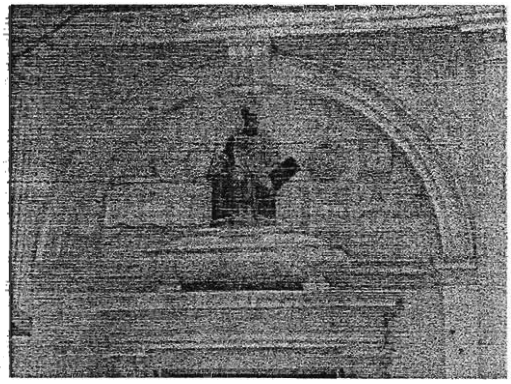

Figure 1 Renaissance Lunetta on Chiesa di San Zulian

The goal of our project was to work towards the protection and conservation of the portali, with a concentration on lunette. We began by locating the lunette and portali. Then we collected and cataloged information about the structures in historical Venice and the surrounding islands. Cataloging information about public art and the conditions of the individual pieces is a vital step in insuring the protection of the pieces in the future. There is currently a catalog of Venice's public art which has been created and expanded through past projects by WPI students and Earthwatch volunteers. We added the locations of all of the

lunette and portali found in the historical center of Venice and the surrounding islands of Murano, Burano, Mazzorbo, and Torcello to the database.

Our next step was to collect detailed information about the lunette and a selection of the portali. We relied on a specific definition for which portali we collected data for, due to the large amount of these structures. We recorded physical information about the pieces, architectural data, and the conditions of the structures. To assess the condition of these structures accurately we recorded the surface condition as well as the quantity and severity of cracks. We then calculated an estimated restoration cost of the structure based on the data collected.

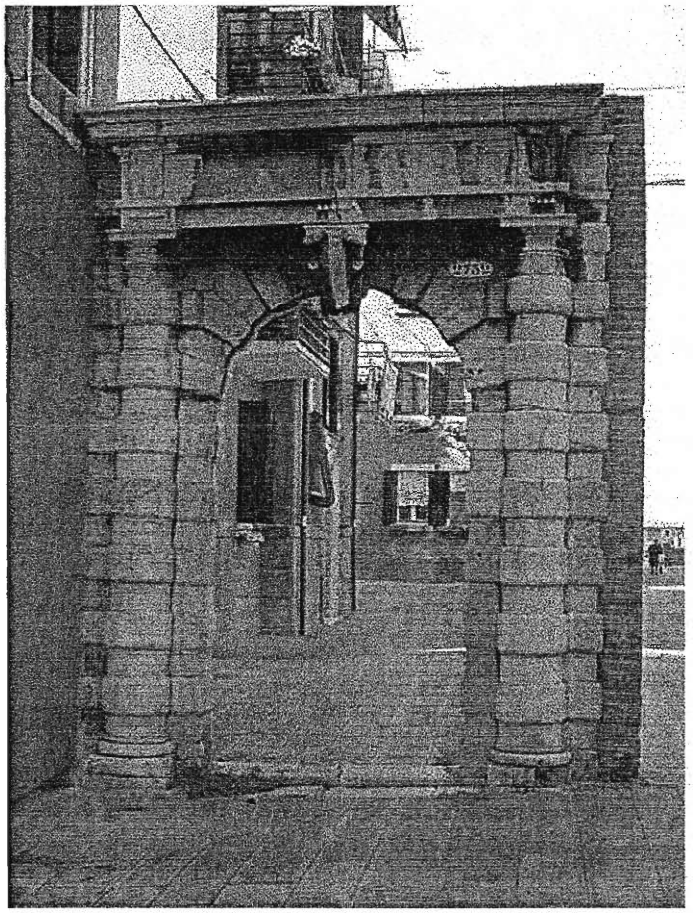

Figure 2 Portale in Castello

The information we collected is vital for any further preservation, restoration, and conservation of the lunette or portali. People cannot protect what they do not know exists, and they cannot adequately restore or conserve the pieces without knowing the conditions. Our project was intended to increase the public's awareness of the existence of lunette and portali, in the hopes that they will use their knowledge to take further action in the protection and restoration of the pieces.

Many people overlook portali and lunette or do not feel they are responsible for the structures. It was our intent to begin to change this mindset. In order to do this, we needed to increase the general awareness of the existence of lunette and portali and the protection that the structures require. We made walking tours for tourists, in order to show them that Venice is much more than St. Mark's square. We also created a website to promote preservation worldwide. Another one of our ideas was to start educating the children and young students. To begin this process, we made placemats for children to color on in restaurants, educating them about what lunette and portali are. We recommended that elementary schools also take part in increasing awareness about the need for preservation of public art. Knowledge tends to filter up from young to old: children will tell their parents about what they learn in school, but the parents may not tell their children about something they learned the same day. Therefore, we recommended educating the children about lunette and portali in the hopes that their parents will learn as well. We hope that as the children become adults, they will remember the portali and lunette, and possibly help safeguard the structures.

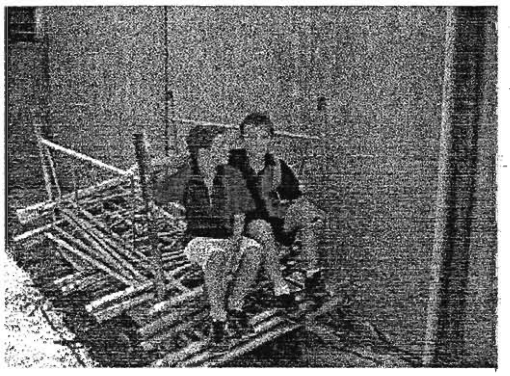

Figure 3 Children Interested in Portali

Table Of Contents

Table Of Figures

Table Of Equations

List of Tables

1 Introduction

Public art greatly contributes to the alluring atmosphere of Venice. Unfortunately, the artwork is quickly vanishing due to lack of public awareness. Our team worked on changing this for the specific structures of portali and lunette, which are decorative and artistic doorways. This project was intended to provide the necessary knowledge for the preservation, and eventual restoration, of portali and lunette. The goal is that one day this completed project will be used as a means for the conservation of portali and lunette, as well as the rest of the public art collection of Venice. We added locations of lunette and portali, as well as physical attributes, to the previously created Venice Public Art Database. We also collected information on the current conditions all lunette and a selection of portali throughout the city. We estimated the cost of repairs for the structures in order to prioritize the pieces for restoration. It is our hope that by making this knowledge available, sponsors can be found to help with the protection of lunette and portali. To promote the preservation of these structures and other public artwork, we explored ways to increase awareness of these pieces. This was very important because preservation cannot occur unless people know about these structures.

Contained within our proposal are several chapters of information that will address the issues of this project.

In order for this project to be successful, it was necessary for us to gain an understanding concerning details about lunette and portali, which can be found in **Chapter 2, Background**. This section includes topics such as information about why this project was necessary, architectural history of the city, and what has been done to protect public art in Venice.

In **Chapter 3, Methodology,** we devised techniques for data collection and condition assessment of the pieces, so the information can be useful in the restoration of this artwork. Also contained in this section is an explanation of how we calculated restoration costs.

The next section, **Chapter 4**, shows our **Results**, which include a list of restoration costs. Visual representations of the data we collected are also contained in this section, including maps of locations for lunette and portali.

Chapter 5 describes the **Analysis** of the data we collected. It shows trends concerning the conditions of the structures with respect to other attributes of the pieces.

Chapter 6 contains our **Conclusions and Recommendations**, which emphasize the importance of a means for the preservation of lunette and portali. We outlined our efforts and ideas to promote preservation, such as walking tours, placemats for children, startup of a nonprofit organization, and website creation. We stressed the importance of educating Venetians, children, and tourists about preserving public art.

2 Background

It was necessary for us to research several topics of background information in order to complete our project. We investigated information on portali and lunette, as well as the history behind these structures. We also familiarized ourselves with the layout of Venice by using maps to locate palaces and churches, as these buildings commonly incorporate both portali and lunette. Data relevant to the preservation and restoration of public art is also included within this section.

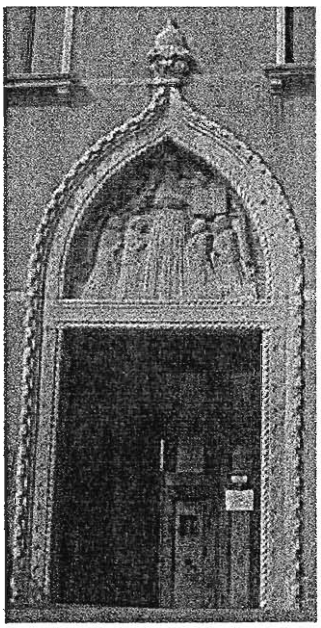

Figure 1: Portale with a Lunetta in San Marco

2.1 The Big Picture

Even though Italians live among a vast number of artistic pieces, many do not feel personally responsible for the pieces' preservation. Citizens display a level of apathy and disengagement regarding the art that surrounds them. *National Geographic* attributes this lack of responsibility to age-old ideas about who owns the art. In the past, art was owned by nobles, the church, or the state[1]. Today, many of the buildings are now either city property or owned by private citizens. Many of the citizens, however, have not yet assumed the responsibility that would come with owning public art pieces on their homes or businesses. "There has been a sense that there's no moral obligation of the citizens to protect their cultural patrimony," states Gianfranco Mossetto, an economics professor at the University of Venice. He continues, "We need to regain the sense of being true proprietors of these treasures."[2]

The increase in tourism, lack of money and personnel for conservation and restoration, and little concern for public art have a negative effect on preservation of art, according to *National Geographic*[3]. Tourists touching and walking on the artwork can cause severe damages. Even though Venice has about 12 million tourists per year[4], it is possible to turn this threat to public art into a resource for its revival.

Italy has found it difficult to acquire funding for protection and restoration of public art. Tourists contribute large amounts of money to famous sites that, in the past, the state collected on site and then redistributed to other pieces[5]. This redistribution gives money to smaller, less popular art, but it does not give enough money to the larger, more popular art since these pieces cost more to fix. For example, a small statue in Castello might receive some of the money Basilica di San Marco takes in, but the lunette on the cathedral are quite expensive, so it takes longer for Venice to collect enough money to be restore the lunette. Recently, this policy has

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[1] Zwingle, 95
[2] Ibid, 95
[3] Ibid, 93
[4] Ibid, 108.
[5] Ibid, 99.

been changed to keep most of the money collected by the sites at the same locations, allowing the sites to become self-sustaining[6]. The policy does not, however, allow as much money as needed to go to the lesser-known pieces of art because most tourists do not visit these pieces. The new policy grants greater financial authority to the Superintendents of Italian Monuments. It also adds a space on the annual income tax form for people to allocate a percent of their taxes to the protection of art. This change brought in an extra three billion dollars in 1997[7]. The laws have changed the way funds are allocated for art preservation, but these changes may not be common knowledge to the citizens of Venice if they hire someone else to do their taxes.

In 1992, Mirella Barracco, a Neopolitan baroness, started a program that encouraged young students to adopt local monuments or artistic pieces. The students would learn about "their" monument and give tours of it on weekends during May. Students at Flavio Gioia Middle School adopted a local church, San Giovanni a Carbonara, and became tour guides on the weekends. These students were often ones who had trouble reading and writing, so this program was also a means to build their confidence. They took the art to be their own; it gave them something to care about and be proud of, and even made the young students feel that they were "worth something" as well[8].

Mirella Barracco's project was focused towards children for a reason. She realized the need to educate "those to whom these works are entrusted."[9] Her work has paid off, instilling in the students a personal pride for their monuments and awareness of the attention artistic pieces need. Alfonso, a 14-year-old tour guide at San Giovanni a Carbonara, regarded art in a simple, yet profound, way. He said, "Art is like a bambino… It needs to be taken care of."[10]

During our project, we did our best to take these factors into account. One of our goals was to make an impact on the way Venetian citizens and tourists regard public art and the need

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[6] Zwingle, 100.
[7] Ibid, 100.
[8] Ibid, 109.
[9] Ibid, 109.
[10] Ibid, 109.

for its restoration. In order to help accomplish this, we modeled some of our recommendations after Barracco's ideas.

2.1.1 Artistic Triage

The existence of a complete catalog, including art pieces and the conditions associated with each piece, would significantly improve conservation efforts[11]. Venice is full of public art, from sculptures to architecture to lunette. Even with the efforts of many different groups, protecting and restoring the public art is difficult and "haphazard"[12]. Many groups restore pieces based on suggestions and personal opinions, rather than restoring pieces based on their conditions. This problem is due, in part, to the nonexistent catalog of pieces and conditions. A considerable amount of the public art in the city has been documented in the Venice Public Art Database, created and expanded by the WPI Project Center students and Earthwatch Volunteers. Our goal is that the database will provide information for an organization, such as United Nations Education Science and Culture Organization (UNESCO), to help conserve and preserve public art, or serve as the basis to start a completely independent non-profit organization for the restoration and preservation of Venice's public art.

It was necessary to catalog all of the portali and lunette in the city so that restoration for savable pieces can occur. Due to Italian law, only certain pieces of artwork can be restored. Artwork that is missing features or elements cannot be restored because the original state of the artwork is unknown[13]. In the past, many museums and organizations around the world have tried to restore art work to its original state by adding features or decorative accents which they believed to have existed on the artwork originally. Many of those restorations have turned out to cause more harm than good to the artwork because after more research, it is discovered that the original artwork did not look like the restored piece. Therefore, Italian law mandates that art can

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[11] Zwingle, 94.
[12] Ibid, 94.
[13] Ibid, p 93

only be restored if the state of the artwork is in a condition that the original state of the material can be determined. For this reason, it is extremely important to have a catalog of all portali and lunette that can be restored, as well as have all other pieces cataloged, so the pieces can be preserved and no further decay occurs.

2.2 Portali

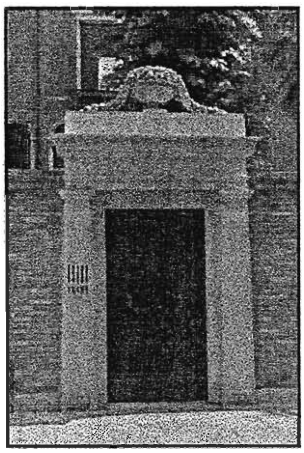

Figure 2 Venetian Portale located in San Polo

Portali (portale in the singular), or portals in English, are entrance ways to buildings and courtyards that contain structural, artistic elements. This includes doorways where sculptures are affixed to the top portion of the entrance, as shown in Figure 2. Also included in this definition are entrances where artwork flows into the doorjambs. Portali were designed to create a sense of grandeur as one enters a building or courtyard. Portali were also designed to be unique, as many incorporated the coat of arms of the family that owned the building, as well as biblical scenes.

2.2.1 Lunette

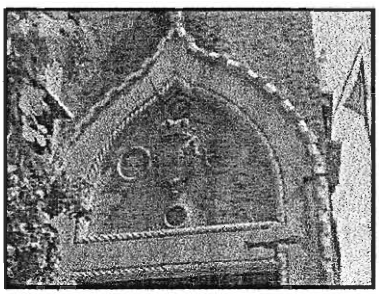

Figure 3 Lunetta on Ufficio Scolastico Interregionale in Venice

Lunette[14] are artistic, structural elements that are a unique sub-set of portali, which utilize the entire archway. In Italian, these structures are called *lunette* in the plural form and *lunetta* in the singular. The main purposes of lunette are to decorate an entrance way and to show status. Palace owners showed their wealth by incorporating lunette into the outer architecture of their homes with coat of arms, and other illustrative

[14] Lunetta literally means "small moon" due to the crescent-shaped or semi-circular shape

artwork. Stone was most commonly used as the base material for a lunetta, due to its strength and durability. The techniques of fresco and mosaic were less common. Fresco utilizes paint on wet plaster. Mosaic is made by grouping together small tiles, which can be made of glass or ceramic.

2.3 History of Lunette in Venice

Lunette can be found throughout the historical center of Venice, most commonly on churches and palaces. Lunette were generally added during the construction of the building. Since the buildings were erected during different time periods, the architectural styles carried over into the design of the lunette. The architectural style of the building provided necessary data to determine the time period, and in some cases the material, of the lunette that we investigated. This helped in the cataloging process, as well as the results and analysis portion of this project.

2.3.1 Locations of Lunette

On the 120 islands that comprise Venice, there are thousands of buildings. Each building is representative of a particular architectural style, which links to the era when it was constructed. As mentioned previously, lunette are architectural and artistic elements that may have been added for prestige. While a wide variety of buildings within the city contain lunette, most are found over the doors of palaces and churches. It is also possible to find lunette and portali on the canal doors of many buildings; however, the structures will not be included in the scope of our project.

Churches, when constructed, usually incorporated artistic elements to display religious themes. Churches within the city typically contain large doorways with intricate artwork providing a sense of grandeur, commonly known as a portali. It is among this artwork that we found lunette.

Within the city, there are over 300 registered palaces[15]. Like churches, the construction of palaces took place over different time periods, encompassing different architectural styles. With Venice being a commercial city, wealth affected the designs incorporated in building styles. During the high time of Venetian commerce, money was not saved but rather spent lavishly. Since buildings within the historical center were limited in size, based on location (built on wooden pilings), Venetians spent their money on the artistic facets that covered the outer surface of the building. This included extravagant styles and features, including lunette.

Lunette found above doorways of palaces take many forms. While religious themes are present, the lunette located on palaces also encompassed the coat of arms of the current family or the original family that owned the palace during construction. According to our definition, to truly be a lunetta the coat of arms must utilize the entire space above the doorway or contain additional designs in order to fill the space. Palaces that are no longer private homes have lunette displaying emblems of guilds (shoe makers' guild, glass-blowing, etc…), and other various artistic elements. Even though the emblems are possibly newer than the coats of arms, these lunette are usually still quite old.

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[15] Zorzi

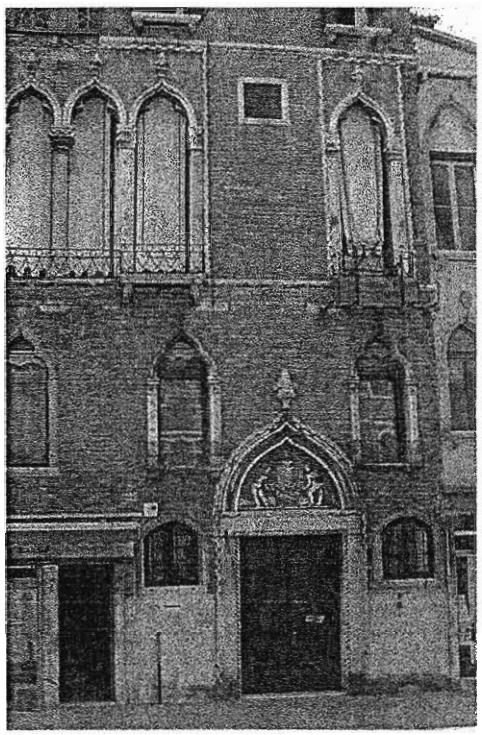

Figure 4: Example of a Lunetta on the Side of a Building in Castello

The following sections are descriptions of different architectural styles of lunette that are found in Venice.

2.3.2 Byzantine Lunette

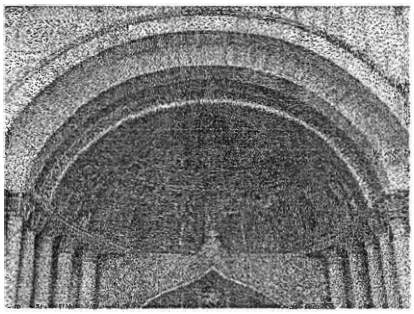

Figure 5 Byzantine Lunetta on the Basilica di San Marco

Byzantine is one of the oldest architectural styles of buildings in Venice. It dates back to the 12th century[16] or earlier. One of the most distinguishing features of the Byzantine style is the domed ceiling which is present in many churches. Byzantine lunette contain intricate details and religious themes.

[16] Allsop, Bruce, etc., p. 11, 13-16, 30, 50-54, 71

2.3.3 Gothic Lunette

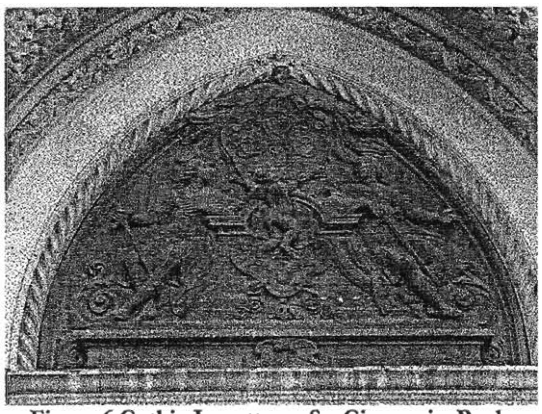

Figure 6 Gothic Lunetta on Ss. Giovanni e Paulo Church in Venice

Another architectural style of Venetian churches and palaces is Gothic. This technique was most popular between the 12th and 15th centuries[17]. One identifying characteristic of Gothic architecture is pointed archways. Most Gothic buildings, especially churches, are quite large, and carry religious themes throughout the structure of the buildings, including the lunette.[1] Likewise, Gothic style lunette are larger and contain more elaborate details than other styles.

2.3.4 Renaissance Lunette

Figure 7 Italian Renaissance Lunetta on San Zulian Church

The Renaissance era occurred between the 15th and 16th centuries[4]; it was a time of rebirth and enlightenment. Renaissance lunette emanate a delicate elegance that is unlike any other style. The lunette are not elaborate and instead carry subtle subject matters that are not gaudy.

[17] Venice Knopf Guide, p. 82-83

2.4 Venetian Public Art

Public art is any type of artistic element that is decorative and in a common area of viewing. In past Interdisciplinary Qualifying Projects, definitions of public art have excluded pieces that are part of a building's architecture. Architecture not only provides the structural basis of a building, but it contributes to a building's aesthetic appeal. Since the public is able to view the outer surface of the building, we considered the elements contained upon it public art.

Despite the extensive research that has been conducted in the past to catalogue and document the existence and conditions of public art within the city of Venice, the Venice Public Art Database was not yet complete. In order to make the previously completed projects a reasonable size for a given amount of time, the individual definitions of public art needed to be specific to the project. For example, the 1995 Venice Project, *Computerized Catalog of Public Art in Dorsoduro, Venice,* defined public art as "outdoor art, also known as public art, and basically consists of the ornaments whose purpose is to decorate, for public display, the various buildings of the city of Venice" [18]. This does not include artistic pieces that are part of the building itself, such as doors and windows.[19] Since this definition excluded doors, lunette were not included. With our project, the database became another step closer to being finished. We considered lunette public art because the structures are in common view and are artistic elements. Therefore, lunette will now be included in the Public Art Database.

2.4.1 Damage to Buildings and Sculptures in Venice

The conditions of buildings and sculptures in Venice are threatened by the city's unique atmosphere. Heat, humidity, sunlight, and the increase in tourism all contribute to the degradation of the public artwork. The constant hydration and dehydration of the stone in Venice takes a great toll on the lunette, causing the structures to decay. Stone lunette decay in

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[18] Beltran, Jesus M., etc. p. 19-20
[19] Beltran, Jesus M., etc. p. 19-20

such a manner that the surface gives off a powder of stone called chalking. This substance greatly reduces the clarity of the lunetta.

One of the other major threats to sculptures and buildings is damage from sulfuric acid. The mixture of toxic gases from nearby industrial zones, salt, and humidity create the acid in the air. The sulfuric acid breaks down calcium carbonate to calcium sulphate, slowly eating away the sculptures. A black film is formed in areas sheltered from the rain, and other interior damage is created by this chemical reaction. We consider calcium sulfate (black film) to be pollution because it requires extensive chemical cleaning to be removed. This type of grime is extremely dangerous because it is estimated to consume up to six percent of the marble and stone surface area annually.[20]

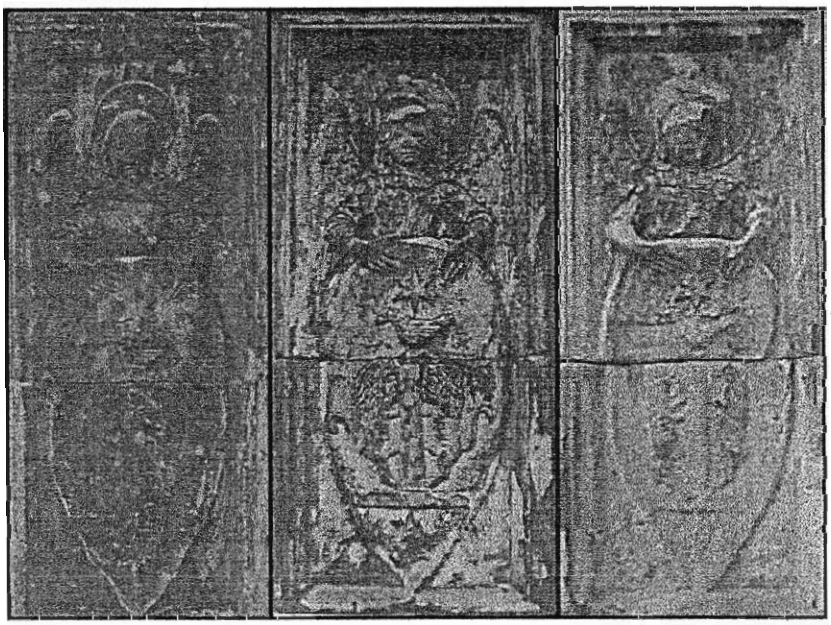

Figure 8: Example of Deterioration

[20] UNESCO

The photos in Figure 8 were taken in Venice in the years 1930, 1979, and 2000 respectively. These photos are a good example of the decay that happens over time to some of these precious pieces of art work.

2.4.2 Protection of Public Art

The government of Italy has possibly created the most (in terms of numbers) laws to protect culture, which includes art, architecture, music, and drama[21]. Despite the strong efforts for legal protection of public art, several pieces are still over-looked. The *Central Office for Environmental Architectural, Archaeological, Artistic and Historical Assets* is in charge of protecting and managing national museums and monuments[22]. There are two subdivisions of the Central Office that are legally responsible for public art and architecture. The *Superintendents for the Artistic and Historic Heritage of Venice* is responsible for "movable" art, which is any piece that can be moved, and thus is not permanently attached to a building or other structure. The *Superintendents for the Architectural Heritage of Venice* is responsible for the legal protection of buildings and architecture. Since lunette are neither specifically architecture, nor are the structures "movable" art, the jurisdiction is not clear, and the lunette are simply passed over.

There are few programs in Venice to protect public art, all of which leave the job uncompleted, as claimed by *The Forgotten Art of Venice: Promoting Awareness of External Sculpture.* There have been laws passed in Italy stating that the owners of a building cannot remove any public art that is displayed on it. These laws, however, do not preserve the art. There are no funds designated for its maintenance, nor is a responsible party delegated. Also, these laws do not prevent obstructions from being placed in view of the art.[23]

There are non-profit organizations created to raise money and designate funds for the protection and restoration of particular pieces of art. After the flood of 1966, which damaged

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[21] UNESCO
[22] UNESCO
[23] Bender, Michael, etc., p. 20-21

much of the public art in Venice, UNESCO was involved with a number of different organizations to restore the damaged art and protect other pieces. *Save Venice, Inc.* was part of the *Venice Committee of the International Fund for Monuments* until 1971. *Save Venice, Inc.* now collects money from donations and decides which pieces of art are in dire need of protection or restoration[24]. *Save Venice, Inc.* receives a list of suggested pieces to restore from the *Superintendents for the Artistic and Historic Heritage of Venice,* the *Superintendents for the Architectural Heritage of Venice,* and other interested citizens. The Board of *Save Venice* then decides which piece to restore based on artistic merit and urgency of need[25]. We contacted *Save Venice, Inc.* in the anticipation that they will consider preserving the lunette that are in most need of repair.

3 Methodology

This project is intended to collect and organize knowledge concerning lunette and portali in order to enable the creation of programs for the preservation and restoration of these structures. The goal is that one day this completed project will be used to promote the conservation of portali, particularly lunette, as part of the public art collection of Venice.

In order to eliminate confusion as to whether a piece of architecture is really a portale or a lunetta that should be included in the Public Art Database, we have created some precise definitions. The definition we created for a portale is an entrance way to a building or courtyard where artwork has been incorporated around the doorway, as well as on top of it. This definition does not include artwork above a door but not attached to the doorway in any way. The definition of a lunetta is an artistic element located inside an arch above an outside door of a building. A lunetta also must utilize the entire arch. This definition does not include metalwork and sculptures that do not utilize the entire space of the arch, as seen in Figure 9 and Figure 10.

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[24] Save Venice, Inc.
[25] Save Venice, Inc.

Figure 9: Metalwork Decorative

Figure 10: Artwork Not Attached to a Door

We also realized that there was the possibility that more than one lunetta or portale may be present on a building, such as a church. Therefore, we created a database structure to reflect this. This structure can be seen in Appendix B. There may also be some confusion as to what is considered public. We defined "public" as any object that is "exposed to general view"[26] within the city.

Our project was completed from June 1st to July 31st, 2002. We collected data about lunette and portali in the historical center of Venice, as well as the islands of Murano, Torcello, Mazzorbo, and Burano. We created our methodology to accomplish the five main objectives of our project. The objectives were:

- Create a multimedia catalog of all lunette and portali
- Assess the Condition of all Lunette
- Provide estimates of restoration costs
- Identify intervention priorities
- Develop educational and informational materials

[26] www.webster.com

- Facilitate fundraising activities

The following information describes the process in which we completed our objectives. Section 3.1 outlines the collection of lunette and portali data. The data includes details about the types of information we collected and the methods used in its acquisition. Architectural Data, Section 3.1.2.1, includes the locations of the lunette and portali, the architectural styles of the building, the address, and other details of the building. Section 3.1.2.2 contains the Physical Data, such as the material and techniques the lunette and portali are comprised of, the type of buildings, and the measurements of the structures. The condition of the lunette and portali, including the assessment of cracks, and degradation is described in Section 3.1.2.3. We have also described some photography techniques and other information that was useful in describing the lunette and portali in Section 3.1.2.5. Our methods for determining restoration costs are located in section 3.2.1.1.

In order to preserve the lunette and portali, we needed to first increase the awareness of these structures' existence. Section 3.2.2 contains an overview of the prototypes we created to promote preservation of lunette and portali.

3.1 Cataloging of Lunette and Portali Data

During the data collection process, we located the lunette and portali, collected information about each one, and assessed the conditions of the structures. The methodology for these steps is explained below.

3.1.1 Locating the Lunette and Portali

The first step in cataloging the lunette and portali was finding each piece. Since there were no records of where the lunette or portali exist, we systematically combed the historical center of Venice, Murano, Torcello, Mazzorbo, and Burano to find the structures. This required

us to acquire knowledge of the layout of the city and islands, along with a basic idea of where to expect the lunette.

By far, the most common form of travel for those moving within the city of Venice is by foot. Therefore we searched the city and neighboring islands on foot to find all the lunette and portali.

To complete this project, it was necessary to become fully aware and knowledgeable with the numbering system of each *sestiere*. The city is composed of six separate *sestieri*: Cannaregio, Santa Croce, Dorsoduro, San Polo, San Marco, and Castello. Each *sestiere* has a separate addressing scheme for the buildings included within it. The numbering system works on a path-like basis, starting at one point in the *sestiere* and making its way through each doorway on a path following the right-hand rule (keeping the buildings to the right side as progressing through the sestiere). Venice's buildings are addressed solely with the door number and *sestiere* name as a continuous system, instead of restarting the numbers by street. Adding to the complication of finding one's way about the city, buildings can have more than one address. Every door within the city is assigned an address. Doors that existed in the past which have been removed are still addressed.

The islands of Torcello, Murano, and Mazzorbo do not use the same address system that Venice does. Instead, these islands use numbers with street names, which is how we cataloged the locations of lunette and portali on these islands. Burano does use an addressing system like Venice's with separate *sestieri*, but due to its much smaller size, we found it more useful to catalog the street name and address number for all lunette and portali found on this island.

We thoroughly examined the city of Venice for lunette and portali, collecting and cataloging data. On the islands of Murano, Burano, Torcello, and Mazzorbo, our group traveled as a whole to locate all portali and lunette, condition assess each one, and record physical and architectural data. For the historical center of Venice, we began by searching each *sestiere* for lunette and portali and documenting the type of artwork for each door. This was done

individually in order to maximize efficiency. We printed lists of the civic numbers in each *sestiere* and marked each address with an "L" for lunetta, an "M" for decorative metalwork, and a "P" for portale, depicting what was over each door. Since there are different types of portali, we also marked separate codes for those structures. We marked an "S" for portali with sculptures, an "I" for inscriptions, a "K" for keystone, a "T" for planter, an "R" for relief and a "C" for coat of arms. Even though we will not be assessing metalwork, we still marked locations. This record of metalwork could be used for a future Interactive Qualifying Project.

After we searched the entire city for lunette and portali, we began our more thorough investigation into each piece of artwork. We created a field sheet, found in **Appendix A**, which we filled out for each located lunetta and portale. It includes the data found in the next few sections. We also took two pictures of each lunetta and portale: one close-up of the piece itself, and one picture of the general location of the lunetta or portale.

3.1.2 Data Collection

After locating all lunette and portali in the city of Venice, we divided into pairs to complete the physical and architectural data collection, as well as condition assessments. We did this in order to be more efficient. It was important for us to be consistent in our assessments and measurements, so the same two people condition assessed the pieces, and the other two always collected the physical and architectural data.

3.1.2.1 Architectural Data Collection

The architectural data we collected involved the locations of the lunette and portali. We needed to know in which *sestiere* the buildings were located, as well as the names and addresses. We were also interested in the architectural styles of the buildings and the time periods of construction. This was determined by finding the dates inscribed in the building, or informational signs mounted to the buildings. We also recorded any inscriptions found in the lunetta or portale; if a letter(s) was missing we recorded an underscore (_) in its place.

The last piece of architectural data we collected was the buildings' location types. This was one of three types: Residential, Commercial, or Church. **Residential** areas were defined as streets that were primarily lined by homes. We defined **Commercial** as areas with shops and businesses. These areas included, but were not limited to, streets lined with shops such as butchers, bakeries, tourist shops, and fruit or vegetable stands. **Church** areas were required because of the diverse areas that can surround churches, including convents. We also realized that portali and lunette could also be found along the canals. The use of a boat would be required in order to accurately catalog each structure's data. Since we did not have access to a boat, or time to catalog each one completely, portali and lunette along the canals were considered outside the scope of our project.

3.1.2.2 Physical Data

The physical data included the specific attributes of the lunette and portali. We determined the technique for construction of the lunette and portali. The different types we encountered were relief, sculpture, fresco, and mosaic. The different materials we found were brick, istrian stone, marble, metal, wood, paint, tiles, glass, and ceramic. We also recorded a basic description of the subject for each lunetta and portale. We divided the subject into large categories, such as religious themes. Beneath each category, the general subject of each piece was included, along with a list of specific details. For example, under the religious theme there was a subject depicting the birth of Jesus. Under the subject was a list of the particular details such as: Mary, Joseph, Baby Jesus, angels, animals, etc. We also measured the dimensions (height and width) of the lunette and portali, as well as the distance off the ground, in centimeters, with a two meter ruler.

We took note of the amount of exposure to the elements for each piece. This factor was determined as follows:

- High Exposure includes:

- Fully Exposed: A piece that is completely exposed to the elements, such as one near the water's edge or on the edge of a large campo
- Facing Building: A piece that is opposite another building is more than 10 meters away
- Right or Left Wall - Wide: A piece that has a wall to the right or left of it, but the wall is too far away to make an impact on the pieces exposure

- Medium Exposure includes:
  - Facing Building <10m: A piece that is facing another building, within 10 meters but further than 5 meters from the piece
  - Right or Left Wall: A piece that has a wall to the right or left of it, where the wall is close enough to make an impact but not directly next to the piece
  - Roof or Overhang: A piece that has a roof or overhang over it, that can block some of the elements
- Low Exposure includes:
  - Facing Building <5m: A piece opposite another building that is within 5 meters away
  - Right or Left Wall - Close: A piece that has a wall to its left or right and is close to the piece
  - A combination of any of the above attributes

3.1.2.3 Condition Data Collection

We collected data on cracking, general surface condition, and also took note of any missing or endangered features and structural concerns. In order to have consistency between the condition ratings of a lunetta, we added section 3.1.2.4 to this document.

3.1.2.3.1 Cracks Assessment

To assess the cracking of a lunetta or portale, we counted the number of individual cracks at each severity level. Cracks that branch off of another crack were not counted individually. The severity levels are defined in Table 1, below.

	0	1	2	3	4
Cracks	No Cracking	Surface Cracks that do not pose a threat to the subject matter of the piece. STABLE	Structural Cracks that do not pose an immediate threat. STABLE	Surface Cracks that are located in an area that would pose a great threat to the subject matter if the crack condition worsened. STABLE	Deep Structural or Surface Cracks posing an immediate threat. UNSTABLE

Table 1: Condition Analysis Scales - Crack Rubric

3.1.2.3.2 Surface Condition Assessment

We determined the conditions of lunette through a collection of condition data that we ranked on scales of zero (0) to four (4) for severity of the condition to be assessed and the percentage of the total surface covered by the condition. The severity levels are outlined below for the three techniques found throughout the city.

Surface Condition	0	1	2	3	4
Sculpture and Relief Work	No Surface Damage or Discoloration	All features still visible; Evidence of grime.	Little to no damage or wear; Translucent layer of grime.	Minor damage or wear visible; Opaque layer or grime.	Severe damage or wear visible (missing feature); Opaque layer of grime.
Fresco	No Visible Dirt, Damage, or Fading	All features of subject visible; Evidence of surface dirt	Most to all features of subject visible; Evidence of Fading	Only subject is Visible, features are Faded away	Fading and wear so severe that the subject can no longer be determined
Mosaic	No visible damage	No wear or missing tiles; Evidence of surface dirt	Subject Visible with less then 10% of tiles missing	Subject matter deteriorated by 10% - 25% missing tiles or wear	Subject Matter no longer visible due to more then 26% of tiles missing.

Table 2: Condition Analysis Scales – Surface Condition Rubric

After determining that a specific severity of a condition is apparent on a lunetta or portale, we then determined the percentage of the total surface covered by it. In order to make

the surface conditions easier to analyze, we consolidated our assessment into a single number. To do this, we multiplied each severity level by the corresponding percentage and added each level together. This gave us a number between zero (0) and four (4) for the total surface condition of each piece.

3.1.2.3.3 Documentation of Missing and Endangered Features

We also took note of any features in the lunetta or portale that were missing or endangered. "Missing features" were ones that did not exist on the sculpture any more. Some examples are: a figure that was missing a body part or facial features, or a coat of arms that had been removed. "Endangered features" were those that were in danger of becoming missing features because of cracks or the degrading of the surface condition.

3.1.2.3.4 Assessment of Structural Concerns

We recorded any structural concerns that may pose a threat to the lunetta or portale. We counted the number of metal pieces in the structure that can pose a threat due to oxidation. Any plant life was noted because the roots can grow into cracks and split the stone. We paid special attention to the condition of the area surrounding the lunetta or portale because it posed a great threat to the entire piece. For example, brick work with missing mortar, open seams around the border of a lunetta, or stone with extensive cracking could potentially cause the entire lunetta or portale to fall. We also took note of any signs of prior restorations.

3.1.2.4 Inter-rater Reliability and Calibration

We realized during the initial planning stages of the project that with the large quantity of buildings in Venice, and the potential number of lunette and portali, there might be an issue with determining a way to efficiently assess the conditions of lunette and portali within the city. We created a method that involved dividing into two person teams. One team was solely responsible for assessing the conditions of each lunetta and portale found in the city, in order to maintain

consistency. This team used the condition analysis methodology explained in the previous section. The two individuals concerned with the condition assessment were able to discuss and come to a consensus as to the most accurate representation of the condition. The second team was then responsible for collecting the physical and architectural data of each lunetta and portale: height and width measurements, type of material used, technique, architectural style, description, and take pictures of the piece.

3.1.2.5 Photography of Lunette and Portali

We took digital photographs, one photo of each lunetta or portale was up-close to show detail. We took a second photo of the entire building to see the lunetta or portale in its surroundings. The size of each digital photograph is approximately 100 Kb with dimensions of 640 x 480 pixels. We saved the pictures in JPEG format. We determined the name of each photo by stating the building address code (the sestiere code followed by the address of the door), and an "L" for a close-up picture or an "A" for the building picture. We inserted these pictures into the Venice Public Art Database. We also used the pictures to show the conditions of the lunette and portali and help us prioritize them for restoration.

3.2 Promoting the Preservation of Lunette and Portali

It was necessary to determine which lunette and portali were in need for restoration first. Factors we considered in determining this were: prime locations (locations of high tourism or historic value); type of damage (dirt, black film, or something more significant like cracks); and the estimated cost of repairs. We also looked at the area around the lunette and portali to determine if there were businesses or groups around it that might want to sponsor the lunetta or portale by donating money for its repairs.

3.2.1.1 Repair Cost Estimation

As mentioned in the objectives of our project, it was necessary to provide restoration cost estimates in order to help facilitate restoration. In order to complete this task, there were

several criteria considered. The first was a threshold value of both surface condition and the crack assessment. As mentioned in sections 3.1.2.3.1 ***Cracks Assessment*** and 3.1.2.3.2 ***Surface Condition Assessment***, each piece was assessed a condition number. This conditional number was then used to create a threshold for pieces that required estimates on restoration cost. For this project, we calculated a basic restoration cost for any piece with an overall surface condition of 2.5 or greater. If the piece included cracks of severity greater than 2, a crack repair cost was added to the basic repair cost. Pieces with surface conditions of less than 2.5 but greater than 2, and included some type of structural concern (alignment, brick mortar deterioration, etc...), also had a restoration cost estimated. Once the pieces selected for estimation was established, we used **Equation 1 Total Restoration Cost** for our calculations. This equation represents the total repair cost as a summation of total restoration cost, scaffolding, a set architect fee of 409.67 €, as well as a 15% safety buffer. The breakdown for each of the costs is given in the following sections.

$$Total\,\mathrm{Re}storationCost = Total\,\mathrm{Re}pairCost + ScaffoldingFee + ArchitectFee + 15\%$$

Equation 1 Total Restoration Cost

3.2.1.1.1 Total Repair Costs

We calculated total repair cost as the sum of three sub-components. The first sub-component was the basic repair cost. The basic repair cost included: restoration cost per unit area, a relief factor, and a cleanup of materials. Restoration cost per unit area was determined by calculating the area the piece occupies, and multiplying it by a fixed fee of 213.37 €, as shown in **Equation 2 Basic Repair Cost.** The relief factor was assigned either a 3.5 for a high relief, 2.5 for a low relief, or 1 for no relief work, dependent on the piece. This value was determined individually for each piece. A relief factor of 3.5 was generally assigned to pieces that incorporated complete 3D structures, such as statues. A relief factor 2.5 was assigned to the pieces that did not have a complete 3D structure, but did incorporate relief into the subject of

the piece. Techniques such as frescos and mosaics were assigned a relief factor of 1, as they do not incorporate a relief into their structure.

$$Basic\,\mathrm{Re}storationCost = (SurfaceArea * \mathrm{Re}lief) * 213.37 + 400$$

Equation 2 Basic Repair Cost

Structural Damage Repair cost was the second sub-component. Included within the structural repairs were costs to repair cracks, surface condition, structural concerns, and a fixed mason's fee. For pieces that met our criterion for consideration as mentioned in Section **3.2.1.1 Repair Cost Estimation,** we calculated the cost to repair each crack of severity 3 and severity 4 and adding them together. This can be seen in **Equation 3 Crack Repair Cost Estimation.**

$$CrackCost = NumberofCracks * ((CrackSeverity - 2) * 64.56)$$

Equation 3 Crack Repair Cost Estimation

For pieces that met our criterion stated in **3.2.1.1Repair Cost Estimation**, we used **Equation 4 Condition Repair Cost Estimation.**

$$ConditionCost = (CondRank - 2) * 64.56$$

Equation 4 Condition Repair Cost Estimation

For any pieces that contained any sort of structural concern, we used the fixed amount of 258.22€. Once these costs were estimated, we then used **Equation 5 Structural Repair Cost** to sum the costs and add a fixed mason's fee of 304.81 €.

$$Structural\,\mathrm{Re}pairCost = CrackCost + ConditionCost + StructuralConcernCost + MasonFee$$

Equation 5 Structural Repair Cost

3.2.1.1.2 Calculation of Scaffolding Costs

Scaffolding costs were determined by a few factors. The first factor to be considered was the actual size of the scaffolding needed. To determine this, we found the height and width

required to cover the piece being restored. Once this was measured, we then found the area it would encompass by multiplying the height times the width. Once the scaffolding area was calculated, it was required to multiply by a constant cost of 36.58€. This cost was then added to a fixed transportation cost of 304.81€. If the structure had a special circumstance like low exposure where scaffolding would be difficult to construct we added a low exposure fee of 350€. The equation used can be seen in **Equation 6 Scaffolding Cost.**

$$ScaffoldingCost = (Height * Base * 36.58) + 304.81 + \text{LowExposureFee}$$

Equation 6 Scaffolding Cost

3.2.2 Increase Awareness

The most substantial outcome of the project is the preservation and protection of the lunette and portali. To begin this, we needed to increase awareness and appreciation of lunette and portali. If people do not know essential data about portali and lunette, it is impossible to protect these public art pieces. Therefore, we collected background information that was needed to make it more feasible to save the lunette and portali. Our next step was to find ways to increase the awareness of the lunette and portali to the general public. It was important for us to be polite and understanding while completing this part of the project because we did not want to sound as though we were educating the Venetians about their own city. This was crucial because with their support and donations, it may be possible to restore the lunette and portali to full beauty.

The prototypes we made included walking tours, placemats for children, coloring pages, a game, table toppers for restaurants, a calendar with pictures of lunette and portali, and a website. These materials are located in Appendix E. Our Conclusions and Recommendations section explains our ideas in more detail to further the endeavor to encourage preservation.

4 Results

One of the major goals of this project was to increase the general knowledge of lunette, by locating and assessing the conditions of these pieces. Once the physical data and condition assessments were collected and cataloged, we created documentation to assist in making the presence of lunette available for all interested parties. By creating a multimedia catalog of the collected information, we provided a resource for others interested in the current conditions and locations of lunette. This data provided the factual information needed to restore the pieces of artwork. The multimedia catalog held the gathered information until it was integrated into the existing WPI-Venice Public Art database. The database structure of the catalog can be seen in Appendix B.

4.1 Distribution of Lunette and Portali

The locations of the lunette and portali are essential information for any further work towards the preservation and restoration of the structures to occur. We located lunette, portali, and metalwork. We located 552 portali, which include 71 lunette. A map of all the lunette locations can be found in Appendix D. The graph below displays the numbers of lunette and portali, divided by *sestiere* and island. It shows that San Marco and Castello contain the most structures.

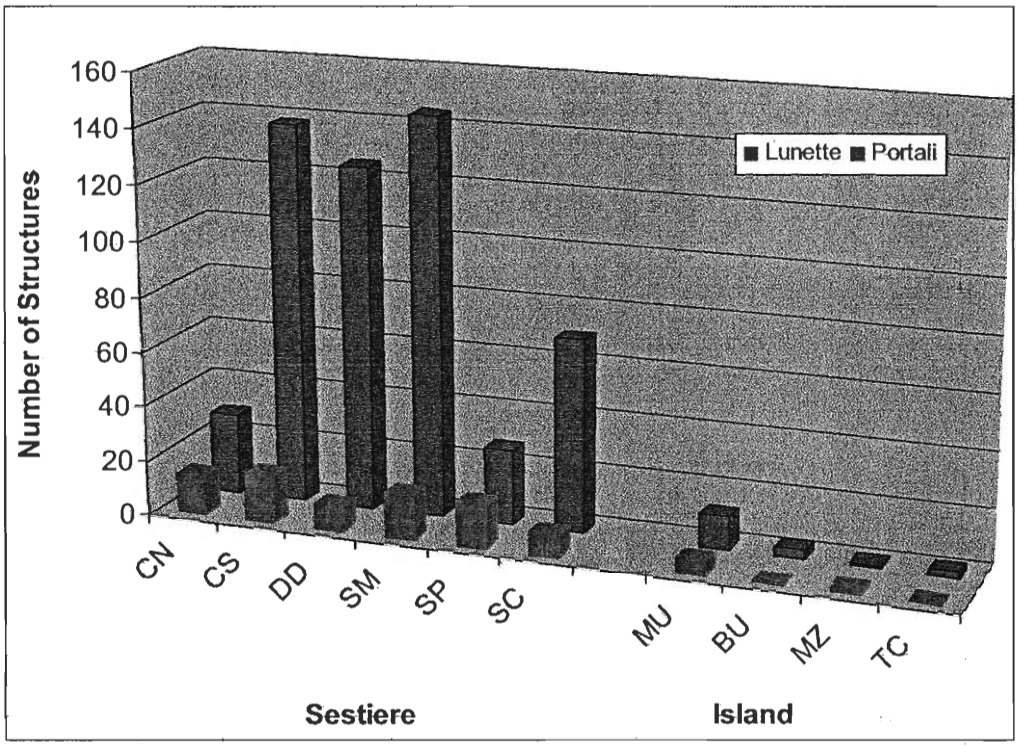

Figure 11: Total Lunette and Portali by Sestiere and Island

The maps of the locations of all of the lunette and portali can be found in our database and appendices C and D.

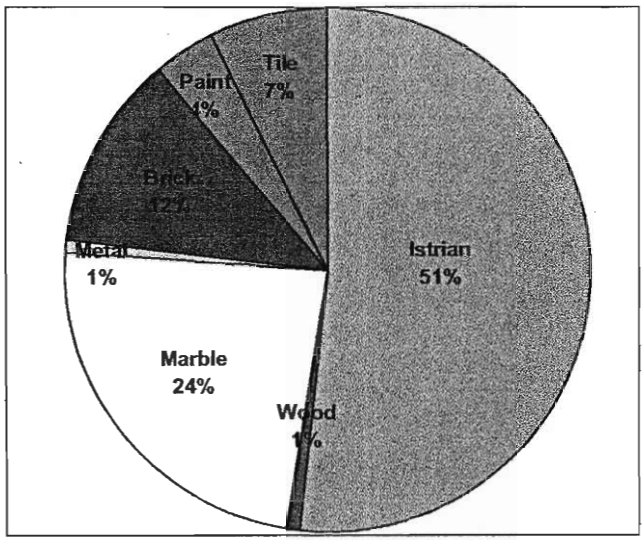

Figure 12 Material Type Percentages

4.2 Materials and Techniques

The material and technique used to construct lunette and portali are important pieces of information for our condition and restoration cost assessments because different materials wear and break down differently and at different rates. The separate materials and techniques also have various levels of restoration difficulty. Graphs in **Figure 12** and **Figure 13** depict the percentage of the 71 lunette for each technique and material and the maps show the locations of each material and technique. Istrian stone is the most common material used due to its durability and non-porous properties. This information will be used with current conditions to create restoration priority listings because some construction materials are rarer then others.

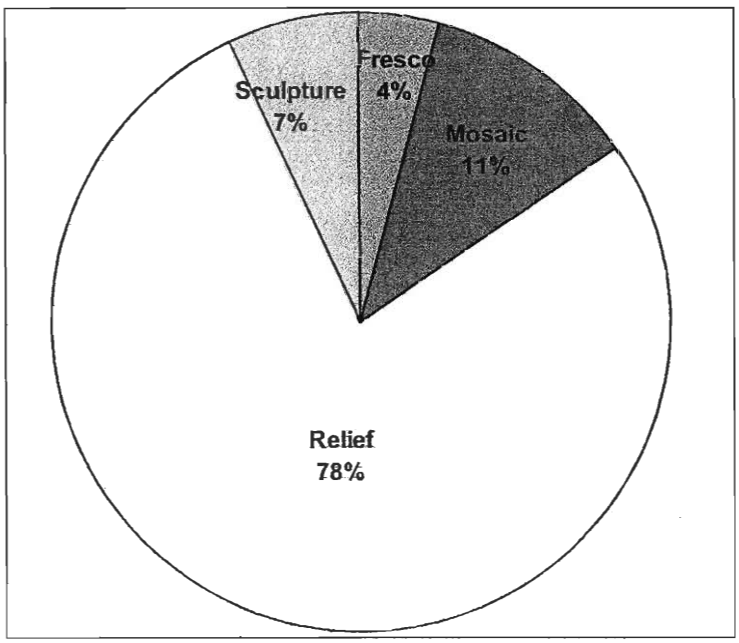

Figure 13 Technique Type Percentages

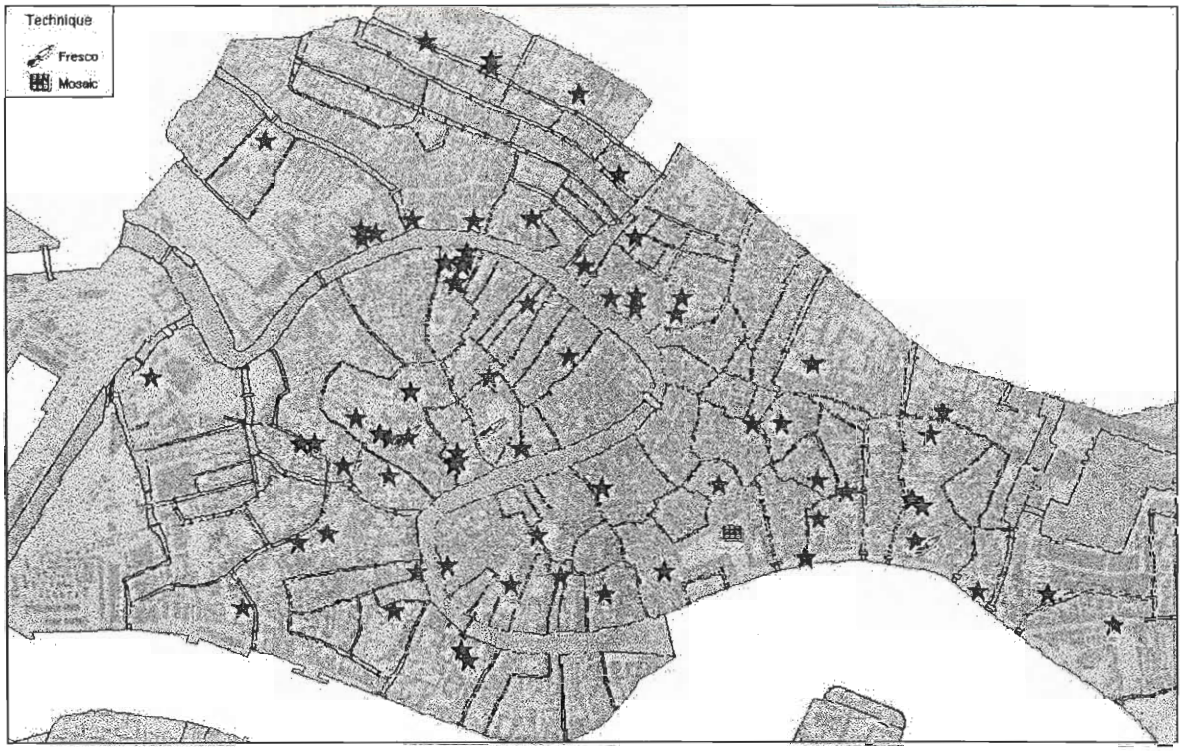

Figure 14 Map of Technique Locations

4.3 Lunetta Orientation

We also collected data on the side of the building, also referred to as orientation that the structures were found on. This data is associated with the amount of exposure to natural elements, which can help to explain the structures' conditions. A fully exposed lunetta on the west wall of a building will be exposed to direct sunlight for at least half of the day, where as one that is closely protected by a building will be exposed for less time during the day. Also, fully exposed structures will be exposed to other weather elements as well, such as acid rain, wind, and snow. A partially protected structure could

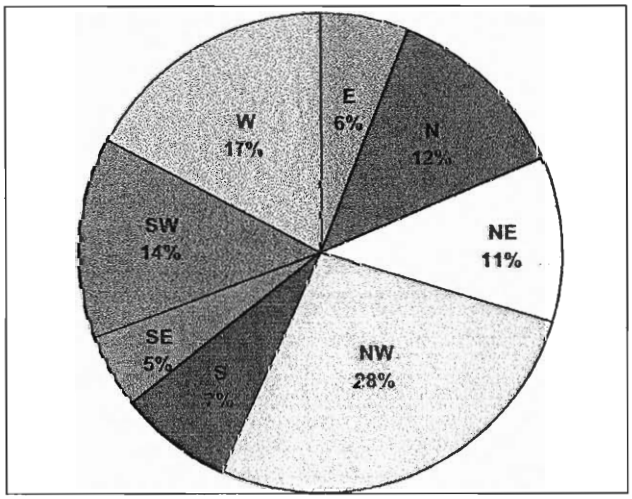

Figure 15 Percent of Structures by Orientation

be either well or poorly protected depending on the direction of the winds and the side of the protective wall.

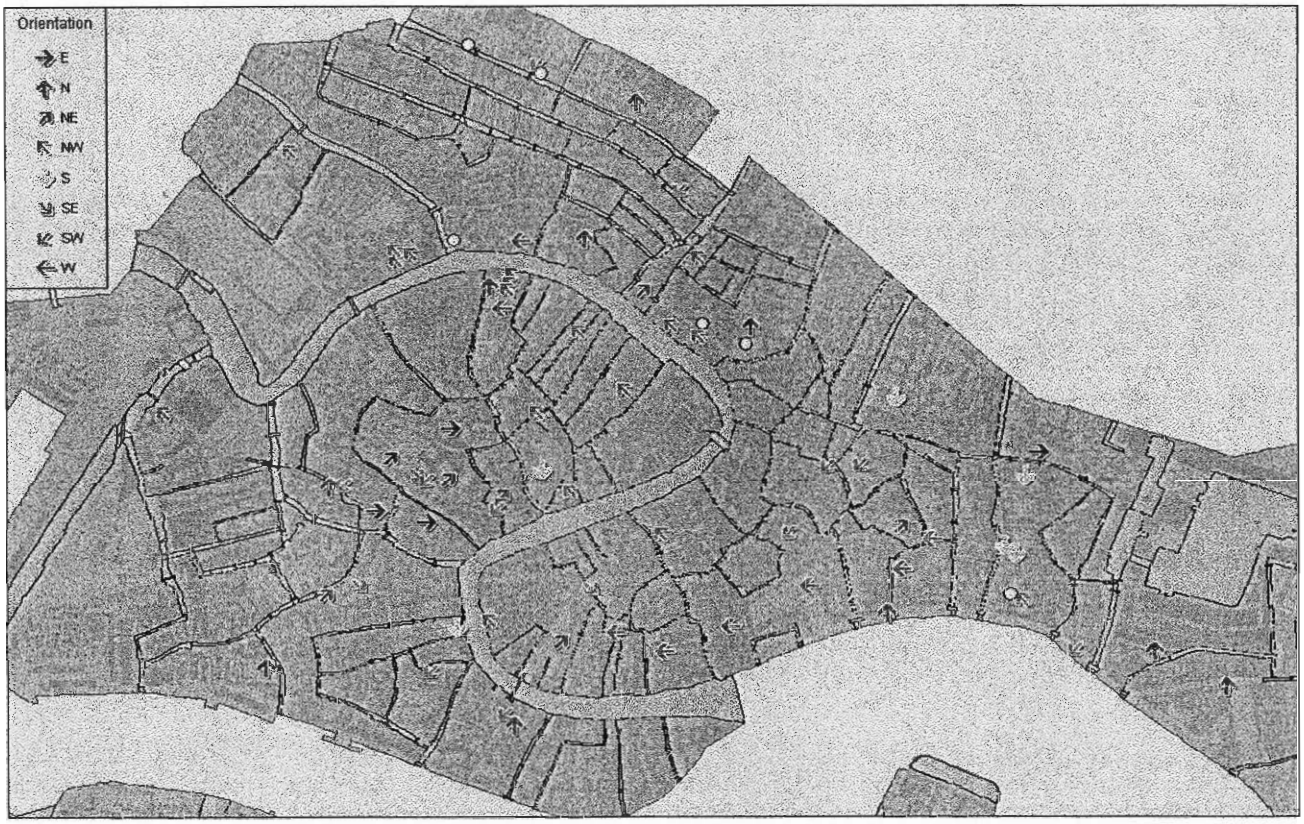

Figure 16 Map of Lunette Orientations

4.4 Exposure

The map below provides the exposure levels of lunette located around the historical center of Venice. Exposures were recorded because the exposure is a key factor in calculating the scaffolding costs and determined why some lunette are in a certain condition. A lunetta located in a back alley is more protected from the elements such as wind, sun, and rain. A lunetta that is widely exposed is continually beaten on by the elements.

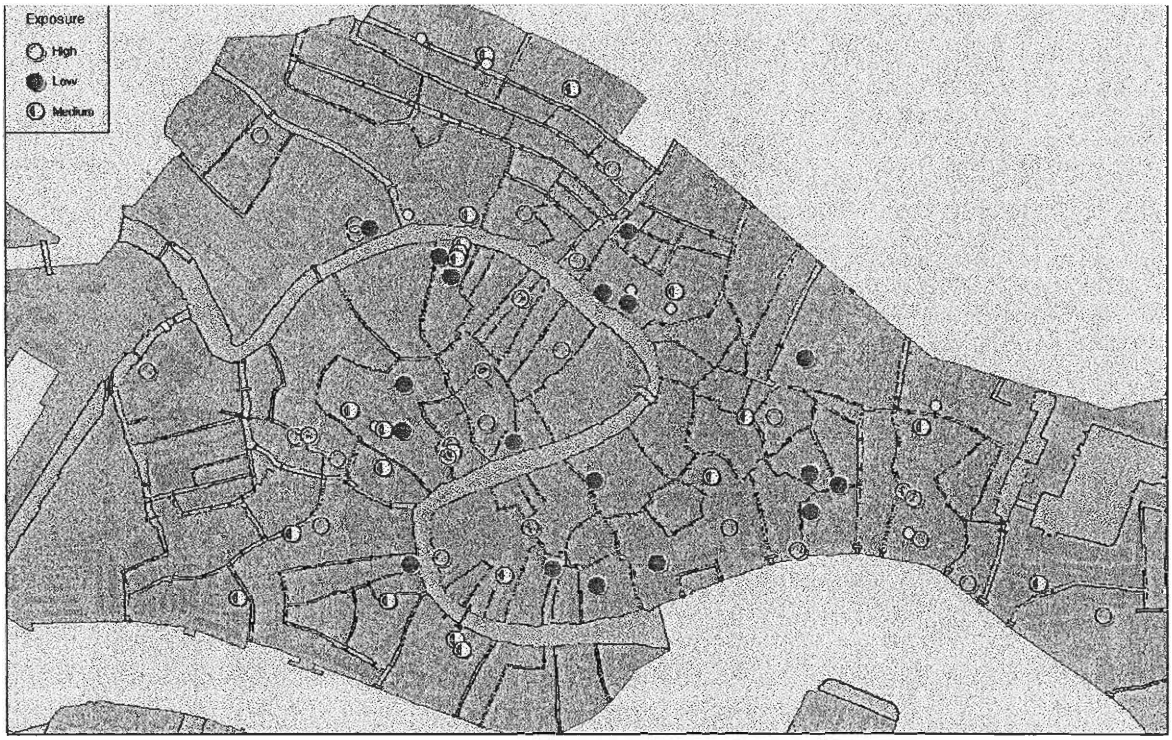

Figure 17 Lunette Exposure Map

4.5 Environs of Lunette

We took note of the environ for each structure. The environs were defined as follows:

- Residential – Areas containing mostly homes on the street level
- Commercial – Areas lined with stores and businesses
- Church – Structures found on a church

The following graph shows the percentage of lunette and portali that were found in the different environs and a map showing the lunette locations by environ is provided below in Figure 19. Environ was important to record because it will hopefully aid in finding funding sources.

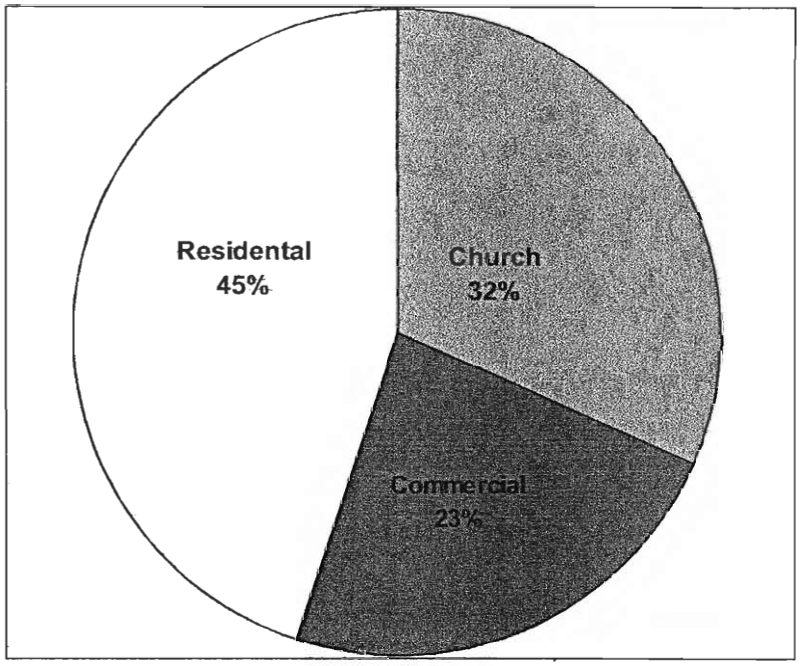

Figure 8 Percent of Lunette by Environ

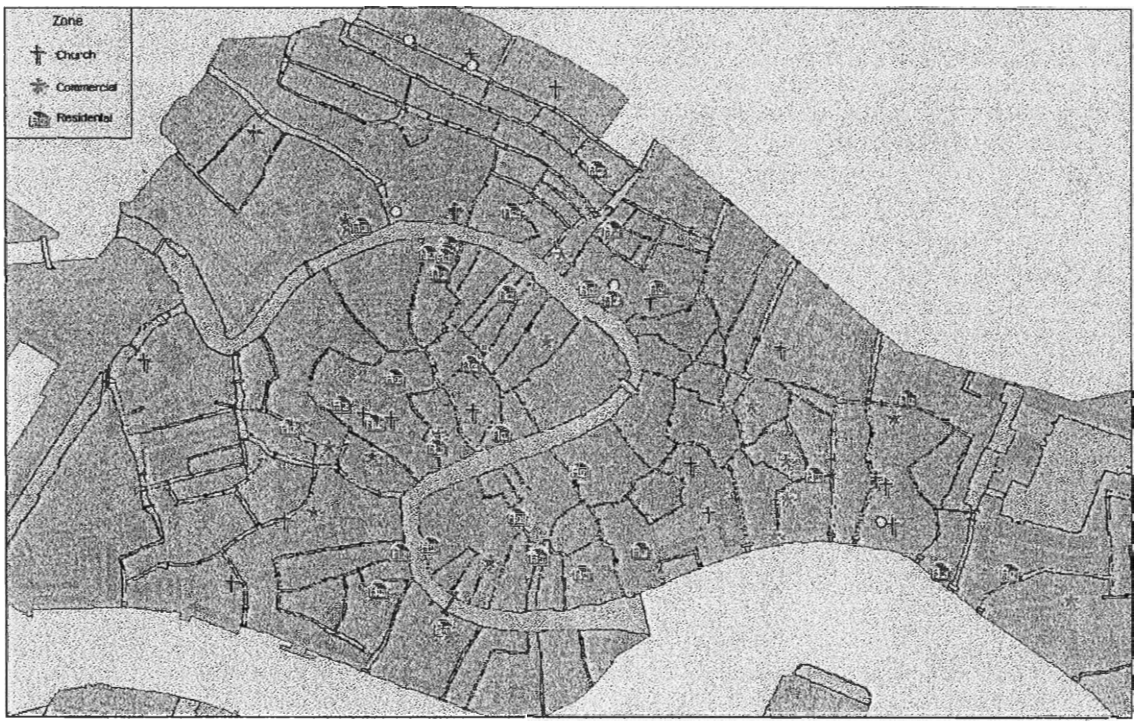

Figure 9 Lunette Map by Environ

4.6 Conditions of Lunette

An important aspect of our project was to assess the conditions of the lunette. This section includes charts and graphs showing different conditions of lunette.

Figure 18 shows the percentage of cracks at each severity level. This figure provides frequency of the general conditions for the structures, according to the number of cracks. Our severity levels vary from one (1), least severe, to four (4), dangerously severe. There are many more cracks at severity level 1, since the smaller cracks tend to form in larger numbers. Refer to **Chapter 3** for an in-depth explanation of the determination of each severity level.

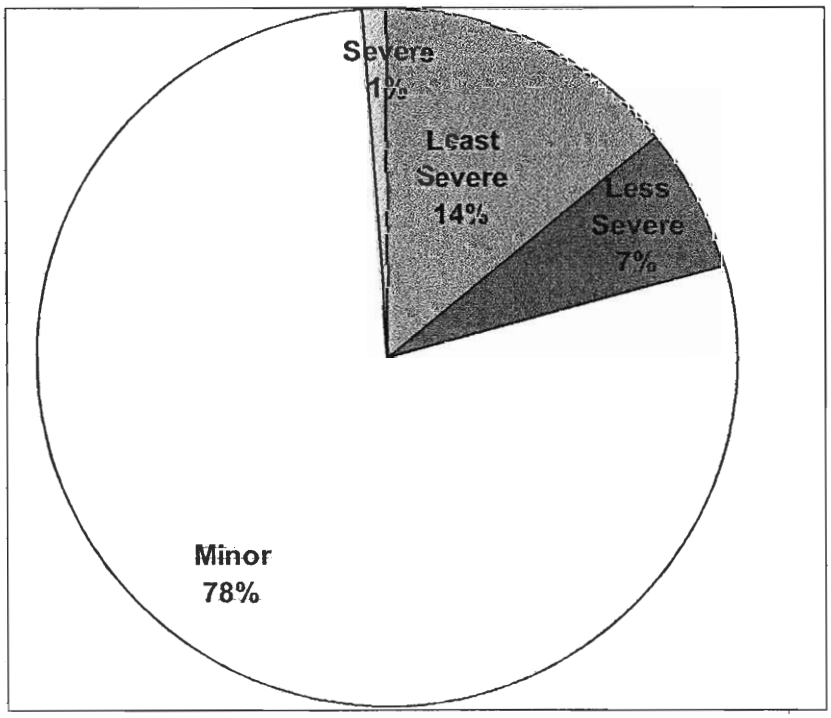

Figure 18: Crack Severities

Cracks were not the only condition factors recorded. We also calculated a normalized overall surface condition based on values recorded in the field; refer to **Chapter 3** for a detailed explanation of this calculation. The map below shows the location of each lunetta and its normalized surface condition.

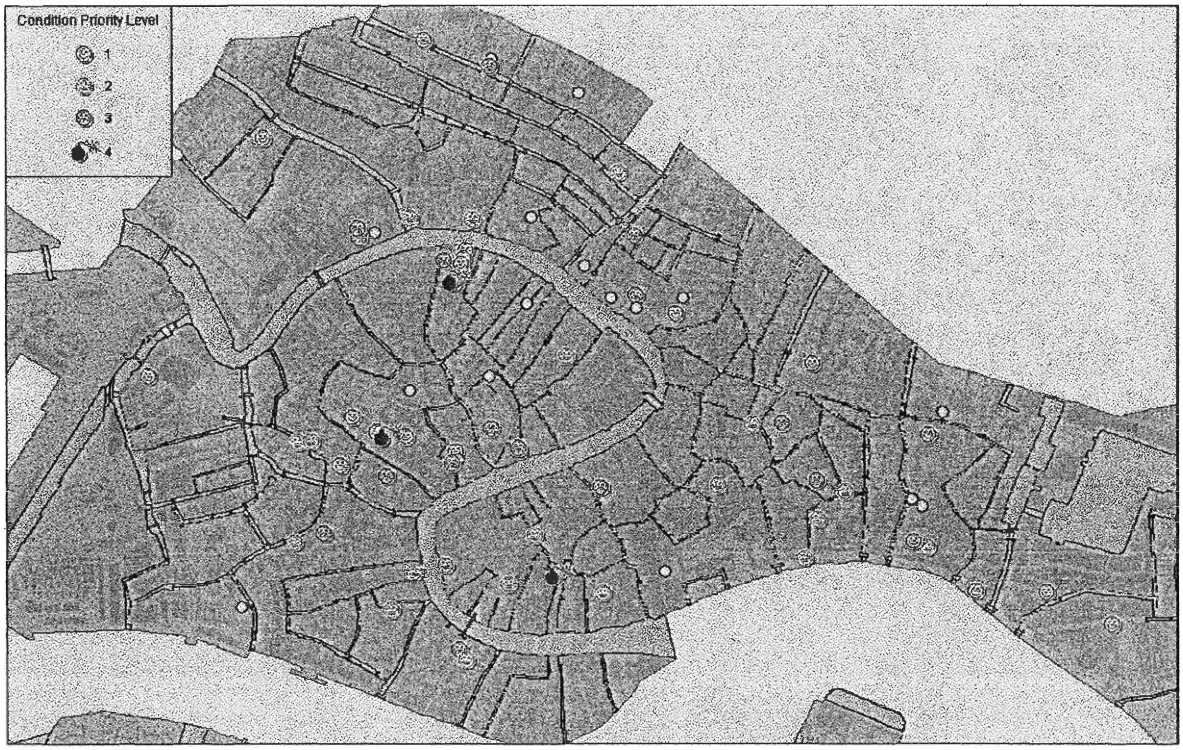

Figure 19 Lunette Conditions Map

4.7 Repair Cost Estimates

In addition to reporting the locations and current conditions of the lunette and portali, we also provided estimations on the costs to repair damaged pieces. The restoration costs were determined from an architect fee, restoration cost, and scaffolding cost, all described in detail in **Chapter 3 Methodology**, and seen in **Equation 7**.

$$Total\ \mathrm{Re}storationCost = Total\ \mathrm{Re}pairCost + ScaffoldingFee + ArchitectFee + 15\%$$

Equation 7 Total Restoration Cost

Using these estimates we ranked the pieces that were the most endangered, taking into consideration how much each piece costs to restore. A priority list of lunette in need of restoration by cost is provided in **Table 3 Restoration Priorities by Cost**.

Priority by Cost	
Address	Total Restoration Cost
Basilica di S. Maria Glorioso dei Frari	€ 11,450
SM4038	€ 6,490
SP1978	€ 6,100
CN233	€ 5,930
Chiesa di S. Paulo Apostolo	€ 5,610
SC1740	€ 5,400
SM2597	€ 5,010
Chiesa di S. Giovanni in Bragora	€ 4,760
DD2615	€ 4,760
DD3820	€ 4,640
SP1565	€ 4,200
Chiesa di San Alvise	€ 4,180
SM2298	€ 3,660
DD877A	€ 3,520
CS4745	€ 3,510
CS6126	€ 3,330
SC1670	€ 3,280
DD2931	€ 3,270
SP2802	€ 2,970
SP3051	€ 2,780
CN3784	€ 2,410

Table 3 Restoration Priorities by Cost

5 Analysis

One of the most important pieces for our study of lunette and portali is the analysis of the collected data. The ability to report the collected data in a meaningful manner is crucial, but to fully understand the importance and significance of the data is much more insightful. Therefore, we created this section to analyze the collected data and find ways to fully understand the importance and significance of portali and lunette in Venice.

5.1 Analysis of Causes of Damage

Due to the amount of data that we collected, there are several areas in which we analyzed relationships and correlations. In the following sections, we will break down different factors that were useful in a priority listing for restoration of all pieces found within the city.

5.1.1 Surface Conditions by Orientation

Contained within this section are correlations between the current surface conditions of pieces and orientation; which is the side of the building the lunetta is on. The relationships are partially attributed to the differing amounts of exposure of the elements: wind, sun, rain, etc. For the following graph, we showed the percent of structures of each surface condition level, as calculated in **Chapter 3: Methodology**, divided by orientation.

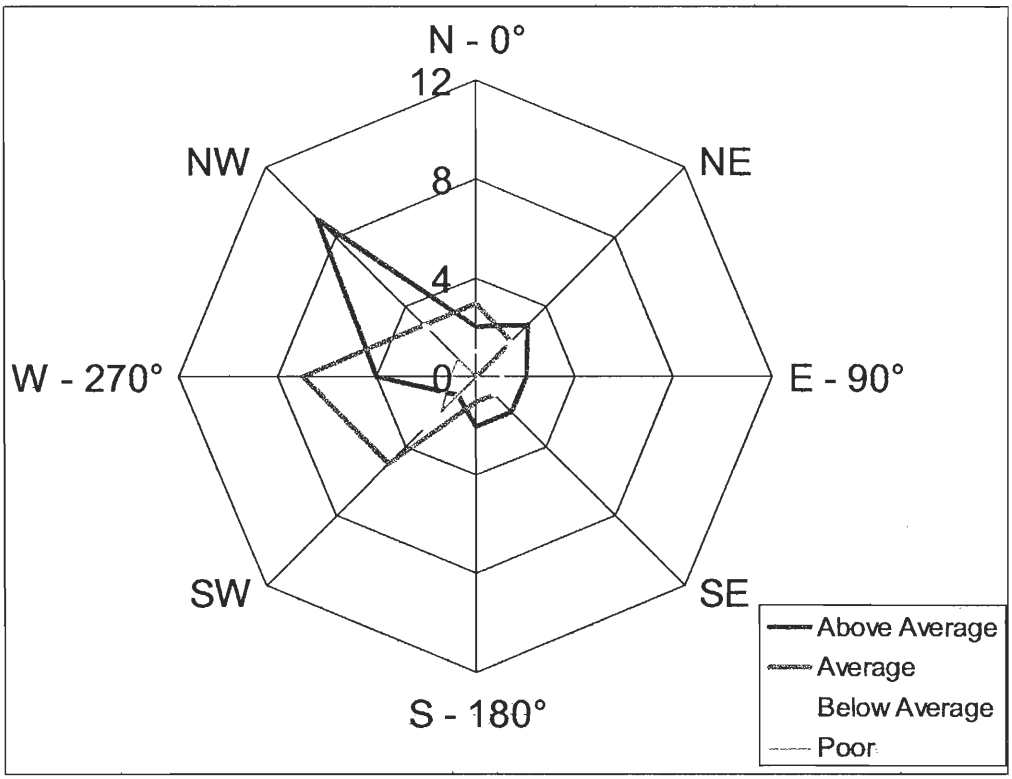

Figure 20: Percent of Structures per Surface Condition by Orientation

The lunette in the worst condition are facing in a westerly direction, which can be seen in Figure 20. Since 79% of the total lunette were orientated in the westerly direction (northwest, southwest, and west), it was impossible to accurately correlate orientation to surface condition.

5.1.2 Surface Conditions by Exposure Level

In this section, we identified correlations between the current surface conditions of pieces and the corresponding level of exposure. **Figure 21** shows the surface condition versus exposure level. This showed us that, contrary to our original hypothesis, more structures in low exposure areas had poorer conditions. This is a result of the neglect for pieces in back alleyways, for example. These pieces are often shaded and blocked from the wind and sun, allowing grime buildup and proliferation of plant life. The pieces are often located in remote, residential areas, where it is possible that the owner is one of the few people that see the lunetta. Structures that

are in high exposure areas are usually highly visible, giving institutions, such as churches, a stronger reason to keep it in good condition.

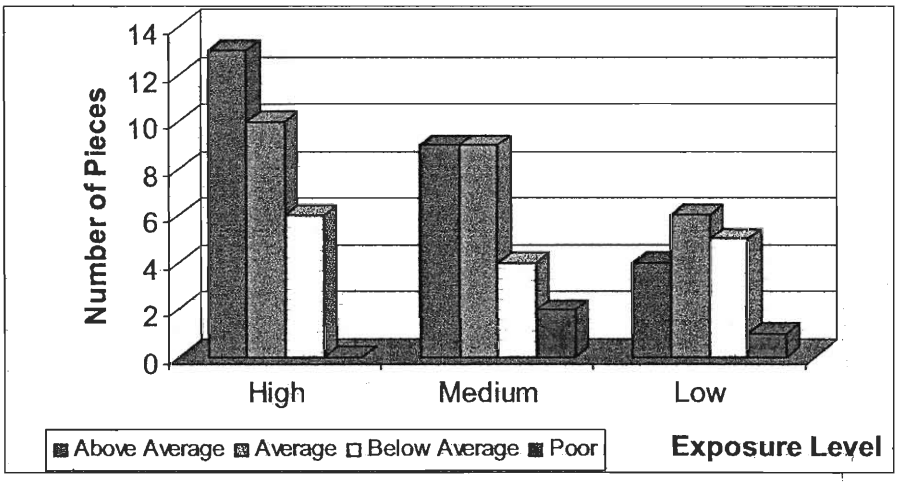

Figure 21: Percent of Structures per Surface Condition by Exposure Level

5.1.3 Surface Conditions by Material

Istrian stone is the most abundant material for lunette and portali. It is a very robust material and does not wear easily. However, many pieces utilizing this material are in need of restoration or care. Marble is a material that tends to resist wear, while brick wears quickly because of its porous composition. From **Figure 22**, we can clearly see that painted pieces, which are found on frescos, are in the worst condition. This is because plaster and paint cannot hold up against the elements as well as stone. Tiles are in the best condition, according to **Figure 22**. This is attributed to the recent restoration of the tiled mosaics on the Basilica di San Marco, however not all mosaics receive the extensive care that these do. The following graph shows the surface conditions versus materials.

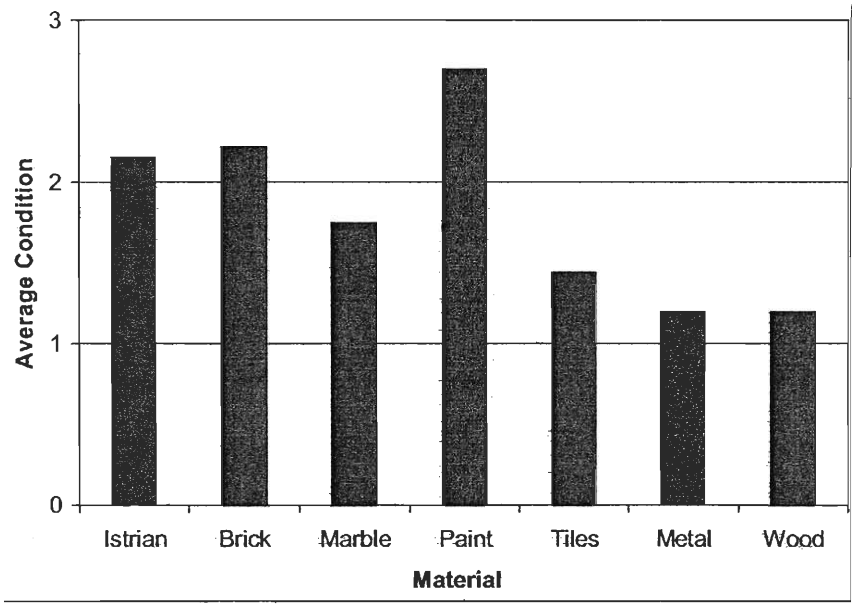

Figure 22: Average Surface Condition by Material

Paint is a more delicate material, so these pieces require more attention than ones made of stone. It must be noted that missing sections of the paint and tile pieces were not included in the calculation of the surface condition because it is impossible to restore the missing areas, due to Italian laws.

5.1.4 Surface Condition by Environ

The purpose of this section is to show the relationship between the environ of the piece and the current surface condition. According to our data, pieces on churches are in better condition than those in the commercial and residential environs. This could be attributed to the higher amount of visibility that the pieces on churches receive, along with a church's independent funding source for repairs. The structures found in the residential environ are more likely to be in low exposure areas, such as back alleyways, possibly contributing to the slightly worse conditions of the pieces.

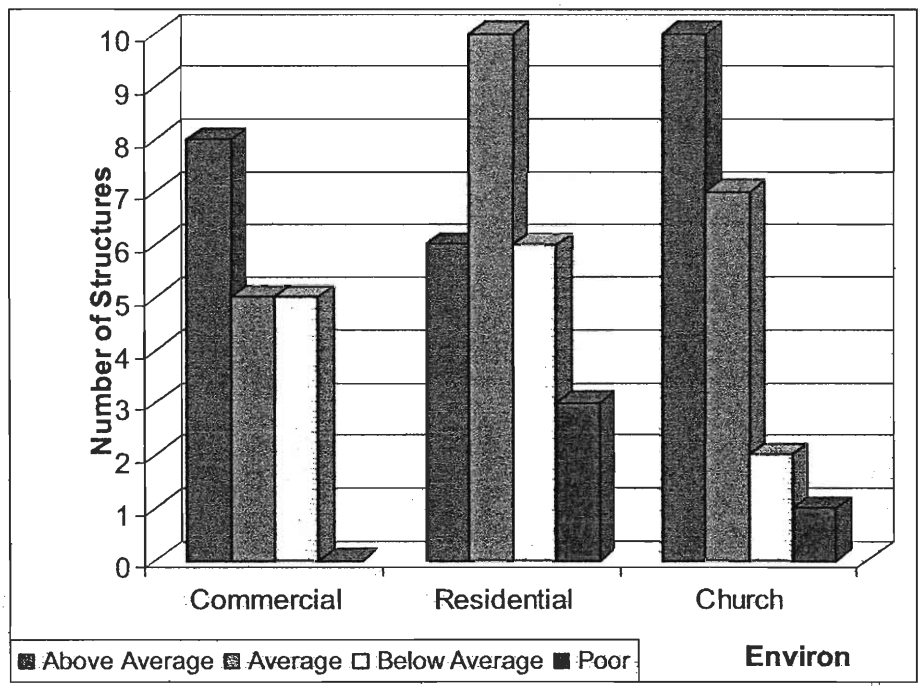

Figure 23: Percent of Structures per Surface Condition by Environ

5.2 Restoration Priorities

This section includes the structures that we believe should be the priorities for restoration. This was determined after our condition analysis, historical importance, and cost estimations. Our restoration costs consider location (if it was in a narrow alleyway or is otherwise difficult to access).

5.2.1 Priority by Condition

The most expensive lunette to restore is not the one that is in the worst condition. We have created a priority listing based on cost and condition to take into account both factors of cost and condition priority. **Figure 24** provides an example of the condition some of these damaged lunette are in.

Priority by Condition		
Address	Condition Rank	Cost
SC1740	3.86	5.400€
SM4038	3.68	6.490€
SP3051	3.66	2.780€
Chiesa di S. Alvise	3.4	4.180€
CS4745	3.39	3.510€
SP1978	3.29	6.100€
CN3784	3.1	2.410€
Basilica di S. Maria Glorioso dei Frari	3.1	11.450€
SC1670	3.05	3.280€
DD3820	3.05	4.650€

Table 4 Priority Listing by Condition

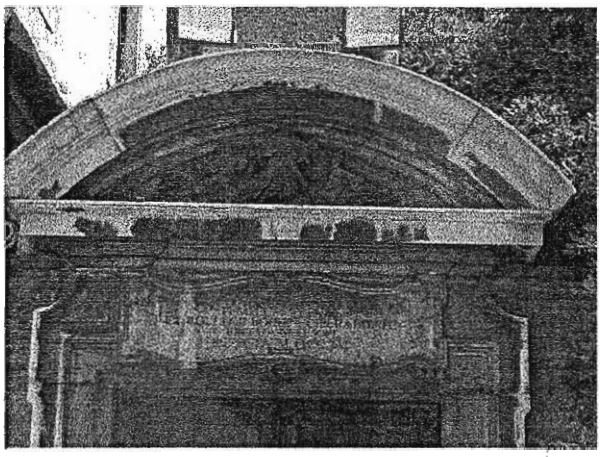

Figure 24 Severely Deteriorated Lunetta (SP3051)

5.2.2 Priority by Historical Importance

It is important to restore the oldest lunette because of the historical importance associated with these structures. Most of the lunette in this category are decaying due to age, so it is necessary start the preservation process as soon as possible.

Address	Construction Time Period	Total Restoration Cost
Chiesa di S. Alvise	14th century	4,180 €
Basilica di S. Maria Glorioso dei Frari	14th century	11,450 €
DD2615	14th century, reconstructed 16th century	4,760 €

Table 5 Priority by Historical Importance

Figure 25 Lunetta on Chiesa di S. Alvise

As seen in **Figure 25**, these historically important lunette are in need of attention. It is evident that the background material is decaying, as well as the statue. In this case, the statue is missing its right hand.

5.2.3 Priority by Rarity and Cost

Upon examining our data we realized that the techniques of mosaic and fresco were extremely rare throughout the historical center of Venice, as well as the surrounding islands. Since these pieces are so rare, it is important for these structures to be preserved for future generations to enjoy. We created a priority list based on cost and rarity, seen in **Table 6**.

Priority by Rarity and Cost		
Address	Technique	Total Restoration Cost
MU 33Λ Navagero	Mosaic	2,980 L
MU 33 Navagero	Mosaic	2,980 L
MU 32 Navagero	Mosaic	3,840 L
Chiesa di S. Giovanni in Bragora	Fresco	4,770 L
Chiesa di S. Paulo Apostolo	Fresco	5,610 L
Basilica di S. Maria Glorioso dei Frari	Fresco	11,450 U

Table 6 Priority by Rarity and Cost

5.2.4 Overall Priority

Taking into account all of the above priority listings, we compiled an overall listing that encompasses cost, historical importance, rarity, and condition. Table 7 shows the pieces that are in most need of restoration.

Overall Priority Ranking	
Address	Total Restoration Cost
SP3051	2,780 €
Basilica di S. Maria Glorioso dei Frari	11,450 €
Chiesa di S. Alvise	4,180 €
SM4038	6,490 €
DD2615	4,760 €
Chiesa di S. Giovanni in Bragora	4,760 €
CS4745	3,510 €
SP1978	6,100 €

Table 7 Overall Priority List

6 Conclusions and Recommendations

The goal of this project was to provide knowledge for the protection of lunette and portali in the city of Venice through awareness of the structures' existence and conditions. We accomplished this goal by first locating all of the structures. Then we collected physical, architectural, and condition data for each of the located lunette. With this data we created a multimedia catalog to search for lunette, as well as portali of interest. We prepared the data for integration into the Public Art Database of Venice.

Although condition assessments and data collection can be completed year after year, the lunette and portali will never be preserved until the public is aware of the importance of these structures. Our team used the data collection as a basis for the promotion of preservation for lunette and portali.

Based on our collected data and analysis, we have made recommendations for the promotion of preservation for lunette and portali in the city of Venice. We have also provided some promotional material prototypes in order to accomplish the recommendations easier.

6.1 Additional Projects

The first recommendation is a second project, which follows the guidelines set in our project, to complete the physical data acquisition and condition assessments of portali in the sestieri of Cannaregio, San Marco, Dorsoduro, Santa Croce, and San Polo. Since the locations have already been entered into the catalog, more time could be spent on preservation and conservation efforts within the city of Venice.

We also recommend that within the next five years, the condition assessments be redone for structures we did not estimate restoration costs, due to the structures' good condition. This is necessary because the sooner a poor condition is noted, the faster it can be restored before it deteriorates further and becomes more costly to repair.

6.2 Nonprofit Organization

Many of the recommendations we have made below are either too complicated or costly for an individual or even small group to run on their own. In order for the ideas to be successful, we suggest the creation of a nonprofit organization. The main purpose of creating the nonprofit organization is to have a foundation from which to run all of our other recommendations.

The new nonprofit organization could be geared towards the protection of lunette and portali in the city of Venice. The organization could be in charge of keeping the cataloged information as current as possible by monitoring the conditions of lunette and portali and prioritizing the pieces for restoration. The organization could also locate sponsors and oversee the collection and disbursement of funds for restoration, as well as use the promotional materials created from this project to increase the public's awareness of the existence and conditions of the lunette and portali throughout the city. After the new organization is up and running, it could then be integrated into a larger public art preservation program for the city of Venice.

6.3 Focusing on Children

While it is necessary to educate those individuals who can make an immediate impact, long term appreciation and responsibility are a must in a society where there is such a large quantity of public artwork. To address this issue, we recommend the addition of a public art section into the curriculum of the public schools. This could be accomplished through a school-sponsored Saturday event or integrated into the daily curriculum.

We also recommend that youth programs, equivalent to Girl Scouts and Boy Scouts in the United States, do projects or concentrations on public art, specifically lunette and portali. The

groups could spend a weekend showing different lunette to their friends and parents, or part of a day cleaning off the nearby portale. The groups would be able to take an active approach in preserving the structures.

It is also important to make the education of children fun. They will not grow to love and protect the pieces unless they had some fun learning about the structures. For this reason, we created a prototype memory game of lunette geared toward the younger generations in Venice. This game contains pictures of 24 lunette throughout the city, as well as a sheet that tells of the structures' locations and some information about what the children or their parents can do to protect the structures. The prototype can be found in Appendix F.

We also recommend the creation of similar materials: coloring books, a story book that includes a fun and identifiable character, and other lunette games for children. By providing material that is fun, but still contains important facts about lunette, children then have the means to become knowledgeable for future preservation and conservation work. The materials geared toward children could be distributed to schools and bookstores in order to promote awareness to the younger generation.

6.4 Fundraising

In order for the nonprofit organization to work towards the preservation of the lunette and portali, it must have the funds to do so. The following sections describe some ways the organization could raise the necessary funds for the restoration and preservation of the pieces.

6.4.1 Adopt-A-Lunetta

A program that would be beneficial to the restoration of portali and lunette is Adopt-a-Lunetta, or *Adottate-una-Lunetta* in Italian. This program could allow individual or corporate sponsors to fund restoration of lunette across the city. Both lunette and portali would profit

from a program of this nature because when a lunetta is restored, the portale that encompasses the lunetta could also be restored. Once a lunetta has been adopted, a decorative brick could be added to the sidewalk or wall adjacent to the piece, in recognition of the sponsor party if requested. Adopt-a-Lunetta could then produce a brochure of the adopted pieces with the sponsors and a brief description of the piece. This brochure could also list orphaned pieces and contact information. The Adopt-a-Lunetta program would also work well as a sub-set of the nonprofit organization mentioned above.

6.4.2 Support Letters

We drafted a sample letter to send to businesses and churches near lunette in need of repair. The letter introduces the reader to the lunette located near their home or business and asked for their support in monetary donations, to be sent to the Venice Project Center. In this sample letter, we also asked if the store owners would place a collection jar in their stores in order to help raise money to restore the lunette. A copy of this letter is found in Appendix F. We recommend that it be translated into Italian for the Venetians.

We also recommend that collection jars be distributed to stores or businesses that are interested in helping the lunette. Donations could be sent to the Venice Project Center or the new nonprofit organization. The donations collected could be used for the restoration of the structures, as well as education materials. By seeing these jars, people may become more aware of the lunette and hopefully choose to preserve what was left to them by a previous generation.

6.5 Promotional Materials

In order to successfully preserve the lunette and portale, it is important for the public to learn that the structures exist, as well as what they can do to help preserve the pieces. We have created a few prototypes of materials that could be used for this purpose. In our promotion

efforts, we aimed toward two groups of people we believe could have the largest influence in the preservation of lunette and portali in the future: tourists and children. The methods and prototypes we created are explained below. Hard copies of these materials can be found in Appendix F.

6.5.1 Walking Tours

Walking tours are one way for tourists to become exposed to lunette and portali. We have created three walking tours in order to show people some of the lunette and portali throughout the city of Venice, which will hopefully fuel an interest in the structures in the future. The tours describe the lunetta on each church or building, as well as explain the depicted subject. The tours also include a brief explanation of the problems facing lunette and portali, along with ways the reader can contribute or get involved in preservation efforts.

We created our own prototypes of themed walking tours of lunette and portali depicting biblical stories and a "Top Ten Tour" which highlights our ten favorite lunette in the city. Since there are already walking tours of Venice, we created an example of a supplement to "Venezia Beyond St. Marks: From the Zattere to Piazzale Roma", showing the locations of some of the nearby lunette and portali throughout the tour. This allows the tourists to follow the tour that is already created and successful, while still being introduced to lunette and portali.

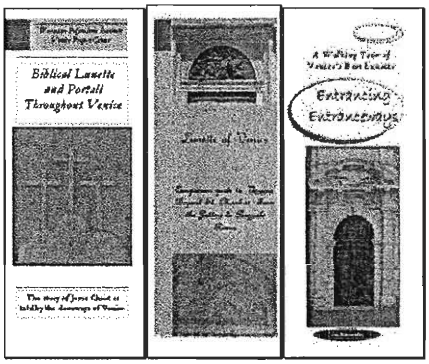

Figure 26: Walking Tours

The walking tours could be distributed around the city: museums, tourist information offices, and churches. A photograph display would provide a greater aesthetic appeal to entice a passerby to pick up a walking tour.

6.5.2 Calendar

We created a prototype calendar, showing a picture of a different portale or lunetta for each month. We also provided short descriptions for each one, including the date of construction and the area of Venice that it is located. A calendar is an efficient way to let many people know about these structures, and hopefully they will want to help in the preservation efforts.

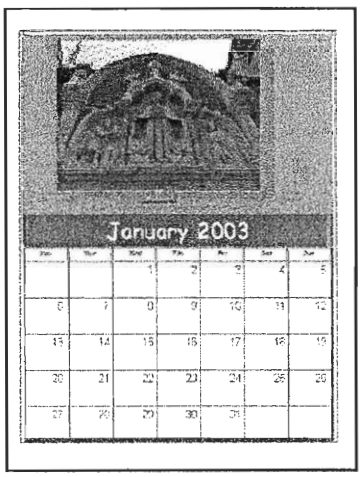

Figure 27: Sample of the Calendar

6.5.3 Restaurant Placemats and Table-toppers

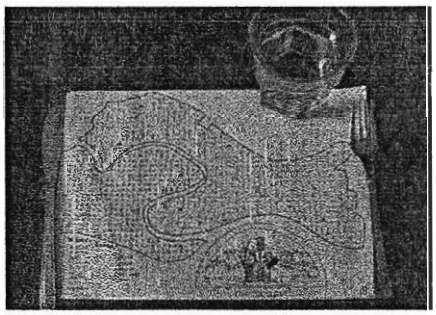

Figure 28 Prototype of Placemat

Another way to increase the public's awareness of the existence of lunette and portali is through restaurant materials. We have created a prototype placemat for children to color on and learn about lunette and portali while they wait for dinner. We also created a tri-fold brochure, called a table-topper, to be placed on the tables. The table-toppers will help to educate people about the existence of lunette and portali, as well as the declining conditions of the structures. It also explains what the reader can do to help the structures.

The table-toppers could also be used in restaurants that do not use paper placemats and would include the same information but in a more attractive form for upscale dining. Both the table-toppers and the placemats could be translated to the language of the majority of the customers at the restaurant, or be available in a few different languages.

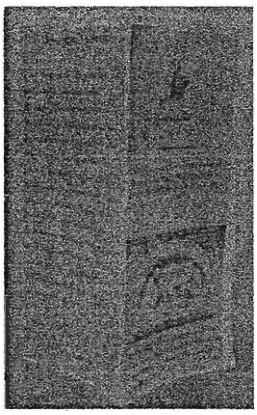

Figure 29 Table-topper for Restaurants

6.5.4 Website

All of above mentioned materials are accessible from the website we created. The site is focused on informing people about lunette and portali in a fun way. Since the website can be accessed by people beyond Venice, the knowledge of the portali and lunette can be spread, and the structures may receive more donations to be restored.

Figure 30: Screenshot of the Website

The website created by this project team could provide a basis for global awareness of Venice's lunette. We recommend that the current English version of the website be translated into at least three other languages (such as Italian, Spanish, and German) in order to aid in the global awareness efforts, and more information should be added to the website once the above recommended programs are in place. It is recommended that current condition information of each piece, as well as a brief history, be added to the website and have a portion of the website be specifically dedicated to the Adopt-a-Lunetta program. Included would be information on sponsored pieces and who adopted the structures. Non-adopted pieces could be listed, as well as contact information for interested parties.

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