



Museo Arzanà:

Preserving the Traditional Boats of Venice

An Interdisciplinary Qualifying Project
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I. Abstract

Preserving traditions and historical artifacts is the key to understanding and cherishing any culture. In Venice, it is the traditional boats that are the most important reminder of the city's ancient connection with the sea. Since World War II and the introduction of motorboats, traditional boats have begun to disappear and are in danger of being forgotten. This project, in association with the Venetian non-profit organization Arzanà, worked towards the preservation and restoration of traditional boats. Our group created an informative brochure, and website that allows for donations, which will increase Arzanà's ability to restore traditional boats. In addition, we were responsible for advertising the significant amount of work that the Venice Project Center students have done, and the great impact that work has had on Venice. We produced a newsletter to bridge the gap between current and past Venice students. We also identified the logistics for the publication of the book that will compile all of the information collected over the past 20 years. We concluded our project with several recommendations on how to further benefit the city of Venice through future project work, including the organization of a 20th anniversary celebration, and the creation of an interactive website for the Venice Project Center.

II. Executive Summary

Preserving historical artifacts is one of the best ways to keep important historical and cultural traditions alive. In Venice, these artifacts are traditional boats, which have begun to disappear since the introduction of motorboats after the Second World War. One non-profit organization, Arzanà, is dedicated to the restoration and preservation of Venetian traditional boats; however, their efforts are limited due to lack of funds and no efficient way of publicizing their cause. One aspect of our project was to create a public website that includes a method for collecting donations, and houses the archives of information collected and catalogued by previous students. We also created a brochure filled with information about Arzanà's collection in order to promote awareness about nautical heritage in Venice. The second half of our project was a commemoration of the 20 years of the Venice Project Center, and organizing the publication of a book comprised of the information gathered by all of the students from past Venice projects.

As a city whose history has long been linked to the ocean, Venice has a heritage deeply rooted in maritime traditions. Venetian artwork and architecture are prime examples of the nautical influence on the city. The famous *Arsenale*, the naval yard, was founded in 1104 and was built as boat yard, once employing over 16,000 people. There are 75 streets in Venice that are named after types of traditional boats, boat builders, and other such nautical terms. The traditional boats of Venice, however, are the most significant indication of the Venetian connection to the sea. Boats were used for most of the main needs of the Venetian culture: fishing, hunting, and transportation. Based on their intended use, traditional boats were built differently. However, all Venetian traditional boats have two similar characteristics: a flat bottom and a shallow draft hull. Due to the shallow water in the canals the boat builders crafted the boats with a flat bottom to keep them from hitting the bottom of the canal. The shallow hull allowed the boats to be dragged to shore with minimal structural damage, and also to make it easier for people to get in and out of the boat.

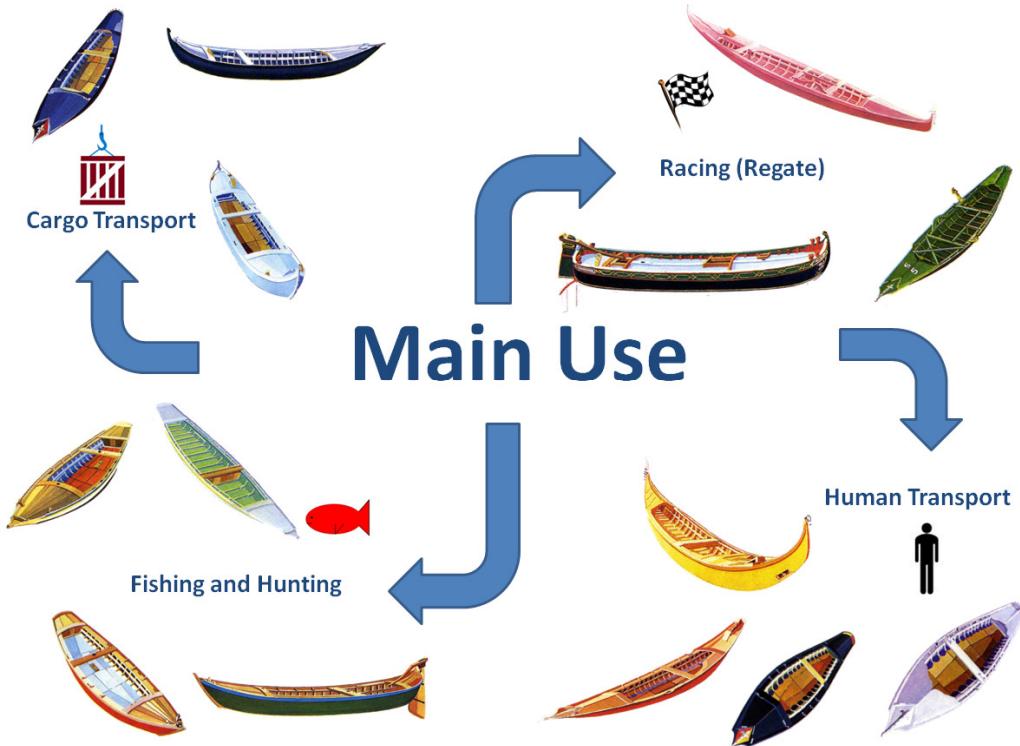


Figure 1: The different uses of the traditional boats of Venice

Since the Second World War, traditional boats have been slowly disappearing due to the increase in popularity of motorboats. One organization in Venice that is dedicated to keeping the heritage of the traditional Venetian boats alive is Arzanà. Arzanà consists of volunteer mariners who work to keep and restore traditional boats, as well as the nautical artifacts that are associated with them. Arzanà works with boats that have been abandoned or donated in an effort to keep these precious artifacts from disappearing all together.

In order to help Arzanà raise funds for preserving and restoring traditional boats, our group created a website that includes descriptions of Arzanà's collection, its mission, and the reasons why preservation is important. The website is comprised of two parts: information about the Arzanà association, and information about Arzanà's collection of traditional boats and nautical artifacts. The design was given to us by Silvia Capriata, a web designer, and the coding was done by a member of the group. As a first step towards making Arzanà part of a museum, this project focused on creating a brochure that would not only provide information about the organization and its collection, but also to provide a walking tour of its headquarters.

This project produced a number of tangible results. The first is the successful creation a website for Arzanà (www.arzana.org) that will contribute greatly to the preservation of traditional boats. Not only does the website provide information about the nautical heritage and traditional boats of Venice, it also gives Arzanà a more widespread way of reaching out to the public for donations.

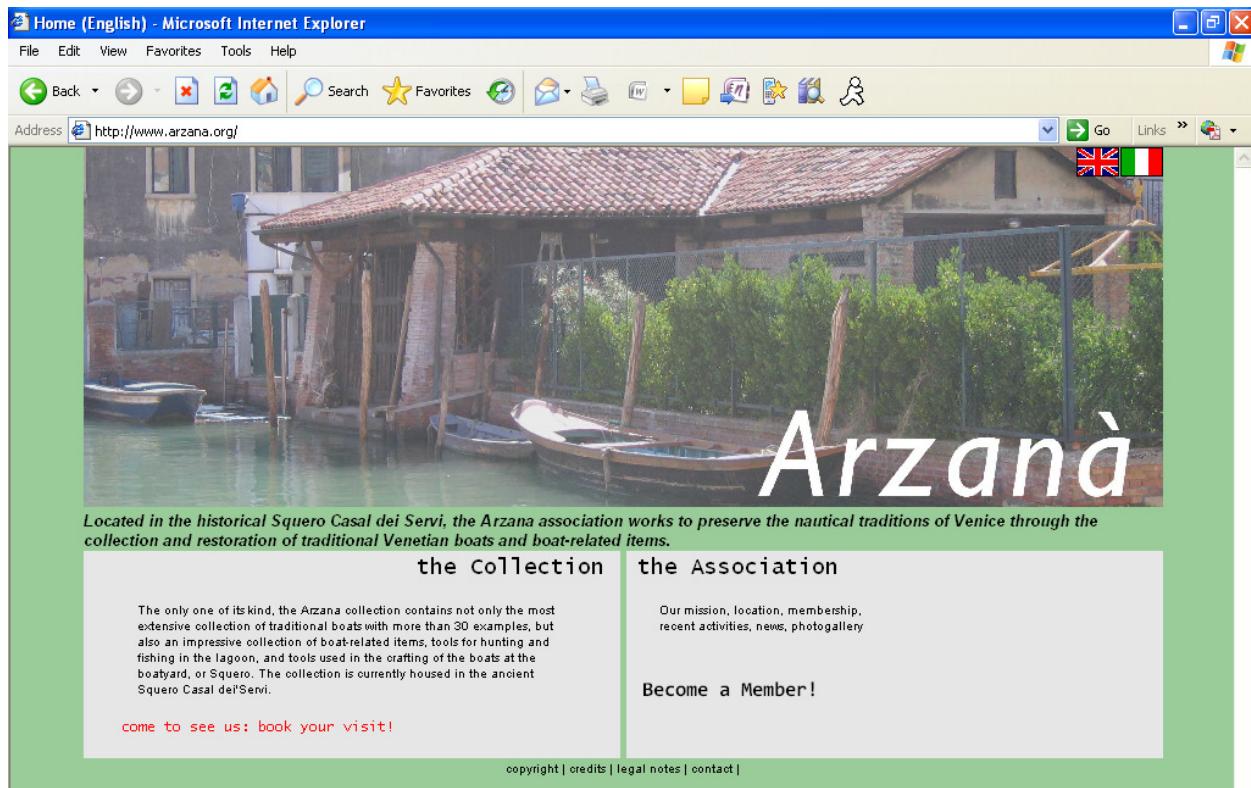


Figure 2: The home page of the new Arzanà website, divided between the actual organization and information about the collection.

The second major result from this project is Arzanà's first step towards creating a traditional boats museum – the creation of a bilingual brochure which outlines a guided tour of the Arzanà building. The brochure includes a floor plan of the old boat yard, with photographs and descriptions of notable artifacts inside the building. As another method of promoting awareness about the traditional boats and nautical heritage of Venice, our group also produced a book chapter encompassing these topics, which will be part of the book being published by the Venice Project Center.

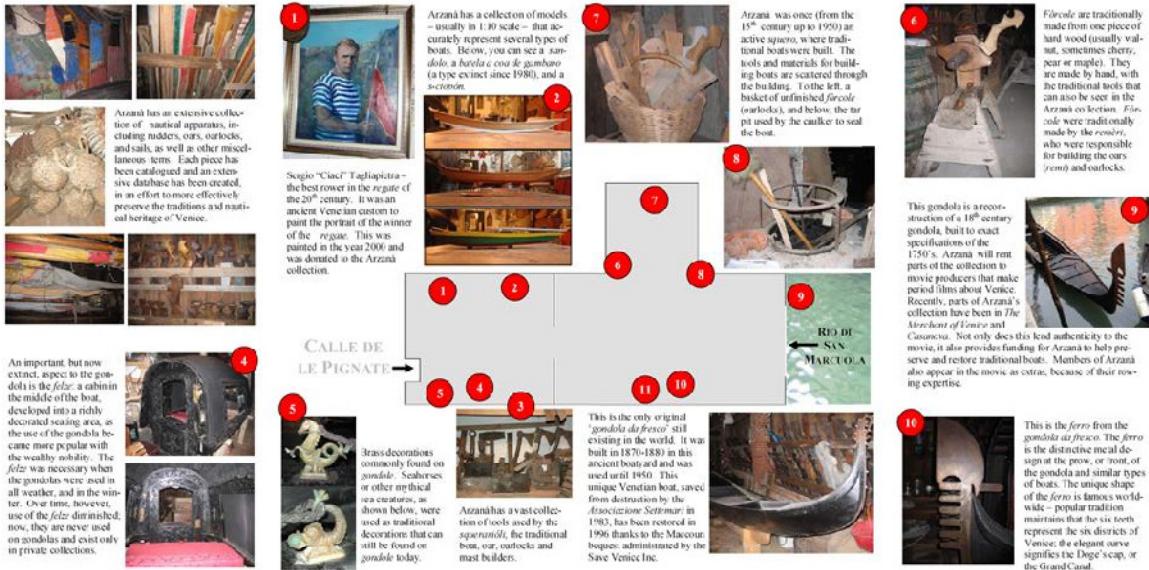


Figure 3: The inside of the informative brochure about Arzanà, taking viewers on a self-guided tour of the boatyard.

The second part of our project involved the publication of the book and the recognition of the 20th anniversary of the Venice Project Center. With nearly 450 students and 224 projects, the Venice Project Center is approaching its 20th anniversary. Over the years, the work done by WPI students has greatly influenced Venice, including the re-engineering of the cargo transportation system, which has been implemented in the city, making it much more efficient. A hydrodynamic study of the canals is one of the topics that are unique to the Venice Project Center. As of now, this study is the only information available on the hydrodynamics of the Venetian canals. Other projects include the restoration and cataloguing of public art, environment issues, and the proposal of a more efficient sewer system in Venice. Through the years, the Venice Project Center has been awarded 9 IQP awards, a significant honor, and also an indication of the quality and impact of the projects.

However, all of this important information is not easily accessible to the public, nor can it all be found in one location. The Center has also not been recognized for all of the achievements and substantial amounts of work that hundreds of dedicated students have invested in their IQP's in Venice.

As the production group, we did extensive research on book publishing, copyright laws, and pricing for the publication of a book containing information gathered by past students. We contacted Franco Filippi, a local publisher, who gave us information concerning the logistics of printing, publishing, and distributing such a book. In order to reach the alumni whose work would be published in the book, our group created a newsletter to update them on the current status of the Venice Project Center. We included summaries of each project, written by each respective group, as well as an update on the book publication and the 20th anniversary celebration. A survey was attached to the newsletter, which will provide feedback from the alumni concerning the 20th anniversary of the Venice Project Center.

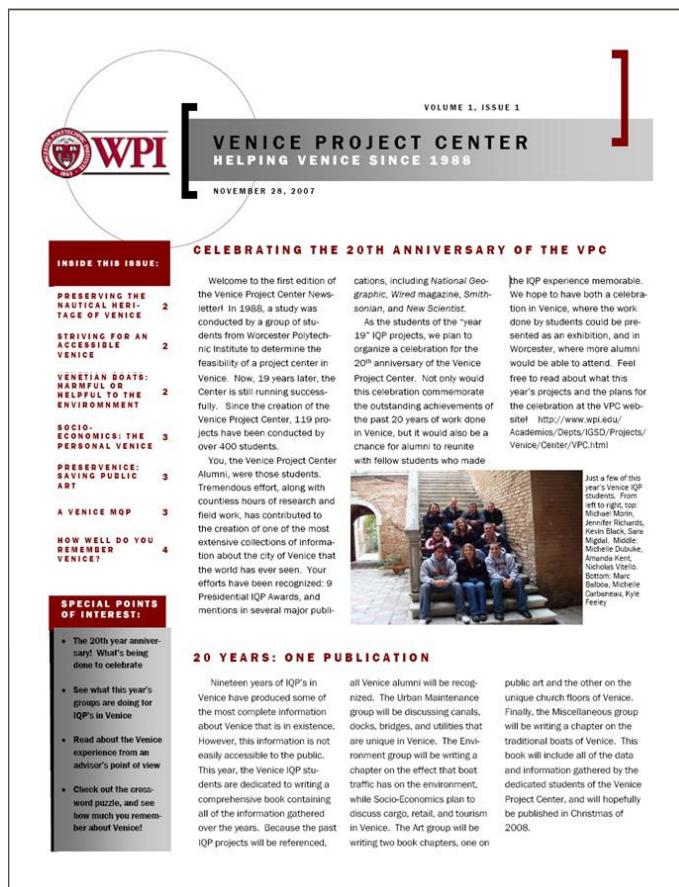


Figure 4: The front-view of the alumni newsletter

This project had to produce the logistics and information required for the successful publication of the book. After meeting with the local publisher, we determined that a book of about 208-256 pages would be ideal and would cost about 18 dollars a copy, with a minimum number of 1,000 copies. Once the book is fully edited and formatted, it will take approximately 20 days to one month to be ready to sell. In order to advertise both the creation of the book and the celebration of the 20th anniversary of the Venice Project Center, our group produced and distributed an alumni newsletter in both electronic and hard copy form. A survey was also included as a means to get feedback from the alumni with regards to the purchasing of the book and the 20th anniversary commemoration.

To ensure the preservation of traditional Venetian boats, it is important to continue current preservation efforts. We developed several recommendations that will allow the continuation of this project, in order to better preserve the traditional boats of Venice, including the final publication of the book, and the creation of an interactive website for the Venice Project Center. In addition, we feel that it is important to celebrate the great milestone the Venice Project Center has reached – its 20th anniversary – as well as involving the Venice alumni to a greater degree. There are also several ways we recommend advertising and selling the book that this year's project groups have dedicated themselves to writing.

III. Acknowledgements

We would like to extend our deepest gratitude to those who helped make this project possible and our stay in Venice a memorable experience.

Giovanni Caniato – We would like to thank our on-site liaison for giving us his utmost attention and dedication to our project. Without Giovanni investing considerable amount of his time and knowledge of traditional boats and the Arzanà Association, we would not have been able to complete this project.

Franco Filippi – Franco was an invaluable source of information on publishing, printing and selling books. He spent considerable time explaining to us proper layouts of chapters, as well as giving us extensive pricing information. We would also like to thank Franco for cooking his wonderful meals for us during our meetings, making our experience in Venice and learning about the publishing business much more enjoyable.

Daniela Pavan – We would like to thank Daniela for translating our Arzanà brochure into Italian. This was of utmost importance to the success of our project; without an Italian translation, our brochure would not nearly have been as effective.

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Silvia Caprieta – Silvia provided us with the excellent design of our website. She also spent a great deal of time helping us with the creation of the website, as well as ideas for the general design. We would like to thank her for helping us make our website a reality.

Andrea Novello – We would like to thank Andrea for his help with the GIS map on our Arzanà brochure. Without his help, our brochure would not have been nearly as complete or professional-looking.

Professor Kristen Billiar – We would like to thank Kris sincerely for all of the dedication and help that he has provided us with over the course of this project. His suggestions and advice were essential to the quality of our book chapter, final paper and presentation. His presence also made our stay in Venice a much more enjoyable experience.

Professor Fabio Carrera – We would like to thank Fabio for not only organizing our project and providing vital assistance, but for doing everything to make our stay in Venice enjoyable. Not only did Fabio help us get vital information relating to traditional boats, but he also made it possible for our website to go online. In addition, we would like to thank Fabio for making our general experience in Venice extremely enjoyable.

IV. Authorship

This group respectfully declines an authorship page. All four members of this group worked together equally in every aspect of this project.

V. Table of Contents

I.	Abstract	2
II.	Executive Summary	3
III.	Acknowledgements.....	9
IV.	Authorship.....	10
V.	Table of Contents.....	11
VI.	Table of Figures	13
VII.	Table of Tables	14
	Prologue	15
1	Introduction.....	16
2	Background	19
2.1	Preserving Traditional Boats.....	19
2.1.1	Nautical Heritage	19
2.1.2	Squeri and the Arsenale	20
2.1.3	Traditional Boats.....	21
2.1.4	Types of Traditional Boats.....	22
2.1.5	Traditional Boat Endangerment.....	26
2.1.6	Efforts for Preservation.....	27
2.2	The Venice Project Center	28
2.2.1	Problems in Venice	28
2.2.2	WPI and the Project Program	30
2.2.3	The Bootstrap Project	31
2.2.4	The Venice Project Center: The First Decade	31
2.2.5	The Venice Project Center: The Second Decade.....	33
2.2.6	Summary	34
3	Methodology	35
3.1	Arzanà	35
3.1.1	Creating a Website.....	35
3.1.2	Making a Brochure	36
3.2	Large-scale Publication	36
3.2.1	Traditional Boats and Nautical Heritage Book Chapter	36
3.2.2	Publishing	37
3.3	Venice Project Center Alumni	37
3.3.1	Newsletter	37
4	Results and Analysis	39
4.1	Arzanà	39

4.1.1	The Website	39
4.1.2	The Brochure	40
4.2	Large-scale publication	40
4.2.1	Traditional Boats and Nautical Heritage Book Chapter	41
4.2.2	The Evolution of the Gondola.....	41
4.2.3	Publishing	42
4.3	Venice Project Center Alumni	42
4.3.1	Newsletter	42
5	Conclusions and Recommendations	43
5.1	Updating the Arzanà Website	43
5.2	Expanding the Arzanà Brochure	43
5.3	Continuation of the Venice Alumni Newsletter.....	44
5.4	Creating and Updating a Venice Project Center Website	44
5.5	Advertizing and Selling <i>Venice 2.0</i>	45
5.6	Exhibit or Celebration of the VPC 20 th Anniversary	45
5.7	Final Thoughts.....	45
6	Bibliography	47
	Appendix A – Annotated Bibliography	48
	Appendix B – Arzanà Website	51
	Appendix C – Arzanà English Brochure	55
	Appendix D – Arzanà Italian Brochure	57
	Appendix E – Nautical Heritage and Traditional Boats Book Chapter	59
	Appendix F – Alumni Newsletter	72
	Appendix G – Alumni Survey	76
	Appendix H – Executive Summary Poster	77

VI. Table of Figures

Figure 1: The main uses of the traditional boats of Venice	4
Figure 2: The front view of the new Arzanà website	5
Figure 3: The inside of the Arzanà brochure	6
Figure 4: The front page of the alumni newsletter.....	7
Figure 5: A ceremonial ring.....	19
Figure 6: The <i>Translatio of St. Mark</i>	19
Figure 7: Sotoportego del Traghetto	20
Figure 8: The ancient <i>Arsenale</i>	20
Figure 9: Map of <i>traghetti</i> in 1687 and in 2004	21
Figure 10: A <i>topo</i>	22
Figure 11: A <i>sanpierota</i>	23
Figure 12: A <i>s'ciopon</i>	23
Figure 13: A <i>caorlina</i>	24
Figure 14: A <i>peata</i>	24
Figure 15: A <i>sandolo</i>	25
Figure 16: A <i>mascareta</i>	25
Figure 17: The traditional rental facilities closing	26
Figure 18: A <i>batéla a coa de gambero</i>	27
Figure 19: Arzanà	28
Figure 20: Ambulance route	32
Figure 21: Re-engineered boat routes	33
Figure 22: Forcole part of the website	39
Figure 23: Inside view of Arzanà brochure	40
Figure 24: The evolution of the gondola	41

VII. Table of Tables

Table 1: Projects, Sponsors and Awards	34
Table 2: Prices for Book Publishing	42

Prologue

Due to the nature of this project, this report contains a dichotomy between the two major topics of the project. The two topics of the project are the production of a 20th anniversary celebration of the Venice Project Center and the preservation of the traditional boats of Venice. This report was written in such a way that in each section the traditional boats will be discussed first, followed by the 20th anniversary and production aspect of the project.

1 Introduction

Preservation of historical artifacts, traditions, and technology is the key to remembering the past. In North America alone there are over 3,500 preservation organizations, ranging from museums to non-profit organizations.¹ These organizations focus on the preservation of traditions and history of past civilizations. As the years go by, craftsmen who practice traditional methods have been put out of business, in lieu of faster, bigger production companies. There are those who try to help keep the memories of these artisans alive, however. The National Trust for Historic Preservation provided \$17 million in aid for preservation all over the United States, demonstrating the lengths some are willing to go to preserve traditions.² The United States is not the only country concerned with preservation. Europe, which has an ancient and rich history, is very concerned with preserving its traditions and culture. However, in Venice, Italy there is a cultural treasure on the verge of disappearing forever.

With the introduction of motorboats after the Second World War a drastic decline in the dependence of rowed traditional boats took place. In 1945, there were 42 rowboat rental facilities in Venice, and today there are none³. The rental facilities in Venice now only stock motor boats. Very few boats traversing the canals are rowed, and the serenity which made Venice famous for centuries has been drowned in the roar of motors. As rowed boats have become more and more obsolete, owners have stopped taking care of them, and when the boats are no longer usable they are abandoned. The problem is that as certain boats start to disappear there is no way to reconstruct them. There were no blueprints used to build the boats, which were hand crafted by artisans whose very line of work is now limited only to the production of the gondola-- the only traditional boat still being constructed in boatyards today. In 2004 a group of WPI students classified some of the traditional boats as being rare, endangered and extinct. Of the 50 known traditional boats, six were found to no longer be in existence and 13 were in the category of endangered implying that only three or less of each type was still on the water in Venice. So, about 20% of the known traditional boats were either no longer in existence or on the verge of disappearing. With no written way of reconstructing these boats it is almost certain they will be completely forgotten. Something must be done to preserve what is left of the traditional Venetian boats.

¹ *Preservation Directory.com*. 30 Sept 2007.
<<http://www.preservationdirectory.com/HistoricalPreservation/Home.aspx>>.

² “Funding.” *National Trust for Historic Preservation*. 29 Sept 2007. <<http://www.nationaltrust.org/funding/>>.

³ E04 Traditional Boats of Venice

Currently a non-profit organization called Arzanà, is working to keep the nautical traditions of Venice alive. They are a group of volunteers from the Veneto and Adriatic region united under the common interest of preserving the maritime culture of Venice⁴. Arzanà currently have a collection of about 50 traditional Venetian boats which have either been abandoned by their owners, or donated to the organization. This organization has made efforts to preserve and reconstruct a few of the boats, but without proper funding, the vessels are left to age in a crowded storehouse. As a non-profit organization they rely mainly on donations from the public to fund their cause, but do receive money from other sources, such as historical movie producers looking to rent boats or other supplies. The goal of one day creating a museum dedicated to the traditional boats of Venice is a big aspiration of Arzanà and its members. Their lack of publicity, however, makes it very difficult to receive donations from sources outside of Venice.

Most people outside of Venice have never heard of the efforts of Arzanà mainly because they have no website, or way to reach out to the public. Currently tours of the Arzanà building, which was once a traditional boatyard, are given but nothing has been truly structured. The building is an ideal place to have a traditional boats exhibit, and guided tours could be organized for people provided some sort of structured exhibit is planned. Previous groups have done work to catalogue Arzanà's inventory into digital databases, and also proposed a webpage which would allow the organization to receive donations, but no further course of action in this area had been taken.

In an effort to reach out to the public and make them aware of the state of the traditional boats and of Arzanà, our group has created a website that includes a method for collecting donations and houses the archives of information collected and catalogued by previous students. The site is bilingual for both English and Italian speaking people. In addition to this, and in an effort to jumpstart Arzanà's traditional boat museum idea, our group decided to create a brochure which gives information about the association and about the collection. It mimics the two faces of the website by having this structure. A floor plan of the old boat yard can be found inside which acts as a guide for a walking tour of the building. By providing photographs of significant artifacts inside the building along with brief descriptions, the brochure helps to transform what was once an old boatyard into a nautical heritage exhibit. This is the first big step towards the end result of a museum dedicated to the traditional boats of Venice.

⁴ Arzanà Statuto

Our group was also charged with the task of planning a 20th anniversary commemoration for the Venice project center. In 1988, a group of 6 WPI students conducted a bootstrap project which analyzed the feasibility of having a project center in Venice, and 19 years later there have been a total 447 students who have completed 124 projects. The result of this hard work is an extremely extensive collection of information about Venice. Despite this phenomenal achievement there has been no definitive way to spread the information and recognize the accomplishments of these students. As a way to organize this information and make it available to the public in a convenient way this group decided to research the feasibility and logistics of publishing a book about Venice using the information compiled over the last 20 years. Each group this year was given the task of writing one or more book chapters using the data from past projects with the overall goal of being published. In order to publicize this book and to reconnect with the alumni whose work will be used as content, this group also completed the task of starting a yearly newsletter for Venice Project Center alumni to inform them of current projects and to bring to their attention the 20th anniversary.

2 Background

2.1 Preserving Traditional Boats

The city of Venice is built on 125 different islands, which are connected by over 182 canals and 473 different bridges. However, that level of structure didn't always exist – early in the city's history, the individual islands were isolated in their development; the only contact between islands was wooden planks and boats. Early Venetians recognized the link that they had with boats – they built homes not just for themselves, but also open-bottomed, three-sided structures which could house their boats. By the sixth century, they were known as formidable seamen. Venetians were famed for their maritime skills, including the innate ability to sail boats against the current.⁵

2.1.1 Nautical Heritage

Many Venetian customs and traditions developed around the dependence on the sea. According to tradition, the Doge, the ruling entity of Venice, was “married” to the sea. Each year, in a celebration called the *Festa Della Sensa*, the Doge would cast a large ring, as seen in Figure 1, into the sea. Similar to other cultures, Venice was prolific in its creation of art and architecture, and pieces typically were focused around different aspects of the city’s maritime heritage. One of the most popular tourist sites in Venice, St. Mark’s Basilica, contains many pieces of artwork depicting



Figure 5: The ceremonial ring thrown into the sea each year by the Doge



Figure 6: The *Translatio of St. Mark* artwork relating to the sea is not just seen in churches – many pieces of public art seen throughout the city have a nautical theme.

different boats and the sea. One example is the *Translatio of St. Mark*, seen in Figure 2, which is a mosaic from the 13th century that can be seen on the west-wing vault in the San Clemente Chapel in St. Mark’s.⁶ Similar mosaics can be found on the three other walls of the chapel, and illustrate not just Venice’s link with the sea, but the connection between the sea and religion. However,

⁵ Vittoria, Eugenio. The Gondolier and his Gondola. Pg 17

⁶ http://www.muspe.unibo.it/period/MA/index/number1/fenl1/fe1_3.htm.

These are several examples of the different nautical heritage elements which can be seen throughout the city of Venice. In 2005, a study was conducted by students from Worcester Polytechnic Institute identifying the nautical heritage of Venice. In the study, 33 places of nautical interest were identified including, but not limited to, ten churches, one monument, three museums, and 14 *Squeri*. These can be seen simply by visiting popular tourist sites, such as San Marco, Palazzo Ducale, and Museo Correr. The nautical heritage of Venice is seen not only in building and artwork, but also in street names found throughout the city. The streets were often named after the different vendor's shops located there, and though many of those shops have closed the names remain. Worcester Polytechnic Institute, in a similar study, catalogued 26 street names containing the word *Barche* (*boats*), four containing the word *Felzi*, nine containing *Remer* (*oar-maker*), 17 containing *Squeri* or *Squero*, and 19 containing *Traghetto* (*gondola taxi*) as seen in Figure 3, with a total of 75 streets referring to some kind of nautical aspect.⁷



Figure 7: Sotoportego del Traghetto, just one of the 75 street signs relating to nautical heritage

2.1.2 Squeri and the Arsenale

In a city that demands boats for transportation, the art of shipbuilding has been a great Venetian tradition dating back as early as the city itself. Traditional boats are always handcrafted at specific boat building sites known as *squeri*. These *squeri* are home to some of the world's most talented wooden boat craftsmen, the *squerarióli*. Most *squeri* are small,



Figure 8: The ancient Arsenale

meant for building one particular type of boat. Perhaps the most unique aspect of the *squeri* is the method of transporting boats in and out of the water. The loading area of the *squeri* consists of a downward sloping ground that goes directly from the boatyard into the canal. This allows effortless transport and also eliminates the risk of damaging boats.

The largest *squero* in Venice is the *Arsenale*, founded in 1104 A.D., and still standing today. The *Arsenale*, as seen in Figure 4, was the boat production and repair center, or *squero*, of Venice; at the height of its power,

⁷ Preserving the Nautical Traditions and Maritime Heritage of Venice, Italy. 2005.

approximately one boat was produced per day, and it employed over 16,000 people.⁸ Today, the *Arsenale* is primarily a naval base, but it sits adjacent to the Naval History Museum of Venice and serves as a part of the biannual art exhibit hosted by the city of Venice.

2.1.3 Traditional Boats

With a history so rich in maritime heritage, it is easy to see the link the Venetians have with boats. The term “traditional boat” in Venice refers to a boat with a flat bottom and a shallow draft hull, two characteristics that have very distinct and practical purposes.⁹ Due to the shallow water in the canals, the *squeriorli* were forced to craft the boats with a flat bottom to keep them from hitting the bottom of the canal. The shallow hull allowed the boats to be dragged to shore with minimal structural damage, and also to make it easier for people to get in and out of the boat. Another benefit to the shallow hull is the balance it offers for passengers when standing in the boats, which is a strange concept for most people.¹⁰ When crossing the Grand Canal in a type of gondola called a *traghetto*, it is customary for the passengers to remain standing. Traditionally the *traghetti* were not confined to transport across the Grand Canal, but as can be seen from the *traghetto* map of 1697, it was also a very common way of getting from island to island in Venice. Figure 5 compares this to the *traghetto* map of 2004¹¹, we can note that not only are the *traghetti* strictly in the Grand Canal, but the number of points where someone could take a *traghetto* have decreased from 43 stations to the eight that are presently active.



Figure 9: Map of *traghetti* in 1697 and in 2004. The *traghetti* were originally used as taxis to carry people all over the lagoon and to other destinations. Of the 43 stations that were originally in use, only 8 still remain. The remaining *traghetti* are now only used to ferry people across the Grand Canal.

Although the number of *traghetti* has decreased, they are still used in modern Venice. It is the most practical way to get across the Grand Canal, at points where pedestrians are

⁸ *The Boats of Venice*. Pg 33

⁹ *The Boats of Venice*. Pg 25

¹⁰ *Idem*

¹¹ Map provided by 2004 IQP, entitled *The Traditional Boats of Venice*

unable to cross by bridge. Using a gas motor would be wasteful and create a wake that would not only adversely affect travel up and down the length of the canal, but cause damage to the canal wall as well. However, the most common traditional boat which can be seen today throughout Venice is the gondola, truly the modern-day symbol of the city. Tourists from all over the world will spend 100 euro to take a romantic ride in a gondola, which through the years has turned into a multi-million dollar business.¹²

2.1.4 Types of Traditional Boats

Traditional Venetian boats were designed based on their intended use. These uses include transport of large and small goods, public transportation, construction, house maintenance, the police, military defense, and fishing. Because traditional boats were built according to their use, they can be separated into three main categories: fishing and hunting, cargo transportation, and human transportation. Each category contains boats of similar size, shape, and intended use.

2.1.4.1 Fishing and Hunting

Venice, like many coastal cities, is known for its seafood cuisine. Fishing in the Lagoon requires boats that are capable of transporting large amounts of fish back to the island, and that have the ability to maneuver to and from the location of the fish.

The *topo*, commonly translated as “mouse,” is typically a 24 meter long sail boat with a large rudder in the rear for steering.¹³ The *topo*, shown in Figure 6, is particularly unique because of the position of its sail; the mast is located about one third of the way along the length of the hull. The Venetian waterways tend to become very shallow during low tides, particularly the smaller canals. In order to travel through these shallow waters, the *topo* was built with the ability to lift its deep rudder and lock it in an upward position, thus preventing the rudder hitting the bottom of the canal. A final feature of the *topo* is the hollowed-out storage compartment in the hull, which allows the fisherman to store his catch in a cool, wet place during transport back to land.¹⁴



Figure 10: A *topo*, used for fishing in the lagoon

¹² Witty, Anne. “Beyond the Gondola.” *Wooden Boat*. No. 153.

¹³ The Boats of Venice. Pg 91

¹⁴ Tipologie dei natanti veneziani. Pg 45

The *sanpierota*, seen in Figure 7, is also an example of a popular fishing vessel found in early Venice. The name is derived from its place of origin, San Pietro, in Volta.¹⁵ It is a member of the *sandolo* family of boats, and was popular for its sturdiness, reliability, roominess, and relatively simple maintenance. Like the *topo*, this boat was sail-powered



Figure 11: A *sanpierota*, a common fishing boat

before the days of motors. It is typically built with a length of six to seven meters.¹⁶ The *sanpierota* was normally owned by Venetian families; they were painted with different

bright colors to distinguish one from the other. It was also commonly rented, similar to car or moving-van rentals. As recent as the 1930's, there were over 50 row boat rental facilities in Venice.

The *s'ciopon* "long gun" is a unique hunting boat designed for the specific task of allowing one man to both navigate the boat and shoot ducks.¹⁷ The *s'ciopon* is one of the few traditional Venetian boats that can be rowed sitting down. The gun attached to the boat is three meters long, and is pre-set to be aimed so that a swimming duck can be shot without moving the gun up or down.

These boats are no longer used today for hunting, but instead are common among young boys for short distance transportation. The boat rides very low in the water, as can be seen in Figure 8.



Figure 12: A *s'ciopon*, a unique traditional boat, with a 3 meter gun extending in the front so the hunter can row and shoot

2.1.4.2 Large Cargo Transport

The city of Venice relies on boats for most large cargo transportation. Cargo boats are filled with anything from fresh fruit to construction supplies – everything the city needs is transported by boat. Transporting large, heavy cargo requires a vessel strong enough to do so, while remaining maneuverable throughout the canals.

¹⁵ The Boats of Venice. Pg 102

¹⁶ *Idem*

¹⁷ The Boats of Venice. Pg 54

The *caorlina*, seen in Figure 9, is about 10 meters in length, and is known for being fast, easy to handle, and capable of carrying a large amount of goods. It was commonly used to carry fruits and vegetables in large quantities.¹⁸ A *caorlina* is typically rowed by two people; however, up to eight may row at one time. To accommodate such a large amount of rowers, the *caorlina* was built to be symmetrical along the width and length.¹⁹ Such symmetry is rarely found in traditional Venetian boats. It is this attribute that allows the *caorlina* to be used in many *regate*, or boat races, today.



Figure 13: A *caorlina*

The largest of all traditional Venetian cargo boats is the *peata*. It was used throughout Venice to transport all sorts of large bulky materials, particularly those needed for

construction. It is typically 16 meters in length and is normally manned by two oarsmen, but can be rowed by as many as 16.²⁰ The manner in which this boat is propelled is what makes the *peata* truly special. Instead of rowing with a bladed oar, which utilizes the water to move the boat forward, the oarsmen stand on the boat and push the



Figure 14: A *peata*, the largest cargo boat. The boat has been extinct since 1980.

oar against the bottom of the canal. They progress the boat along by walking slowly from one end of the boat to the other, as seen in Figure 10.²¹

2.1.4.3 Human Transport

In early Venice, traditional boats were used as a means of both personal and public transportation. Whether it was ferrying Venetians across the Grand Canal or transporting royalty, Venice depended greatly on the presence of row boats to reach their destinations.

¹⁸ The Boats of Venice. Pg 122

¹⁹ *Idem*

²⁰ The Boats of Venice. Pg 124

²¹ The Boats of Venice. Pg 126

The *sandolo*, shown in Figure 11, was the most common form of transportation in the Lagoon. The most common use of the *sandolo* was private ownership; however, it was also used as a water taxi or fishing boat. This vessel is one of the few that is still very common today, although many now have an attached motor. The *sandolo* can also be commonly seen in races throughout Venice.



Figure 15: A *sandolo*

Another common means of transportation was the *mascareta*. This boat gained popularity because it was lightweight, easy to maneuver, and above all, inexpensive. It



Figure 16: A *mascareta*

weighs as little as 120 kilograms and is about six meters in length.²² This boat is one of the simplest of the traditional boats, and therefore the most popular among modern amateur boat builders. As motor boats gained in popularity, boat owners began purchasing personal motor boats, which meant that privately owned crafts like the *mascareta* fell out of existence. This boat can be seen in Figure 12.

Perhaps the quickest of all traditional boats, the *puparin*, was the vessel of choice for a faster means of transportation. Its slim design made it skim quickly over

the water of the shallow canals. This member of the *sandolo* family was the most expensive and difficult to obtain. Owning a *puparin* was considered a symbol of status because they were expensive to buy. It is for this reason that members of Italian nobility were commonly transported in a *puparin*.

Despite the fact that such a huge variety of boats once populated the canals, it is common to walk around Venice today and see the overly-romanticized *gondola* as the only traditional boat on the water. It is much more common to see people steering motorized

²² The Boats of Venice. Pg 52

boats through the narrow canals or around the lagoon, rather than rowing traditional boats. Where have these hundreds of traditional boats gone?

2.1.5 Traditional Boat Endangerment

Due to the overwhelming increase of motorized boats in Venice, the traditional rowed boats are being abandoned and nearing extinction. The slow disappearance of traditional boats can be best seen through the evolution of the rental facilities, known as *fitabatèle*, which would rent boats for work or pleasure. Between 1960 and 1975, as seen in Figure 13,²³ there were 17 rental facilities that were forced to close as motorboats became more popular. There were once 52 shops that rented traditional boats; today, none remain. The motorboat rental shops that have appeared over the past ten years do not rent boats for pleasure; instead, the boats are used for work purposes, such as carrying heavy materials or transporting goods for construction sites.

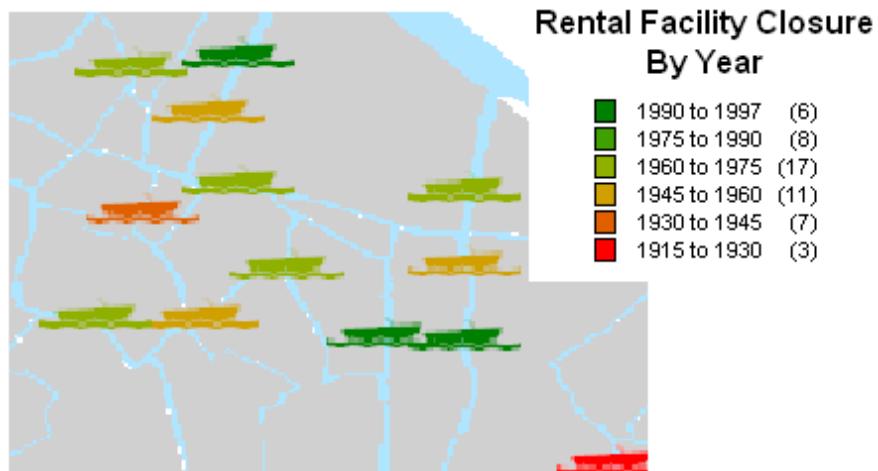


Figure 17: Traditional, rowed boat facilities closing. The largest decline number closing occurs from 1960-1975, which is approximately the same time that motor boats starting gaining in popularity.

The *squeri* that were once one of the most important parts of Venice are also disappearing. There were originally fourteen main *squeri* that were active in the building of traditional boats. Now, only seven of the fourteen are still operational; although they repair many types of traditional boats, the only new boats which come out of them are *gondole*, the last of the popular traditional boats.

²³ This figure was provided by the 2004 IQP, entitled *The Traditional Boats of Venice*

As renting traditional boats became more difficult, membership for the many rowing clubs around Venice increased. Although traditional boats have become increasingly endangered, the Venetian love of traditional rowing has not diminished. Rowing clubs offer members social interaction for those similarly interested in the unique style of Venetian rowing. The 26 rowing clubs in Venice are known as *remiere*, and each rowing club has a collection of boats, including rare or unique traditional boats. For example, Figure 14 shows a *batèla a coa de gambero*, a very rare boat owned by *Ramiera Serenissima*. About 28,000 Italians belong to rowing clubs in Venice and northern Italy, which in certain areas practice the Venetian style of rowing.²⁴ These rowing clubs have helped keep the enthusiasm for traditional boats and rowing alive.



Figure 18: A *batèla a coa de gambero*, a very rare traditional boat owned by *Ramiera Serenissima* (The Serenissima rowing club). Rowing clubs have helped to keep the tradition of Venetian rowing alive.

2.1.6 Efforts for Preservation

2.1.6.1 Regata

Traditional boats are in constant danger of becoming extinct. There are, however, efforts to preserve the nautical history of the city of Venice. There are annual races held in Venice, not only as a sport, but also to preserve the ancient Venetian tradition of rowing traditional boats. The ten famous *regate* are annual races, used to understand and respect the lagoon – to help rediscover Venice’s maritime culture. The *regate* are vastly popular, for both participants and for viewers. These races are one of the most important ways that traditional boats, rowing, and maritime heritage stay alive in Venice.

²⁴ *The Traditional Boats of Venice*. 2004 IQP

2.1.6.2 Arzanà

There is one organization dedicated to preserving traditional boats and the maritime heritage of Venice. This organization is Arzanà, which is headquartered in the *Squero ai Servi* in the Cannaregio district of Venice. The *squero* was built in the 15th century, and remained active until 1920. Although no longer active, Arzanà uses the *squero* building for boat preservation and as a storage facility for maritime accessories. Founded in 1992, Arzanà promotes the study, restoration and conservation of the traditional boats of Venice. In the last fifteen years it has acquired, and in part restored, about fifty typical boats of Venice and the lagoon, many of them the only one surviving of their kind.²⁵

To be maintained efficiently and, where possible, fully returned to sailing and rowing capacity, many of the traditional boats in the Arzanà collection need radical restoration. This is something that requires financial support that Arzanà – a non-profit organization run by volunteers – often lacks. Arzanà has rented parts of the collection to films making period

pieces about Venice. For example, several of Arzanà's boats and nautical artifacts can be seen in the recent movies, *The Merchant of Venice*, and *Casanova*. Arzanà also appeals to local and international agencies, companies, foundations and associations, who understand the need to safeguard traditional boats and to convey to future generations the importance of what was once, and still should be, the most common aspect of the Venetian culture.



Figure 19: Arzanà, located in an ancient *squero*

2.2 The Venice Project Center

2.2.1 Problems in Venice

Although it is arguably one of the most beautiful cities in the world, Venice faces many challenges. With recurring floods, introduction of motorized boats, the increase in pollution, and the overwhelming increase of tourism, Venice is facing problems that require immediate attention.

²⁵ Arzanà statuto

Venice both thrives on and suffocates from tourism. In the summer months, the more popular routes along small alleyways and over the many beautiful bridges are so thronged with tourists that pedestrian traffic is brought to a halt. Not only is the sheer number of tourists increasing, the number of day visitors is also rising. This means that the people visiting the city each day are not contributing to the income of restaurants and overnight hotels. A large problem in Venice is due to the declining population, the decreasing tax base, and the overwhelming number of tourists that do not add to the income of the city needed for repairs and restoration.

Venice is located on a lagoon, which is a wetland coastal area that consists of seawater, mud flats, salt marshes, fish farms, islands, reclaimed areas of dry land, sand banks, and a coastal strip between the lagoon and the Adriatic Sea. The lagoon has a mean water depth of 1.2 m and a surface area of about 550 km², of which just over 400 km² is open to the tides of the Adriatic Sea.²⁶ Since the 1950's, the city has been increasingly immerse by periodic floods, in part because it is sinking. Increased air pollution from cars and industrial smoke has contributed to the deterioration of the ancient buildings and works of art, and the high phosphorus and nitrogen content of the lagoon has stimulated algal growth, which has depleted marine life. Such environmental problems have led to a steady depopulation of Venice to the mainland over the past several decades.²⁷

Among the problems typical of Venice, the most evident come from *acqua alta*. *Acqua alta* refers to a heavy high tide which will often flood the city. Although these floods are generally limited to a few inches of water, *acqua alta* can nevertheless become a hindrance to the everyday workings of the people of Venice. Not only does the constant flooding affect the historical city, but the high increase of motorized boat traffic is eroding the canal walls, which provide the basic support for the city infrastructure. All of these problems are a combined concern that plagues Venice and its inhabitants. It is because of these concerns that many organizations have been created that are dedicated to the preservation and restoration of Venice. Among these organizations is the Worcester Polytechnic Institute Venice Project Center (VPC).

²⁶“Safeguarding Venice.” *Science/Technology*. 28 Aug. 2000. 7 Oct 2007.
<<http://pubs.acs.org/cen/coverstory/7835/7835sci1.html>>.

²⁷ “History Founding and Rising of Venice. *InfoPlease.com*. 3 Oct 2007. <<http://www.infoplease.com/ce6/world/A0861775.html>>.

2.2.2 WPI and the Project Program

Worcester Polytechnic Institute is a university located in Worcester, Massachusetts. It is unique in that it requires students to participate in a series of projects that provides an acute awareness of the social implications of technology and engineering. This program, known as the “WPI Plan” is described in the 2007-2008 undergraduate catalog.

In 1970 WPI adopted a revolutionary new undergraduate program known as the *WPI Plan*. The Plan replaced the traditional rigidly-prescribed curriculum — typical of conventional engineering education — with a flexible, exciting, and academically challenging program aimed at helping students to learn *how to learn*. The Plan continues the “Two Tower” tradition by synthesizing classroom experience in projects that solve real world problems. The WPI project program prepares graduates for their future professional lives by helping them learn how to identify, investigate and report on open-ended problems. Alumni indicate that project experiences also prepare them uniquely well for managing team efforts, and for communicating both in oral and written forms according to professional standards.

All WPI students complete two major projects in addition to requirements in general education and in their major fields. The Major Qualifying Project (or MQP) challenges students to solve problems typical of those to be encountered in their professional discipline. The Interactive Qualifying Project (or IQP) presents an issue at the intersection of science, technology, and culture, and emphasizes the need to learn about how technology affects societal values and structures. Students also achieve intellectual breadth through degree requirements in the social sciences and humanities and arts. In addition, students achieve some depth within the Humanities and Arts by completing an Inquiry Seminar or Practicum on a theme emerging from a self-selected series of courses. Taken together, these activities emphasize that professionals must learn not only to create technology, but also to assess and manage the social and human consequences of that technology.²⁸

The Interactive Qualifying Project, known as the IQP, is a major part of the WPI, and is designed to give students an opportunity to consider the social implications of engineering and technology when developing solutions on a practical level. The IQP is designed to not only provide a practical education to students; it is also designed to solve some of the challenges in society.

²⁸ WPI Undergraduate Catalog 2007-2008. Worcester Polytechnic Institute: 2007.

2.2.3 The Bootstrap Project

The first Venice IQP commenced in the fall of 1988. It was known as the “Bootstrap” project, and it had two main goals: determining the logistical feasibility of a project center in Venice, and gauging the level of interest by the Venetian community in having American students work on some of the city’s more pressing concerns. Six students traveled to Venice in order to find urban, environmental, scientific and industrial organizations that would be potentially interested in sponsoring a WPI IQP. In order for such a project center to exist, the group needed to have solid project proposals coming from the Venetian community, indicating a certain level of interest for hosting WPI students completing their Interactive Qualifying Projects.

The project group documented what was necessary for students to travel and work in Venice. They came up with proposals for types of projects that would benefit society in Venice, and presented these to potential sponsors. Because of the success of the Bootstrap project, WPI established the Venice Project Center, making it the second oldest international project center, after the project center in London.²⁹

2.2.4 The Venice Project Center: The First Decade

The Bootstrap project was the first of many IQP’s in Venice. 1988 and 1989 were investigatory years, dedicated to determining the suitability of certain topics as IQP’s. These first projects created a foundation for future groups doing their IQP’s in Venice.

Many of the original projects focused on the lagoon environment and the reutilization of the abandoned islands surrounding Venice. Some topics included: the feasibility of organic farming, the introduction of an educational park, which would inform the public of the unique and interesting wildlife of the lagoon, and archaeology of the lagoon. This project earned the Venice Project Center its first Presidential IQP Award, a prestigious honor given to the best IQP of the year.

In addition to addressing environmental concerns were projects dedicated to the public art of Venice. In 1990, one project group investigated the effects of pollution on the public art. Later projects created an extensive catalog of every piece of public art, complete with detailed descriptions as well as methods for restoration. Another art program, which won the 1991 Presidential IQP Award, cataloged the inventory of the *Ca'Rezzonico* Museum, allowing easy management, something that was not possible previously.

²⁹ Cote, Michael, et. al. *A Feasibility Study of the Venice Project Center*. 5 May 1989.

It was during this first ten years that the Venice Project Center began to focus on one of the major concerns of the Venice community: canals. Students involved in these projects worked extensively on the canals, which included: determining the scientific definition of a canal, establishing effective data acquisition methods, and the investigation of possible solutions to canal wall damage. In 1992, UNESCO was granted about two million dollars for projects focusing on the preservation of Venice; in turn, UNESCO sponsored 10 out of 12 IQP's, which focused on canals.

1993 marked the official designation of the Venice IQP program as a "Project Center", the third such program at WPI after Washington D.C. and London. During the subsequent years the projects expanded, at which time the public art catalog was completed. Over the years the Project Center was noted in many distinguished publications, including the BBC and *Technology Review*, published by the Massachusetts Institute of Technology. In the following years urban maintenance became a large source of concern that IQP's began focusing on. Information such as which canals to dredge first, alternative routes for traffic upon canal closures, as well as the hydrostatics of the different canals, were all based on the data collected and analyzed by the project center's students.

In 1997, WPI contributed a percent of the costs it took to establish a Project Center Office in Venice; Venice was the first project center to have its own office in the city of interest. That same year, another Presidential IQP award was given to the project that proposed a newly automated ambulance dispatch system.

Figure 16 shows the most efficient route calculated by the new system, which serves as a guide for the ambulance drivers. This system highly reduced time to emergencies, using computer programs to display high and low tides, as well as heavy traffic areas to avoid.

1998 marked the 10th anniversary of the Venice Project Center. In recognition for his continued dedication and contributions to Venice and the WPI community, Fabio Carrera, the founder and advisor of the VPC, was appointed an adjunct professor of WPI.

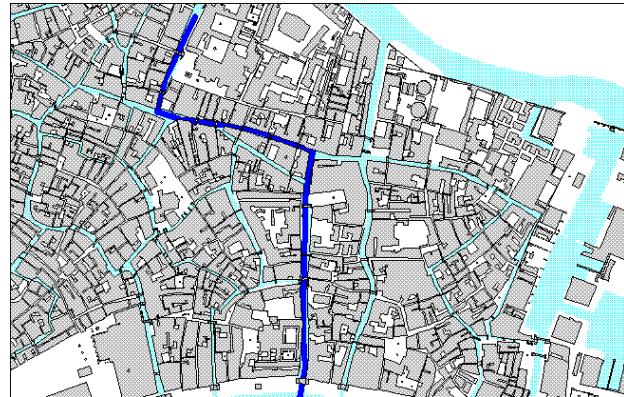


Figure 20 - Ambulance Route

2.2.5 The Venice Project Center: The Second Decade

The Venice Project Center gained even more recognition after its tenth anniversary. Many new projects were created to better help address the concerns of Venice. These new projects typically focused on one of five areas: Art; Environment; Socio-Economics; Urban-Maintenance, and Miscellaneous (for those projects that did not fit into the other four categories).

One of the most notable projects in the Venice Project Center's second decade involved mapping the hydrodynamics of the canals. Not only did this project provide invaluable information on the flow and currents of the canals, but it was also a stepping stone to many other projects that investigated the many aspects to Venice's intricate waterways.

In the second decade, the preservation and restoration of the public art of Venice was a major topic of many of the IQP projects. In 2000 alone there were two projects dealing with art, one studying and classifying the city's unique circular bell towers, and the other making a study of the forgotten art of Venice. Later in 2004 and 2005, two groups made a study of the church floors in Venice, which in themselves are priceless works of art. All of these projects contributed to the extensive database of the public art that is scattered throughout the city.

Socio-economic issues in Venice have provided students with many worthwhile projects. One group assessed the state of tourism in Venice, which has become a rising concern. In 2001, the Presidential Award was given to the group that proposed the re-engineering of the cargo transportation system. Figure 17 shows the re-engineered boat routes that would make the cargo transport system much more efficient. This new system has since been implemented and has greatly increased the effectiveness of the cargo transporters, as well as greatly decreased the traffic that the previous system caused. It was in this year that another group proposed the establishment of a new recycling system, which could possibly contribute to the sanitation of the city. Most recently, a group in 2006 studied techniques for optimizing parking space, which has always been a problem in the congested canals.

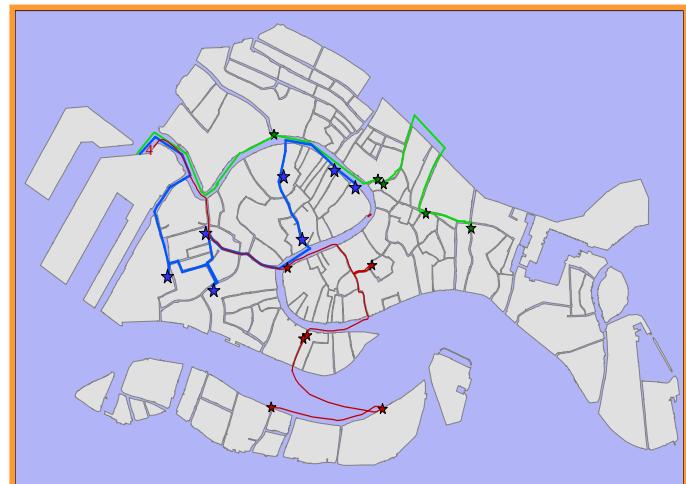


Figure 21: Re-engineered Boat Routes

Over the years, two more Presidential IQP Awards were presented to Venice students: one in 2002 to a group that created a prototype for an environmental atlas of the lagoon, and the other in 2005 for the group that studied the preservation of the traditional boats in Venice. The work done by WPI students through the Venice Project Center has been mentioned in many publications, which include the BBC radio, *Wired* magazine, *Smithsonian*, *New Scientist*, and *National Geographic* magazine. *National Geographic* went further and broadcast a video on the work done by Fabio Carrera and his students to help answer some of the problems concerning Venice. The Venice Project Center's second decade was just as successful and beneficial to Venice as the first, and it continues to work toward alleviating some of the concerns that plague the city.

2.2.6 Summary

In the 19-year history of the Venice Project Center, 446 students have worked to preserve and aid the beautiful and historic city of Venice. There have been many challenges and even more innovative solutions to some of the issues afflicting the city. In the past 19 years, five themes have developed that encompass all of the projects, which are: Art; Environment; Urban Maintenance; Socio-Economics; and Miscellaneous, for those projects that don't belong to the other four categories. Table 1 is a summary of the students, sponsors, and accomplishments within each project theme.

Table 1: Projects, Sponsors and Awards

	Art	Environment	Urban Maintenance	Socio-Economics	Miscellaneous	Total
Projects	37	26	24	18	19	124
Students	133	90	86	69	68	446
Sponsors	17	18	11	12	10	68
Awards	3	1	2	1	2	9

3 Methodology

The main goal of this project was to assist Arzanà to accomplish their mission in the preservation and study of traditional Venetian boats. This project also focused on reconnecting with the Venice Project Center alumni in an effort to organize a 20th anniversary celebration, and organizing the publication of a book written by current IQP students, as a compilation of the past 20 years of IQP work done in Venice. To accomplish our multi-faceted mission, the following objectives were identified:

1. Create a functional live website for Arzanà that can collect donations.
2. Make a bi-lingual brochure that will serve as a walking tour of Arzanà.
3. Identify the specifications and logistics of publishing a large book.
4. Create a newsletter updating past Venice IQP students about current projects and plans for an anniversary celebration.

3.1 Arzanà

Past IQP's have assisted Arzanà by cataloguing their inventory and proposing ways to integrate traditional boats back into society. Arzanà has long had the goal of becoming part of a nautical heritage museum. Our project sought to assist them in this goal, as well as help Arzanà raise funds to be better able to preserve the disappearing traditional boats of Venice.

3.1.1 Creating a Website

Arzanà has been very successful in preserving traditional boats and nautical heritage with the funds that they have. However, our group felt the best way to get donations for Arzanà was to create an informative website that would include descriptions of Arzanà's collection, its mission, and the reasons why preservation was important. We worked with Giovanni Caniato, our on-site liaison, and Silvia Capriata, a web designer working with Arzanà, to create a website for Arzanà. The design of the website was provided by Silvia Capriata. The design of the website is controlled completely through Cascading Style Sheets, which allows for easy updating without destroying the original code. We split the website into two main sections, "The Association" and "The Collection". The Association page provides information on Arzanà, including its mission, history, members, and location. The Collection page gives information about Arzanà's collection of traditional boats, oars, oarlocks, and other nautical heritage items. One important feature of the website is a link to a PayPal donation account. After extensive research, we determined that PayPal offered the

best system of easily collecting donations. After the website was finished to a satisfactory level, the domain name *arzana.org* was purchased through www.godaddy.com, and the website was housed on the Venice Project Center server. This website should have a very positive effect on Arzanà, and hopefully provide them with more funds to aid them in their mission of restoring and preserving the traditional boats and nautical heritage of Venice.

3.1.2 Making a Brochure

Arzanà is headquartered in an ancient *squero*, or boatyard, which is full of artifacts, boats, and nautical heritage. As a first step towards making Arzanà part of a museum, this project focused on creating a brochure that would not only provide information about the organization and its collection, but also to provide a walking tour of the headquarters. We researched the past IQP reports that catalogued the inventory to provide the information that went into the walking tour of the building. The highlights of the tour mentioned in the brochure were chosen based on what we felt would be most appealing to the general public. We worked extensively with our on-site liaison and active member of Arzanà, Giovanni Caniato, to provide information about the association's mission and history. He also provided us with many of the pictures of the collection that were used in the brochure. In order to make the brochure bi-lingual, we first wrote it in English, and translated it into Italian, with the help of Daniela Pavan, who works in the Venice Project Center.

3.2 Large-scale Publication

Nineteen years of IQP work and data collection has yielded an extensive amount of information about Venice that cannot be found anywhere else. This information has the potential to being very beneficial to anyone who would like to learn about or help Venice. However, the nearly twenty years of information has never been made readily available to the public. It is for this reason that this year's IQP students have dedicated themselves to writing a large-scale publication that would be the summation of all the work done by past Venice students.

3.2.1 Traditional Boats and Nautical Heritage Book Chapter

There have been many past IQP's focusing on preserving the heritage and tradition of Venice. Two past groups in particular concentrated on studying and preserving the nautical heritage of Venice. Our group compiled the information from the two past IQP's – one from 2004 and the other from 2005 – and, along with our own research, wrote an informational

book chapter about the nautical heritage and traditional boats of Venice, and the current effort of Arzanà to preserve the traditional heritage of Venice. In addition to the book chapter, we also wrote interesting sidebars about important parts of Venice's nautical heritage and what is being done to preserve them. We used a combination of our own pictures and those used in the past IQP reports.

3.2.2 Publishing

Not only was our group responsible for a book chapter on the traditional boats and nautical heritage of Venice, but we were also responsible for organizing the production of the book itself. To do this, we did extensive research on book publishing, copyright laws, and pricing for the publication of the book. We contacted a publisher in Venice, Franco Filippi, to determine the logistics of publishing a book. Over several meetings, we determined the approximate price of publishing, the price of selling, the ideal number of pages for such a book, and other such information necessary for printing, publishing, and selling our book. This information will eventually contribute to the successful publication of the book.

3.3 Venice Project Center Alumni

As the 20th anniversary of the Venice Project Center approaches, it has become necessary to acknowledge the extraordinary work that the Venice alumni accomplished during their IQP's. We chose to open the lines of communication between the past and current Venice IQP students, because any celebration of the Venice Project Center would have to be done with the involvement of the Venice alumni. Our group determined that the best way to reach the wide-spread alumni was to create a newsletter; in addition, a survey was sent out in order to gather feedback from the alumni.

3.3.1 Newsletter

The newsletter was made to update past Venice students on current projects. Each group wrote a 200-250 word summary of their project and what their group planned on accomplishing while in Venice. While trying to keep the essence of what each group wrote, we edited each summary to fit the word limit of the newsletter. We then wrote the cover of the newsletter, highlighting our efforts to publish a book about Venice, written by the current Venice students. We also wrote about the fact that the Venice Project Center celebrating its 20th anniversary in 2008. In order to complete the newsletter and make it more interesting, we added a summary of one of the MQP's in Venice and a crossword puzzle on the last page.

Once the newsletter was written and formatted to satisfaction, we contacted Beth Howland of the Alumni Relations office in order to acquire alumni contact information. Because of confidentiality issues, it was necessary to send the newsletter to the Alumni Office to be forwarded to the Venice Alumni. In addition to being sent to past Venice students, a copy of the newsletter was also sent to the WPI Class of 1965 because they have supported the Venice Project Center in the past.

Attached to the newsletter was a survey that had several purposes. The first was to gauge the interest of alumni purchasing the large publication that the current Venice students are writing; second purpose was to gauge the interest of attending a 20th anniversary celebration. Not only would this survey provide feedback for the production of the book and organization of the celebration, it also is meant to open the channels of communication between the current and past IQP students.

4 Results and Analysis

This section contains the results of our collaboration with the Arzanà association, all of which were completed and then handed over to be used in the future. Using Publisher, Adobe Acrobat, Expression Web and Access, we organized our information into a deliverable format.

4.1 Arzanà

This section contains the results of our collaboration with the Arzanà association, all of which were completed and then handed over to be used in the future.

4.1.1 The Website

With the help of a design provided by Silvia Capriata, we were able to construct a website which, at the conclusion of our time in Venice, went live at www.arzana.org. Until this point, no website had ever been made live for the Arzanà Association, and very little information was available on the internet about their history or mission. Although the website is by no means done, all of the code will be turned over to Silvia Capriata; she will work to manage the website after we have left Venice, as well as implement a content management system so that when an Arzanà webmaster is chosen they will be able to easily update the content without destroying the design. The website is divided into two different sections: the association section, which focuses on all the pertinent information about Arzanà

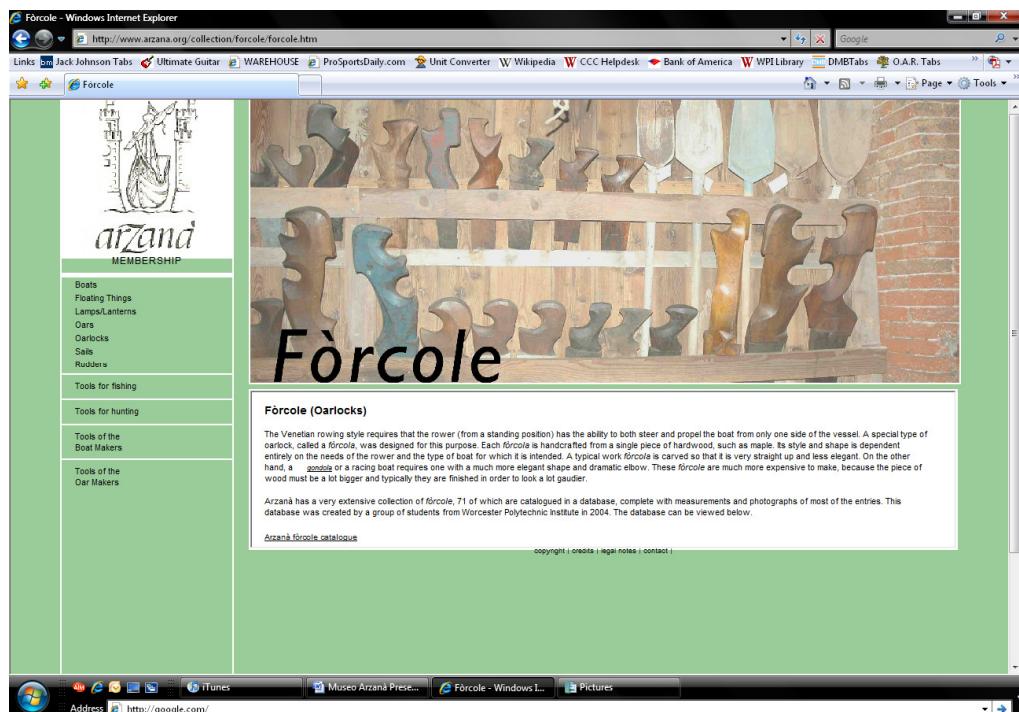


Figure 22: Part of the collection part of the Arzanà website

as an association, and their mission; and the collection side, which houses all of the information that previous IQP students have collated about the pieces in the Arzanà collection. Screenshots of the different areas of the website are included in Appendix B.

4.1.2 The Brochure

Using Microsoft Publisher, we created a brochure which gives a walking tour of Arzanà. The brochure covers all of the important pieces of the Arzanà collection, which include but are not limited to the extensive *fórcole* collection previously catalogued by IQP students, pieces of art collected by the members of the association, various boats housed in the *squero* and other tools used in the creation of boats and boat-related items. Since there are more items in the storehouse than can be reasonably included in a tour brochure, the curator, Giovanni Caniato, aided in the selection of the most notable artifacts for the initial version of the tour, the contents of which formed the basis of our brochure. The size was determined by Giovanni, and in the end was made to be the length of A3 paper and the width of A4 paper so that it was long enough to include a full floor plan and pictures, yet would fit in a standard-sized envelope. The completed brochure can be seen in Appendix C.

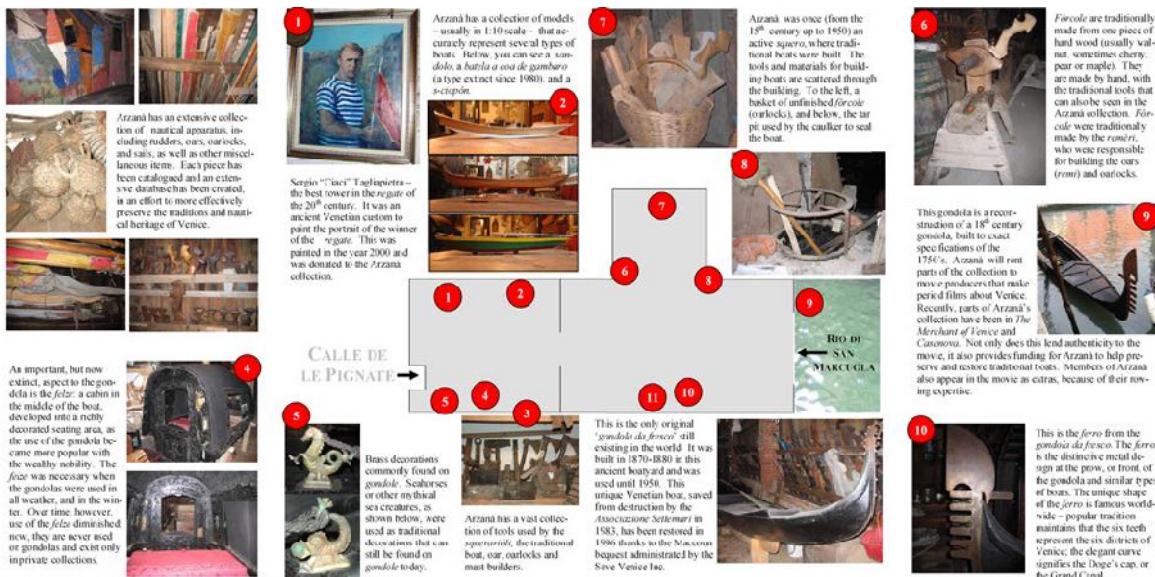


Figure 23: The inside view of the Arzanà brochure

4.2 Large-scale publication

This section includes all of the data gathered about *Venice 2.0*, the planned publication based on the past 20 years of IQP research.

4.2.1 Traditional Boats and Nautical Heritage Book Chapter

Each of the 2007 Venice Project Center groups created a book chapter relating to their individual area of study. Our book chapter contributed data from two past projects on the traditional boats and nautical heritage of Venice. The text of the book chapter is data-rich, with information gathered by the past students; in addition, there are side-bars which have interesting facts and stories, and a two-page insert with interesting information, and some folklore, about the history and evolution of the gondola. The completed book chapter can be seen in Appendix D.

4.2.2 The Evolution of the Gondola

In addition to the traditional boats of Venice, our group did extensive research on the history and evolution of the gondola. The gondola has evolved heavily since the beginning of its popularity in the early 16th century. Throughout time, the width and length of the gondola has changed as its use and functionality changed. The gondola was originally rowed by two men but as it became more popular as a tourist attraction, it became a single rower boat. This affected the shape of the gondola as the hull became much more curved on the ends. The recent decrease in width beginning in the 19th century is due to the steady narrowing of the Venetian canals.

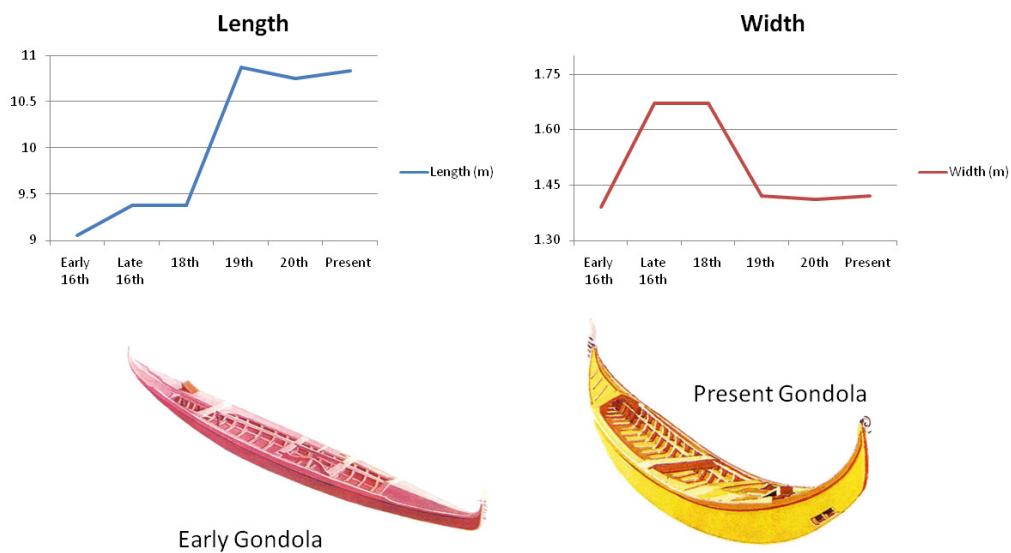


Figure 24: Two charts showing the evolution of the length and width of the gondola, spanning six centuries. Below, two pictures showing the difference in shape over time.

4.2.3 Publishing

Our group was responsible for researching the publication of the book. Three meetings were arranged with the publisher, Franco Filippi. It was explained that books need to be printed in 16-page “bundles,” so the total number of pages needs to be a multiple of 16. Based on this information, the book was projected to be 208-256 pages long, printed on glossy paper, approximately the size of A5 paper. In addition, 1,000 copies were decided upon, taking into account projected sales to alumni. The cost for each set of pages is shown in Table 2 taking into account whether or not the book will be hard-cover. Once the book is fully edited and formatted, there will be an approximately 20 day turn-around time.

Table 2: Prices for Book Publishing

# of copies	# of pages	Hardcover?	Total cost
1,000	208	no	€ 10,400.00
1,000	208	yes	€ 13,400.00
1,000	224	no	€ 11,200.00
1,000	224	yes	€ 14,200.00
1,000	240	no	€ 12,000.00
1,000	240	yes	€ 15,000.00
1,000	256	no	€ 12,800.00
1,000	256	yes	€ 15,800.00

4.3 Venice Project Center Alumni

4.3.1 Newsletter

One of the main goals of this group was the creation of an alumni newsletter, especially in light of the 20th anniversary of the project center. This newsletter contained information about the work each group was doing, in the hopes of re-kindling their excitement about the project center. In addition, a survey was attached to the newsletter to determine interest in both a reunion event and the book currently in production. The newsletter won’t be sent until the end of the year, so it’s not possible to have any feedback from the alumni until after that time. The newsletter can be seen in its entirety in Appendix E.

5 Conclusions and Recommendations

To ensure the preservation of traditional Venetian boats, it is important to continue current preservation efforts. We developed several recommendations that will allow the continuation of this project, in order to better preserve the traditional boats of Venice. In addition, we feel that it is important to celebrate the great milestone the Venice Project Center has reached – its 20th anniversary – as well as involving the Venice alumni to a greater degree. There are also several ways we recommend advertising and selling the book that this year’s project groups have dedicated themselves to writing.

5.1 Updating the Arzanà Website

This project has produced a live website that describes the Arzanà mission, history, and membership details, as well as giving detailed descriptions of the types of traditional boats and other historical nautical artifacts. However, we were not able to finish the website to the degree that we would have liked. We would first recommend that a content management system be implemented into the website so the Arzanà organization can easily update and change the website as needed. As of right now, a good knowledge of computers and website maintenance is needed for the upkeep of the website; eventually we would like Arzanà to easily be able to change the website as their inventory changes or as events are planned.

Because of the limited amount of time during our project, we did not entirely fill the website with complete information about the Arzanà inventory. We recommend that the website information should be completed, so that it can be a comprehensive source of information for anyone who wishes to learn about traditional Venetian boats and the history behind them. Arzanà has so many nautical artifacts: it is in the best interest of the collection for there to be complete information about each one.

Because Arzanà rents boats and other nautical artifacts to movie producers, we recommend that part of the website be dedicated to a complete list of the Arzanà inventory, with pictures, in order for the collection to be easily accessible to any possible renters. This would attract more movie producers to the collection, and hopefully help Arzanà acquire a steady rate of donations, with which they would dedicate to the preservation of traditional boats.

5.2 Expanding the Arzanà Brochure

The creation of a brochure is an important step in making the Arzanà collection part of a larger traditional boat museum. It is complete at this point, but if Arzanà changes

locations, or has significant additions to their collection, the brochure will need to be updated accordingly. The brochure is now available in both English and Italian, but we would recommend that it be translated into several other common languages, to better attract tourists of different nationalities. We recommend that the brochure be translated into German, French, and Spanish, as these are common tourist languages in Venice.

One goal that our group was not able to meet was the creation of an informative booklet about the Arzanà collection. We would recommend that this be done, to be used as an extension of the brochure. The booklet would give more detailed and complete information about each piece of the Arzanà collection, and be the next step towards creating an Arzanà museum.

5.3 Continuation of the Venice Alumni Newsletter

One major deliverable that our group produced was a newsletter for the Venice Project Center Alumni. It was our intention that the newsletter be continued annually, by each new year's IQP students. It is our sincere recommendation that this should be done, so that the Venice Alumni are aware of current projects, and will be more likely to involve themselves with any celebrations or activities that the Venice Project Center chooses to organize. The newsletter should include information about what each project encompasses, as well as any events or special news that the alumni should know about. In the 2008 edition, there should be specific information on how an alumnus can purchase one of the books that was written by the current IQP students. In addition, we feel it is necessary to take a group picture each year to include with the newsletter. This not only documents who was involved each year in the Venice IQP's, but it helps to document and remember the extraordinary work done by students in Venice.

5.4 Creating and Updating a Venice Project Center Website

In order for the alumni to learn about current projects and events in Venice, there needs to be a central website that is easy to navigate. As of now, a website is in the process of being created, but we suggest that it be completed with several key features. This website should first have an updatable section that contains all of the news and upcoming events of the VPC. Further, the website should have a link to all of the past projects, including their reports and their final presentations. One possibility for the website could be an interactive section that allows alumni to write suggestions or questions, and have them be answered within a certain amount of time. One of the most important aspects to the website should be that it links users to all of the information that has been gathered over the past 20 years; this

information is now very hard to acquire, and it needs to be made easily accessible to anyone who would benefit from it.

5.5 Advertising and Selling *Venice 2.0*

This year's IQP students went to great lengths to produce book chapters that will eventually become part of the book, titled *Venice 2.0*. We have several recommendations that will help raise money for the publishing of this book, as well as making it more appealing to buy for the Venice alumni. Our first recommendation is to offer a discount to Venice alumni, in return for buying one of the books in advance. Not only would this guarantee a certain number of books would be sold, but it would also provide some of the necessary funds needed to publish. Another way to get an idea of how many books would be purchased by alumni would be to send postcards with the book cover on the front, along with a detachable order form. This order form would give the publisher a good idea of how many alumni were interested in buying the book. In terms of finding funding for the publishing of *Venice 2.0*, we would recommend finding external sponsors who will buy a certain number of books up front. Some suggested sponsors might include past sponsors of the IQP's, Insula, Arzanà, and the city of Venice, as well as anyone who might have a vested interest in owning a book with complete and accurate information about Venice.

5.6 Exhibit or Celebration of the VPC 20th Anniversary

The 20th anniversary is an important milestone in the history of the Venice Project Center. It is our recommendation that a celebration is organized in 2008 to commemorate the event. An exhibit might be the best way to display all of the great achievements of the 447 students who have worked so hard to make a difference in Venice. Depending on the feedback received from our newsletter, an exhibit or celebration in Venice might be possible as well.

5.7 Final Thoughts

Traditional boats are one of the most important historical aspects of Venice. The city has long been identified by its nautical tradition and the unique boats. Each boat was designed specifically for the task for which it was made. The flat bottom and shallow draft hull common to all traditional boats allows easy navigation in the shallow waters of the Lagoon without disturbing the surrounding environment. The Venetians have perfected a rowing technique specific to their traditional boats that has long since become a symbol of Venice itself. This project ultimately displays the endangered state of the rapidly diminishing

traditional boats, and explains that without continued preservation efforts, these treasures in Venetian history will disappear forever. Our efforts have aided Arzanà more easily get their message across to the public, which will in turn help them preserve the boats that are so precious to their culture.

Along the same lines, the Venice Project Center has been integral to many of the positive changes around Venice. To date, the information collected by WPI students on the hydrodynamics of the canals is the only information available on the subject. In addition, the VPC has had a very positive impact on the city, including the information collected for all of the canals, bridges, docks, utilities, environmental and socio-economic impacts; this information has helped the city identify and solve problems in Venice. Because all of this information is so extensive and currently difficult to access, the students of this year's IQP have dedicated themselves to making the information available to the public. It is because of all the work and effort put into helping Venice that such an anniversary should be celebrated, both by the community and by the alumni who have made such a difference in the lives of so many.

6 Bibliography

Arzanà Statuto.

“Beyond the Gondola: A Panorama of Venetian Boats.” Wooden Boat. April 2000, 50- 59.

Candlish, Sean, Craig Shevlin and Sarah Stout. *The Traditional Boats of Venice: Assessing a Maritime Heritage*. July 30, 2004.

Catalano, Brian, Kristin Gervais and Ryan Sinapius. *Preserving the Nautical Traditions and Maritime Heritage of Venice, Italy*. April 7, 2005.

Cote, Michael, et. al. *A Feasibility Study of the Venice Project Center*. 5 May 1989.

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“History Founding and Rising of Venice. *InfoPlease.com*. 3 Oct 2007. <<http://www.infoplease.com/ce6/world/A0861775.html>>.

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Rossi, Paolo. Tipologie dei Natanti Veneziani. Comune di Venezia, 2001.

“Safeguarding Venice.” *Science/Technology*. 28 Aug. 2000. 7 Oct 2007. <<http://pubs.acs.org/cen/coverstory/7835/7835sci1.html>>.

The Venice Naval History Museum. <<http://goeurope.about.com/cs/venice/l/aa021703a.htm>>

Vittoria, Eugenio. The Gondolier and his Gondola. Venice: Editrice Evi, 1981.

Witty, Anne. “Beyond the Gondola.” Wooden Boat. No. 153.

Appendix A – Annotated Bibliography

Arzanà Statuto

This is the mission and constitution of the Arzanà organization. It was very helpful in understanding the Arzanà mission, as well as providing us with some information about the history and funding methods of the organization.

“Beyond the Gondola: A Panorama of Venetian Boats.” Wooden Boat. April 2000, 50-59.

This article from “Wooden Boat” describes our project well. It is about the decline of traditional boats and the increase in interest to revive the lost types of boats. The information is very relevant to our project

Candlish, Sean; Shevlin, Craig; Stout, Sarah. “The Traditional Boats of Venice: Assessing a Maritime Heritage”. July 30, 2004

This is the IQP completed in the year 2004. This is one of the most useful sources, as it included background information on traditional boats, contact information, and Arzanà inventories.

Catalano, Brian; Gervais, Kristen; Sinapius, Ryan. “Preserving the Nautical Traditions and Maritime Heritage of Venice, Italy.” April 7, 2005.

This is the follow-up IQP completed in the year 2005. This is one of the most useful source, as it included background information on nautical traditions as well as on traditional boats, and the entire inventory of the Arzanà collection.

Cote, Michael, et. al. *A Feasibility Study of the Venice Project Center.* 5 May 1989.

This was the first IQP ever done in Venice, the feasibility “bootstrap” project. It brought great insight into the beginnings and reasons behind the Venice Project Center, and gave great information on the potential it has on helping Venice.

Fenlon, Iain. “Music, Ceremony and Self-Identity in Renaissance Venice St. Mark and the Virgin Mary.” 12 Sept. 2007. http://www.muspe.unibo.it/period/MA/index/number1/fenl1/fe1_3.htm.

This website gave great information on Venetian culture, and provided this project with a picture of a piece of nautical heritage.

“Funding.” National Trust for Historic Preservation. 29 Sept 2007. <<http://www.nationaltrust.org/funding/>>.

This was a good website providing information on the organizations who promote historical preservation. It gave us a good idea of the money spent and the interest in preservation today.

Fullin, Giancarlo. The Boats of Venice. Il Libreria Editrice, Padova: 1999.

This book brought us useful information about the various types of traditional Venetian boats for the background. This book has very in-depth information of each type of boat, including blueprints.

“History Founding and Rising of Venice. *InfoPlease.com*. 3 Oct 2007. <<http://www.infoplease.com/ce6/world/A0861775.html>>.

This was a good source of information on the history of Venice.

Lanapoppi, Paolo. “Six Centuries of Gondolas.” *WoodenBoat*. No. 152, Jan/Feb 2000: p 42-49.

This article found in WoodenBoat provides with a great background on the *Gondola* and how its change in purpose over the years. The article also included information on the *squeri* and *squeri* owners we documented.

Preservation Directory.com. 30 Sept 2007. <<http://www.preservationdirectory.com/HistoricalPreservation/Home.aspx>>.

This was another good source of information on organizations and societies that deal with historical preservation, which was good background information for our project.

Rossi, Paolo. Tipologie dei Natanti Veneziani. Comune di Venezia, 2001.

This is a book which includes the different types of traditional Venetian boats; however, it is all in Italian. But it was very useful in the measurements and pictures of boats, which were clear and accurate..

“Safeguarding Venice.” *Science/Technology*. 28 Aug. 2000. 7 Oct 2007. <<http://pubs.acs.org/cen/coverstory/7835/7835sci1.html>>.

This was a very useful article providing good information on some of the history and culture of Venice, which we used for background information.

The Venice Naval History Museum. <<http://goeurope.about.com/cs/venice/l/aa021703a.htm>>

This website provided us with important background information on the existing Naval History Museum in Venice.

Vittoria, Eugenio. The Gondolier and his Gondola. Venice: Editrice Evi, 1981.

This was an extremely helpful source providing detailed information about the history and culture behind the ancient gondola. This was very helpful in giving information about one of the most recognizable of the traditional Venetian boats.

Witty, Anne. “Beyond the Gondola” Wooden Boat. NO.153, April 2000: p 50-59.

This is an article about the decline of traditional boats in Venice and their uses today. It includes details on several types of specific boats, as well as great background information about the city of Venice and the groups trying to restore the traditional boats.

Appendix B – Arzanà Website

The screenshot shows the homepage of the Arzanà website. At the top, there's a banner featuring a photograph of a traditional Venetian boat docked near a brick building with a tiled roof. The word "Arzanà" is written in large, white, lowercase letters across the middle of the banner. Below the banner, a green sidebar on the left contains the text: "Located in the historical Squero Casal dei Servi, the Arzana association works to preserve the nautical traditions of Venice through the collection and restoration of traditional Venetian boats and boat-related items." To the right of the banner, there are two main sections: "the Collection" and "the Association". The "Collection" section includes a paragraph about the collection's history and a link to book a visit. The "Association" section includes a link to become a member. At the bottom of the page, there are links for copyright, credits, legal notes, and contact.

The screenshot shows the "Boat Collection" page of the Arzanà website. On the left, there's a sidebar with a logo of a stylized boat and a menu for "Boats" (which includes Floating Things, Lamps/Lanterns, Oars, Oarlocks, Sails, Rudders), "Tools for fishing", "Tools for hunting", "Tools of the Boat Makers", and "Tools of the Oar Makers". The main content area features a large image of several traditional Venetian boats docked at a pier. Overlaid on the image is the text "Arzanà Boat Collection". Below this, there's a section titled "Boat Categories" with a grid of boat names: Barchetto, Barcheta, Batela, Bragozeto, Caorolina; Cofano, Gondola, Mascareta, Moscone, Peàta; Puparin, Sàndolo, Sanpierota, S'ciopon, Topetto; and Verigola. At the bottom of the page, there are links for copyright, credits, legal notes, and contact.

Sanpierota - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Favorites Go Links

Address <http://www.arzana.org/collection/boats/sanpierota/sanpierota.htm>

MEMBERSHIP

- Boats
- Floating Things
- Lamps/Lanterns
- Oars
- Orlocks
- Sails
- Rudders

- Tools for fishing
- Tools for hunting
- Tools of the Boat Makers
- Tools of the Oar Makers

Sanpierota

>>Arzana/ Collection/ LARGE CATEGORY/ SMALLER CATEGORY.htm

The *Sanpierota* is an example of a popular fishing vessel found in early Venice. The name is derived from its place of origin, San Pietro, in Volta. It is a member of the *gondola* family of boats, and was popular for its sturdiness, reliability, roominess, and relatively simple maintenance. Like the *toga*, this boat was sail-powered before the days of motors. It is, on average, 6 to 7 meters in length. The *Sanpierota* was usually owned by Venetian families; they were painted in different bright colors to distinguish one from the other. It was also commonly rented, similar to car or moving-van rentals in other countries. As recent as the 1960's, there were 34 row boat rental facilities in Venice; today there are none.

[copyright](#) | [credits](#) | [legal notes](#) | [contact](#) |

Fòrcole - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Favorites Go Links

Address <http://www.arzana.org/collection/forcole/forcole.htm>

MEMBERSHIP

- Boats
- Floating Things
- Lamps/Lanterns
- Oars
- Orlocks
- Sails
- Rudders

- Tools for fishing
- Tools for hunting
- Tools of the Boat Makers
- Tools of the Oar Makers

Fòrcole

>>Arzana/ Collection/ forcole.htm

Fòrcole (Oarlocks)

The Venetian rowing style requires that the rower (from a standing position) has the ability to both steer and propel the boat from only one side of the vessel. A special type of oarlock, called a *fòrcola*, was designed for this purpose. Each *fòrcola* is handcrafted from a single piece of hardwood, such as maple. Its style and shape is dependent entirely on the needs of the rower and the type of boat for which it is intended. A typical work *fòrcola* is carved so that it is very straight up and less elegant. On the other hand, a *gondola* or a racing boat requires one with a much more elegant shape and dramatic elbow. These *fòrcole* are much more expensive to make, because the piece of wood must be a lot bigger and typically they are finished in order to look a lot gaudier.

Arzana has a very extensive collection of *fòrcole*, 71 of which are catalogued in a database, complete with measurements and photographs of most of the entries. This database was created by a group of students from Worcester Polytechnic Institute in 2004. The database can be viewed below.

[copyright](#) | [credits](#) | [legal notes](#) | [contact](#) |

The screenshot shows a Microsoft Internet Explorer window displaying a database table titled "forcole_db.htm". The table has columns for ID #, Image, Measurements (A1, A2, B, C1, C2, D, E), Front, Back or Middle, Right or Left, and Boat Type. Below the table is a thumbnail image viewer showing four images of wooden boat parts.

ID #	Image	Measurements						Front, Back or Middle	Right or Left	Boat Type	
		A1	A2	B	C1	C2	D				E
1		31	5.5	-4.5		1	2	Front	Left	Sandolo	
2		28	16	4	-3	-5.5	3	0	Back	Right	Sandolo
3		11	7	-5.5		3	0	Front	Left	Caorlina	
4		11	4	-5		1	0	Front	Left	Topo	
5		10	5.5	-5		2	2	Front	Left	Gondola	
6		29	3.5	.5		1	0	Front	Left	Sandolo	
7		14	4	-3		1	0	Front	Left	Batela	
8		11	6	-5		2	2	Front	Left	Gondola	
9		17	6	-7		1	0	Front	Left	Peata	
10		9	7	-5		5		Front	Left	Gondola	

The screenshot shows a Microsoft Internet Explorer window displaying the homepage of the Arzanà association website at <http://www.arzana.org/association/mission.htm>. The page features a large image of a gondola on a canal, the text "Arzanà", and links for "Mission", "Organization", "Short History", "Current Activities", "Past Activities", "Calendar", "Events", "Notices", "Press Releases", "Contact Us", and "Membership".

Contact Us - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Favorites Go Links

Address http://www.arzana.org/association/contact.htm


Arzana

Mission
Organization
Short History

Current Activities
Past Activities
Calendar

Events
Notices
Press Releases

Contact Us

Membership



Arzana

come to see us: book your visit! [the Collection](#)

association /contact.htm

Contact Us

Arzana Association
Cannaregio 1936/d
Venice, Italy
Fax: +39-(040)296-0616
E-mail: giovanni DOT caniato AT libro DOT it



Appendix C – Arzanà English Brochure

The Collection

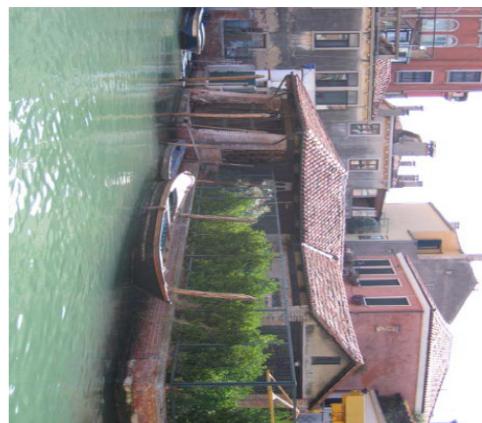
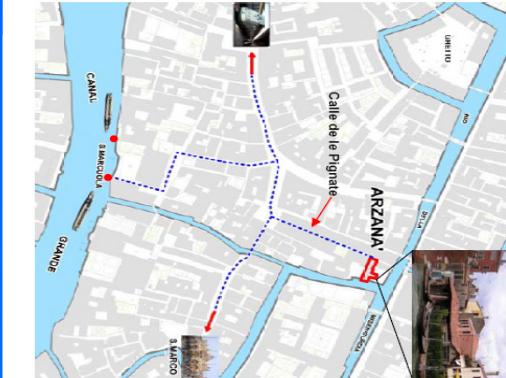


A *bavaria* in the Arzanà collection. This specific boat was built by one of the most well-known Venetian boat builders of the second half of the 20th century, Aristide Battistin.



Two boats in the Arzanà collection, a small *bragozzo* and a *bavaria* with sails, something unique in Venetian marine culture.

Preserving Traditional Boats



Arzanà

The Association

The Arzanà Association – founded in 1992 – promotes the study, restoration and conservation of the traditional boats of Venice. In the last fifteen years it has acquired – and in part restored – about fifty typical boats of Venice and the lagoon, many of them the only one surviving of their kind. Until about 30 years ago, boats built for a specific purpose were commonly used in Venice and the islands of the lagoon: from the "traghetto da latte", used for transport of milk, poultry which every day at dawn transported the early produce of the gardens in the islands to the markets of the Rialto; from the "bavaria dei lattei", used for transport of milk, poultry and eggs, to the "barche da seraglioni", used until recently by the fishermen of Burano for fishing in the shallows of the northern lagoon, to the last large "pèzia" existing in Venice, constructed in 1950 in Burano.

To be maintained efficiently and, where possible, fully returned to sailing and rowing capacity, many of these traditional boats need radical restoration. This is something that requires financial support that Arzanà – a non-profit organization run by volunteers – often lacks. Arzanà therefore appeals to local and international agencies, companies, foundations and associations, who understand the need to safeguard traditional boats and to convey to future generations the importance of what was once – and still should be – the most common aspect of the Venetian culture.



Association for the Study and Conservation of the Traditional Boats of Venice

Arzanà also possesses the last two examples of racing/regatta boats from the pre-war era (a *pugarià* and a *mascareta*, both rowed with two oars), in addition to an entire collection of oars, masts and boats that have been gradually disappearing because of their lack of use. Arzanà anticipates that these collections, with enduring financial support of the Venetian marine tradition, can contribute in the near future to one part of the "National Museum of the Civilization on the Water", which is planned to be in the ancient Arsenal of Venice: a project brought on by the Cultural Assets and Activities.



Arzanà has collected almost fifty traditional boats, all of which are in need of restoration: most are stored in a warehouse, but they are in danger of degrading and becoming impossible to repair. Being a non-profit organization, Arzanà relies on donations to help preserve the maritime heritage of Venice.



Arzanà has an extensive collection of nautical apparatus, including rudders, oars, oarlocks, and sails, as well as other nautical items. Each piece has been catalogued and an extensive database has been created, in effort to more effectively preserve the traditions and nautical heritage of Venice.



Sergio "Cach" Tagliapietra – the best rower in the *regata* of the 20th century. It was an ancient Venetian custom to paint the portrait of the winner of the *regata*. This was painted in the year 2000 and was donated to the Arzanà collection.



Arzanà has a collection of models – usually in 1:10 scale – that accurately represent several types of boats. Below, you can see a *samodola*, a *batella a cou de gambaro* (a type extinct since 1980), and a *serigian*.



Arzanà was once (from the 15th century up to 1950) an active *squero*, where traditional boats were built. The tools and materials for building boats are scattered throughout the building. To the left, a basket of unfinished *fòrcole* (oarlocks), and below, the tar pit used by the caulkers to seal the boat.

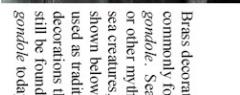


Fòrcole are traditionally made from one piece of hard wood usually walnut, sometimes cherry, pear or maple). They are made by hand, with the traditional tools that can also be seen in the Arzanà collection. *Fòrcole* were traditionally made by the *remier*, who were responsible for building the oars (*remi*) and oarlocks.

CALLE DE LE PIGNATE →

- 1
- 2
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- 7
- 8
- 9
- 10
- 11

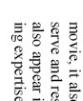
An important, but now extinct aspect to the gondola developed into a richly decorated seating area, as the use of the gondola became more popular with the wealthy nobility. The *fèze* was necessary when the gondolas were used in all weather, and in the winter. Over time, however, use of the *fèze* diminished; now, they are never used on gondolas and exist only in private collections.



This is the only original *gondola da fresco* still existing in the world. It was built in 1870-1880 in this ancient boatyard and was used until 1950. This unique Venetian boat, saved from destruction by the *Associazione Settemari* in 1963, has been restored in 1996 thanks to the Macconni bequest administrated by the Save Venice Inc.

RIO DI SAN MARCO LA

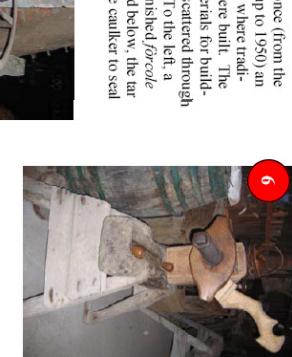
- 9
- 10



This gondola is a reconstruction of a 18th century gondola, built to exact specifications of the 1750's. Arzanà will rent parts of the collection to movie producers that make period films about Venice. Recently, parts of Arzanà's collection have been in *The Merchant of Venice* and *Casanova*. Not only does this lend authenticity to the movie, it also provides funding for Arzanà to help preserve and restore traditional boats. Members of Arzanà also appear in the movie as extras, because of theirrowing expertise.



This is the *ferro* from the *gondola da fresco*. The *ferro* is the distinctive metal design at the prow, or front, of the gondola and similar types of boats. The unique shape of the *ferro* is famous worldwide – popular tradition maintains that the six teeth represent the six districts of Venice; the elegant curve signifies the Doge's cap, or the Grand Canal.



Fòrcole are traditionally made from one piece of hard wood usually walnut, sometimes cherry, pear or maple). They are made by hand, with the traditional tools that can also be seen in the Arzanà collection. *Fòrcole* were traditionally made by the *remier*, who were responsible for building the oars (*remi*) and oarlocks.

Appendix D - Arzanà Italian Brochure

La collezione



Una barca della collezione Arzanà. La barca sull'immagine fu restaurata da uno dei più conosciuti saggi dotti veneziani del XX secolo, Antonio Battisti.



Due barche della collezione Arzanà, un barge e una barca con vela, un classico tipo nella tradizione marittima veneziana.

La conservazione delle imbarcazioni tradizionali

Arzanà ha collaudato quasi 30 barche tradizionali tutte varate in condizioni di sicurezza e rapidità. Gran parte di esse si trova oggi presso la sua officina di rimessaggio a Venezia, mentre altri sono state esposte in esposizioni di arte e cultura a livello internazionale.

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Per maggiori informazioni e se desidera versare una donazione, prego visiti il nostro sito web www.arzanà.org

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arzanà

Arzanà

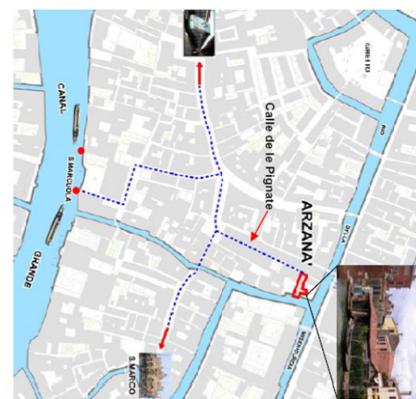
L'Associazione

L'Associazione Arzanà - costituita con atta notarile dal 1992 - ha il suo stimato di promuovere lo studio, il ristretto e la conservazione delle imbarcazioni tradizionali veneziane.

Negli ultimi quindici anni la acquisito - e in parte filologica - una collezione di imbarcazioni tipiche di Venezia e della laguna, anche queste "poco usate" dai loro possessori. Fra le quali la ultima "barca da rivoce" che fino a trent'anni fa sono state di uso comune in Venezia e nelle isole della laguna, dell'ultimo "tagliando da mare" catalogato alla "marina civile". Con trasparenza ogni giorno all'alba le prime ore degli anni dei libri e delle storie al nuovo di Rialto, dalla "Scuola del Lavoro" per il trasporto di laterite polime e sora alla campagna dell'entroterra a Venezia, alla "scuola dei sogni" militare fino a pochi anni or sono dai pionieri di Burano per la pesca edilizia sui bellissimi della laguna settentrionale, al "villaggio greco" "greci" a respiro estremo a Venezia, cominciato nel 1939 a Burano.

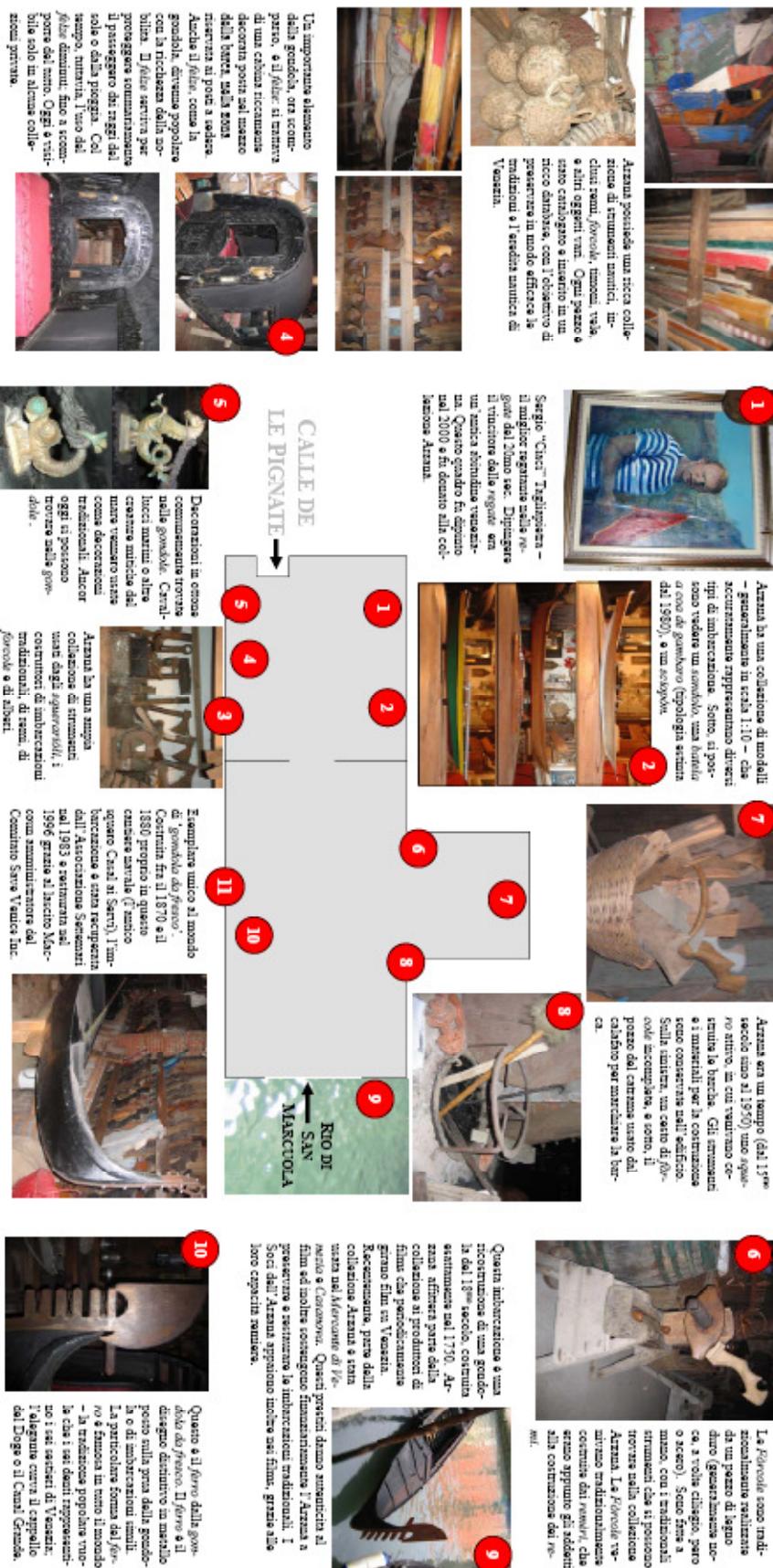
Per poter essere mantenute in efficienza e, o possibile, navigando anche a fini didattici, molti di queste imbarcazioni tradizionali necessitano di radicali interventi di restituzione e conservazione: un impegno sostanzioso che l'Associazione crede si basa volontariamente e senza scopo di lucro - non è segno di affievolire. L'Arzanà ha già sperimentato un appello agli enti locali, alle Dintorni delle Fondamenta e alle Associazioni che intendessero legare il proprio nome a queste iniziative di salvaguardia in qualità di Soci Socio-associati, coinvolgendo a riceverne i risultati alle future generazioni dalla più spicciola espressioni della città veneziana.

L'Arzanà considera anche gli ultimi che vengono eseguiti di barche comunali da segna anteguerra in legno massello (un portore e una cassoniera a due remi), sono in grado di regalarci di antigni documenti di storia, libriere e innumerevoli che hanno avuto un ruolo i nostri e le cui aziende sono state allestiti in imbarcazioni dureggente. Si prevede che queste collezioni, residuo patrimonio della nostra memoria, possono essere raccolte nel prossimo futuro fino alla sala delle sezioni del "Nuovo Nazionale della Città dell'Acqua", in corso di progettazione all'interno dell'Arzanà unico di Venezia per illustrativa della Marina Militare e del Ministro per i Dotti e le Artistiche Culturali.



Associazione per lo Studio e la Conservazione delle Imbarcazioni Venzie





Appendix E – Nautical Heritage and Traditional Boats Book Chapter

The Nautical Heritage and Traditional Boats of Venice

By: Bryan Bigda, Michelle Dubuke, Daniel LaTorella, and Jennifer Richards

Strolling through the narrow streets of Venice, you hear the sound of an accordion bellowing a rustic-sounding melody, and the strong, yet mellow, voice of a Venetian singing to passengers in a gondola. Like most tourists, you stop on a bridge to snap pictures or to simply watch four or five *gondole* float beneath you, maneuvered eloquently around the twists and turns of the canals. This is the view that most people have of the Venetian culture of old, but it is not an entirely accurate one. The traditional boats of Venice filled the canals for centuries, until a drastic decline starting in the 1970's. With the exception of the *gondola*, there are no traditional boats currently being produced in Venice for work purposes. However, what people do not realize is that the *gondola* is only one style among about 40 documented that fall into the category of traditional boats. Each one is hand-crafted with a unique design to carry out a specific task.

The fascinating world of traditional boats has shaped the Venetian culture and lifestyle for centuries, but many have no idea what constitutes a traditional Venetian boat. This lack of knowledge is not simple “tourist ignorance,” but is rather due to the fact that traditional boats are very rare today. Motor boats dominate the canals which, for the bigger part of Venice’s history, were traversed by rowed traditional boats. Once popular, there are no longer any facilities in Venice that still rent traditional boats to the public. One organization in Venice that is dedicated to keeping the heritage of the traditional Venetian boat alive is Arzanà. Arzanà consists of volunteer mariners who work to keep and restore traditional boats, as well as the nautical heritage that are associated with them. Arzanà works with boats that have been abandoned or donated in an effort to keep these precious artifacts from disappearing all together. The Venetian culture is greatly connected to traditional boats, whose very existence is threatened and whose legacy is doomed to be lost forever if there is no immediate action taken.

Replacing rowed boats with motor boats seems simple evolution; it is the natural step in the progress of the culture. Asking Venetians to return to total dependence on traditional boats would be akin to the return of the horse and carriage: a completely impractical solution. The

traditional boats of Venice should be preserved as cultural treasures, in order to keep the nautical heritage, which has so visibly shaped the city, alive. The cultural and physical union with the sea is one that is rooted in the history and geography of Venice.

The city of Venice is built on 125 different islands, which are connected by over 182 canals and 473 different bridges. However, that level of structure didn't always exist – early in the city's history, the individual islands were isolated in their development; the only contact between islands was wooden planks and boats. Early Venetians recognized the link that they had with boats – they built homes not just for themselves, but also open-bottomed, three-sided structures which could house their boats. By the sixth century, they were known as formidable seamen. Venetians were famed for their maritime skills, including the innate ability to sail boats against the current.³⁰

Many Venetian customs and traditions developed around the dependence on the sea. According to tradition, the Doge, the ruling entity of Venice, was “married” to the sea. Each year, in a celebration called the *Festa Della Sensa*, the Doge would cast a large ring, as seen in Figure 1, into the sea. Similar to other cultures, Venice was prolific in its creation of art and architecture, and pieces typically were focused around different aspects of the city's maritime heritage. One of the most popular tourist sites in Venice, St. Mark's



Figure 1: The ceremonial ring thrown into the sea each year by the Doge



Figure 2: The *Translatio of St. Mark*

Basilica, contains many pieces of artwork depicting different boats and the sea. One example is the *Translatio of St. Mark*, seen in Figure 2, which is a mosaic from the 13th century that can be seen on the west-wing vault in the San Clemente Chapel in St. Mark's.³¹ Similar mosaics can be found on the three other walls of the chapel, and illustrate not just Venice's link with the sea, but the connection between the sea and religion. However, artwork relating to the sea is not just seen in churches – many pieces of public art seen throughout the city have a nautical theme.

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³⁰ Vittoria, Eugenio. The Gondolier and his Gondola. Pg 17

³¹ http://www.muspe.unibo.it/period/MA/index/number1/fen11/fe1_3.htm.

These are several examples of the different nautical heritage elements which can be seen throughout the city of Venice. In 2005, a study was conducted by students from Worcester Polytechnic Institute identifying the nautical heritage of Venice. In the study, 33 places of nautical interest were identified including, but not limited to, ten churches, one monument, three museums, and 14 *Squeri*. These can be seen simply by visiting popular tourist sites, such as San Marco, Palazzo Ducale, and Museo Correr. The nautical heritage of Venice is seen not only in building and artwork, but also in street names found throughout the city. The streets were often named after the different vendor's shops located there, and though many of those shops have closed the names remain. Worcester Polytechnic Institute, in a similar study, catalogued 26 street names containing the word *Barche* (*boats*), four containing the word *Felzi*, nine containing *Remer* (oar-maker), 17 containing *Squeri* or *Squero*, and 19 containing *Traghetto* (gondola taxi) as seen in Figure 3, with a total of 75 streets referring to some kind of nautical aspect.³²

Squeri and the Arsenale

In a city that demands boats for transportation, the art of shipbuilding has been a great Venetian tradition dating back as early as the city itself. Traditional boats are always handcrafted at specific boat building sites known as *squeri*. These *squeri* are home to some of the world's most talented wooden boat craftsmen, the *squerarióli*. Most *squeri* are small, meant for building one particular type of boat. Perhaps the most unique aspect of the *squeri* is the method of transporting boats in and out of the water. The loading area of the *squeri* consists of a downward sloping ground that goes directly from the boatyard into the canal. This allows effortless transport and also eliminates the risk of damaging boats.



Figure 3: Sotoportego del Traghetto, just one of the 75 street signs relating to nautical heritage

The Squeri

In a city that demands boats for transportation, the art of shipbuilding has been a great Venetian tradition dating back as early as the city itself. Traditional boats are always handcrafted at specific boat building sites known as squeri. These squeri are home to some of the world's most talented wooden boat craftsmen, the squerarióli. Most squero are small, meant for building one particular type of boat. Perhaps the most unique aspect of the squeri is the method of transporting boats in and out of the water. The loading area of the squeri consists of a downward sloping ground that goes directly from the boatyard into the canal. This allows effortless transport and also eliminates the risk of damaging boats.

³² Preserving the Nautical Traditions and Maritime Heritage of Venice, Italy. 2005.

The largest *squero* in Venice is the *Arsenale*, founded in 1104 A.D., and still standing today.

The *Arsenale*, as seen in Figure 4, was the boat production and repair center, or *squero*, of

Venice; at the height of its power, approximately one

boat was produced per day, and it employed over 16,000 people.³³

Today, the *Arsenale* is primarily a naval base, but it sits adjacent to the Naval History Museum of Venice and serves as a

Figure 4: The ancient *Arsenale*

part of the biannual art exhibit hosted by the city of Venice.

Traditional Boats of Venice

With a history so rich in maritime heritage, it is easy to see the link the Venetians have with boats. The term “traditional boat” in Venice refers to a boat with a flat bottom and a shallow draft hull, two characteristics that have very distinct and practical purposes.³⁴ Due to the shallow water in the canals, the *squerorli* were forced to craft the boats with a flat bottom to keep them from hitting the bottom of the canal. The shallow hull allowed the boats to be dragged to shore with minimal structural damage, and also to make it easier for people to get in and out of the boat. Another benefit to the shallow hull is the balance it offers for passengers when standing in the boats, which is a strange concept for most people.³⁵ When crossing the Grand Canal in a type of gondola called a *traghetto*, it is customary for the passengers to remain standing. Traditionally the *traghetti* were not confined to transport across the Grand Canal, but as can be seen from the *traghetto* map of 1697, it was also a very common way of getting from island to island in Venice. Figure 5 compares this to the *traghetto* map of

³³ The Boats of Venice. Pg 33

³⁴ The Boats of Venice. Pg 25

³⁵ *Idem*

Walking on Water – Le Fòrcole

Traditional Venetian style rowing has been compared to walking on water (The Boats of Venice, pg 7). A Venetian rows a traditional boat by standing on the back and facing the direction in which he travels, very much analogous to walking. Due to this unique style of rowing a very intricate craft emerges. Fòrcola is the name of the oarlock fixed onto the side of traditional Venetian boats. It allows the rower to both propel and maneuver his boat through the canals. The craftsmen who shape these unique fòrcole are called remeri, and in a sense are more than just craftsmen; they are artists.

Each fòrcola is made from a single piece of hardwood, typically walnut, and has a characteristic shape which is specialized for the needs of each rower. The more elegant fòrcole are either for show or for racing in the regate. These are traditionally designed from a bigger piece of wood to allow for a larger and more elegant sanca, or “elbow” as seen in the figure. A fòrcola designed for work boat is typically much less elegant with a sanca which is much less defined. In the figure below there is an example of how a typical work fòrcola looks. Arzaná has an extensive catalogue of about 100 traditional fòrcole.



2004³⁶, we can note that not only are the *traghetti* strictly in the Grand Canal, but the number of points where someone could take a *traghetto* have decreased from 43 stations to the eight that are presently active.



Figure 5: Map of *traghetti* in 1687 and in 2004. The *traghetti* were originally used as taxis to carry people all over the lagoon and to other destinations. Of the 43 stations that were originally in use, only 8 still remain. The remaining *traghetti* are now only used to ferry people across the Grand Canal.

Although the number of *traghetti* has decreased, they are still used in modern Venice. It is the most practical way to get across the Grand Canal, at points where pedestrians are unable to cross by bridge. Using a gas motor would be wasteful and create a wake that would not only adversely affect travel up and down the length of the canal, but cause damage to the canal wall as well. However, the most common traditional boat which can be seen today throughout Venice is the gondola, truly the modern-day symbol of the city. Tourists from all over the world will spend 100 euro to take a romantic ride in a gondola, which through the years has turned into a multi-million dollar business.³⁷

³⁶ Map provided by 2004 IQP, entitled *The Traditional Boats of Venice*

³⁷ Witty, Anne. "Beyond the Gondola." *Wooden Boat*. No. 153.

Gondola: The Symbol of Venice

Although there are over 40 types of traditional boats native to Venice, it is the gondola that is most easily recognizable. It has become the symbol of Venice, as well as being a major industry in the now tourist-rich city. The gondola is a very intricate and specific watercraft; it has become what it is today through a long evolution of carrying nobility through the serene canals of Venice, becoming more intricate as the craftsmen perfected generations of skill and building techniques.

The city of Venice developed as it perfected its means of transportation. Although horses and other pack animals were used for a substantial amount of time in Venice, the maintenance of both horses and carriages strained the economics of both individuals and the community – considerations which brought back the ancient use of the boat as the most economical means of transport (27). Boats evolved as they were needed for specific tasks. The most elegant means of water transportation was the gondola, named for the first time in 1094 by Doge Vitale Falier (32). It is believed that the name gondola was not initially restricted to the specific boat seen today, but that it was applied to different types of boats.



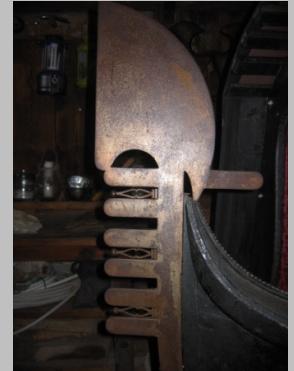
The Evolution of the Gondola

Over time, the gondola evolved into the elegant boats that are recognizable today. It has gone through many modifications over the centuries, both in form and the finer details. The first known description of a gondola, found in a 14th century manuscript, measured the boat 8 or 9 meters long (28 Venetian *piedi* or feet – 1 *piede* was 30.38 cm) (59). The original boat was not as slim as today's gondola, perhaps because it was derived from the more common boats used for everyday tasks. The boat also lay more flat in the water; it did not have the banana-shape as modern gondolas do. Although it has been continually improved and modified, many of the original technical terms are still used today, so that features of the ancient boats have remained intact (59).

The modern gondola has very specific measurements and specifications. The outer length is 10.85 meters, with an average width of 1.40 meters and a net weight of about 350 kilograms. (35). Made up of around 280 wooden pieces, the gondola uses a variety of wood in its construction, including oak, fir, walnut, cherry-wood, larch, elm-root, and limetree (35). Despite modern techniques, the wood used for the sides of the gondola is curved using an ancient process that involves using marsh canes – which come from nearby lagoons – to heat the wood until it can be curved. These marsh canes are said to have the degree of humidity required for the operation. This process gives the gondola amazing balance, although it appears likely to topple over at any moment. (65) There are many different craftsmen who contribute to the beautiful creation that is a gondola. These craftsmen range from carpenters to *squerioli* to caulkers (who tar the boats). The gondola is special, not only because of its unique shape, but also because of “el parecio”: the ornamentation of the gondola. The most important of this ornamentation is the *ferro*, the *forcola* and *remo*, and the *felze*.

Ferro, Forcola, and Felze

The *ferro* is the distinctive metal design at the prow, or front, of the gondola. It has gone through about 1,000 alterations since its creation; its curled design is not only for aesthetic reasons but also to defend it from possible damage through collisions. It was once made from soft iron, but modern *ferros* are made with duralumin or other alloys; depending on the metal used, the *ferro*'s weight can vary from 10 to 20 kilograms (41). The unique shape of the *ferro* is famous worldwide – popular tradition maintains that the six teeth represent the six districts of Venice; the elegant curve signifies the Doge's cap, or the Grand Canal. The semi-circular break between the curved top and the six teeth is said to represent the Rialto Bridge. The *ferro* has become a symbol of the gondola, which is a symbol of Venice itself.



The *remo* (oar) and *forcola* (oarlock) are two of the most practically important parts of the gondola. The *forcola*, carefully shaped with a large bend for maximum strength, is made from a single piece of walnut root. (43) It is placed at the stern of the gondola, where it is the true point of strength, which allows the boat to lean and lower on the right-hand side. Its main function is to give support to the oar, as the gondolier pushes on the oar to propel the gondola forward. The oar is specially made by the “*remer*” (oarmaker), who exclusively builds the oars and oarlocks. The wood used is split beech, well matured and without knots. The oar is carefully made to have a tapered blade at the end; the thickness of the oar gradually diminishes, which allows the oarsmen to row more effectively (43). Without these beautifully crafted pieces, a gondolier would not be able to row the gondola.

Another important, but now extinct, aspect to the gondola is the *felze*, which was a small cabin in the middle of the boat. It was initially made of small planks formed into an arch shape and covered with branches and ferns, or “*felci*”, from which the word “*felze*” is derived from (43). The *felze* was later developed into a more richly decorated seating area, as the use of the gondola became more popular with the wealthy nobility. It became “a small, floating drawing-room, with velvet or brocade seats inside and a little door at the front part and curtains on the small side windows” (44). Over time, however, use of the *felze* diminished; now, they are never used on gondolas and exist only in private collections.

The Color Black

One of the peculiarities of the gondola is the fact that it is black. This might not seem strange, but it is interesting to note that every gondola in Venice is black. Once, the gondola was painted various colors, but black was prevalent because it is a sign of elegance, suitable for every kind of big event. Although many associate the color black with mourning, the Venetian Republic used red as the symbol of mourning, while black was that of elegance (72). There are many theories as to why the gondola are now all black, some more feasible than others. One such theory is that the color black symbolizes the mourning for the fall of the Venetian Republic (this theory can be dismissed as there is no historical proof). Another version is that black was the established color after the plague disaster of 1630, which claimed over 50,000 lives. Most likely, the color derives from the use of black pitch used to seal the boat and make it waterproof. (72) For whatever reason, gondolas today are black, just one of the traditions that make Venice unique.

The Gondolier

It is hard to discuss the gondola without mentioning the gondolier. These persons have as long and rich of a history as the boat itself. “History shows that from simple boatmen they went on to become virtual ambassadors of high lineage, because of the secrets they knew about entire families of the nobility.” (9). In the very early days of the gondola, the gondoliers were made up of Moors and black slaves. As the use of the gondola became more important, the gondoliers became an integral part of society. (107) A gondolier’s daily contact with the aristocracy caused his rise in society – they eventually became a link between nobility and the common people. The gondolier is connected with all of the events of the Republic, at ceremonies and on solemn occasions; they were also responsible for keeping the secrets of the nobility, as illicit affairs and intrigues would often occur in the gondola. In the late 1500’s, when personal luxury in the gondola was forbidden, the gondoliers’ uniforms were ordered to be simple and sober. (107) It was for this reason that they wore simple black up until the Second World War, when the influence of the French Army altered the uniforms. Today, gondoliers can be seen wearing blue and white or red and white striped shirts, a sight that has become integral with Venetian culture.

Gondolas and their boatmen have always been an important part of Venetian culture. The gondola remains to this day a masterpiece of aesthetics and naval architecture, of both science and art. It has and always will be one of the symbols of Venice.

Types of Traditional Boats

Traditional Venetian boats were designed based on their intended use. These uses include transport of large and small goods, public transportation, construction, house maintenance, the police, military defense, and fishing. Because traditional boats were built according to their use, they can be separated into three main categories: fishing and hunting, cargo transportation, and human transportation. Each category contains boats of similar size, shape, and intended use.

Fishing and Hunting

Venice, like many coastal cities, is known for its seafood cuisine. Fishing in the Lagoon requires boats that are capable of transporting large amounts of fish back to the island, and that have the ability to maneuver to and from the location of the fish.

The *topo*, commonly translated as “mouse,” is typically a 24 meter long sail boat with a large rudder in the rear for steering.³⁸ The *topo*, shown in Figure 6, is particularly unique because of the position of its sail; the mast is located about one third of the way along the length of the hull. The Venetian waterways tend to become very shallow during low tides, particularly the smaller canals. In order to travel through these shallow waters, the *topo* was built with the ability to lift its deep rudder and lock it in an upward position, thus preventing the rudder hitting the bottom of the canal.

A final feature of the *topo* is the hollowed-out storage compartment in the hull, which allows the fisherman to store his catch in a cool, wet place during transport back to land.³⁹

The *sanpierota*, seen in Figure 7, is also an example of a popular fishing vessel found in early Venice. The name is



Figure 6: A *topo*, used for fishing in the lagoon



Figure 7: A *sanpierota*, a common fishing boat

³⁸ [The Boats of Venice](#). Pg 91

³⁹ [Tipologie dei natanti veneziani](#). Pg 45

derived from its place of origin, San Pietro, in Volta.⁴⁰ It is a member of the *sandolo* family of boats, and was popular for its sturdiness, reliability, roominess, and relatively simple maintenance. Like the *topo*, this boat was sail-powered before the days of motors. It is on average six to seven meters in length⁴¹, and usually owned by Venetian families; they were painted with different bright colors to distinguish one from the other. It was also commonly rented, similar to car or moving-van rentals. As recent as the 1930's, there were over 50 row boat rental facilities in Venice.

The *s'ciopon* "long gun" is a unique hunting boat designed for the specific task of allowing one man to both navigate the boat and shoot ducks.⁴² The *s'ciopon* is one of the few traditional Venetian boats that can be rowed sitting down. The gun attached to the boat is three meters long, and is pre-set to be aimed so that a swimming duck can be shot without moving the gun up or down. These boats are no longer used today for hunting, but instead are common among young boys for short distance transportation. The boat rides very low in the water, as can be seen in Figure 8.



Figure 8: A *s'ciopon*, a unique traditional boat, with a 3 meter gun extending in the front so the hunter can row and shoot

Large Cargo Transport

The city of Venice relies on boats for most large cargo transportation. Cargo boats are filled with anything from fresh fruit to construction supplies – everything the city needs is transported by boat. Transporting large, heavy cargo requires a vessel strong enough to do so, while remaining maneuverable throughout the canals.

The *caorlina*, seen in Figure 9, is about 10 meters in length, and is known for being fast, easy to handle, and capable of carrying a large amount of goods. It was commonly used to carry fruits and vegetables in large quantities.⁴³ A *caorlina* is



⁴⁰ The Boats of Venice. Pg 102

⁴¹ *Idem*

⁴² The Boats of Venice. Pg 54

⁴³ The Boats of Venice. Pg 122

typically rowed by two people; however, up to eight may row at one time. To accommodate such a large amount of rowers, the *caorlina* was built to be symmetrical along the width and length.⁴⁴ Such symmetry is rarely found in traditional Venetian boats. It is this attribute that allows the *caorlina* to be used in many *regate*, or boat races, today.



Figure 10: A *peata*, the largest cargo boat. The boat has been extinct since 1980.

The largest of all traditional Venetian cargo boats is the *peata*. It was used throughout Venice to transport all sorts of large bulky materials, particularly those needed for construction. It is typically 16 meters in length and is normally manned by two oarsmen, but can be rowed by as many as

16.⁴⁵ The manner in which this boat is propelled is what makes the *peata* truly special. Instead of rowing with a bladed oar, which utilizes the water to move the boat forward, the oarsmen stand on the boat and push the oar against the bottom of the canal. They progress the boat along by walking slowly from one end of the boat to the other, as seen in Figure 10.⁴⁶

Human Transport

In early Venice, traditional boats were used as a means of both personal and public transportation. Whether it was ferrying Venetians across the Grand Canal or transporting royalty, Venice depended greatly on the presence of row boats to reach their destinations.

The *sandolo*, shown in Figure 11, was the most common form of transportation in the Lagoon. The most common use of the *sandolo* was private ownership; however, it was also used as a water taxi or fishing boat. This vessel is one of the few that is still very common today, although many now have an attached motor. The *sandolo* can also be commonly seen in races throughout Venice.

⁴⁴ *Idem*

⁴⁵ The Boats of Venice. Pg 124

⁴⁶ The Boats of Venice. Pg 126



Figure 11: A *sandolo*

Another common means of transportation was the *mascareta*. This boat gained popularity because it was lightweight, easy to maneuver, and above all, inexpensive. It weighs as little as 120 kilograms and is about six meters in length.⁴⁷ This boat is one of the simplest of the traditional boats, and therefore the most popular among modern amateur boat builders. As motor boats gained in popularity, boat owners began purchasing personal motor boats, which meant that privately owned crafts like the *mascareta* fell out of existence. This boat can be seen in Figure 12.

Perhaps the quickest of all traditional boats, the *puparin*, was the vessel of choice for a faster means of transportation. Its slim design made it skim quickly over the water of the shallow canals. This member of the *sandolo* family was the most expensive and difficult to obtain. Owning a *puparin* was considered a symbol of status because they were expensive to buy. It is for this reason that members of Italian nobility were commonly transported in a *puparin*.



Figure 12: A *mascareta*

Despite the fact that such a huge variety of boats once populated the canals, it is common to walk around Venice today and see the overly-romanticized *gondola* as the only traditional boat on the water. It is much more common to see people steering motorized boats through the narrow canals or around the lagoon, rather than rowing traditional boats. Where have these hundreds of traditional boats gone?

⁴⁷ The Boats of Venice. Pg 52

Traditional Boat Endangerment

Due to the overwhelming increase of motorized boats in Venice, the traditional rowed boats are being abandoned and nearing extinction. The slow disappearance of traditional boats can be best seen through the evolution of the rental facilities, known as *fitabatèle*, which would rent boats for work or pleasure. In the thirty years from 1930 to 1960, 18 of these rental facilities were closed, and then an even more drastic decline took place, and in the subsequent 15 years 17 more closures took place. There were once 52 shops that rented traditional boats; today, none remain.

The *squeri* that were once one of the most important parts of Venice are also disappearing. There were originally fourteen main *squeri* that were active in the building of traditional boats. Now, only seven of the fourteen are still operational; although they repair many types of traditional boats, the only new boats which come out of them are *gondole*, the last of the popular traditional boats.

As renting traditional boats became more difficult, membership for the many rowing clubs around Venice increased. Although traditional boats have become increasingly endangered, the Venetian love of traditional rowing has not diminished. Rowing clubs offer members social interaction for those

similarly interested in the unique style of Venetian rowing. The 26 rowing clubs in Venice are known as *remiere*, and each rowing club has a collection of boats, including rare or unique traditional boats. For example, Figure 14 shows a *batèla a coa de gambero*, a very rare boat owned by *Ramiera Serenissima*. About 28,000 Italians belong to rowing clubs in Venice and northern Italy, which in certain areas practice the Venetian style of rowing.⁴⁸ These rowing clubs have helped keep the enthusiasm for traditional boats and rowing alive.



Figure 14: A *batèla a coa de gambero*, a very rare traditional boat owned by *Ramiera Serenissima* (The Serenissima rowing club). Rowing clubs have helped to keep the tradition of Venetian rowing alive.

Efforts for Preservation

⁴⁸ *The Traditional Boats of Venice*. 2004 IQP

Traditional boats are in constant danger of becoming extinct. There are, however, efforts to preserve the nautical history of the city of Venice. There are annual races held in Venice, not only as a sport, but also to preserve the ancient Venetian tradition of rowing traditional boats. The ten famous *regate* are annual races, used to understand and respect the lagoon – to help rediscover Venice’s maritime culture. The *regate* are vastly popular, for both participants and for viewers. These races are one of the most important ways that traditional boats, rowing, and maritime heritage stay alive in Venice.

Arzanà

There is one organization dedicated to preserving traditional boats and the maritime heritage of Venice. This organization is Arzanà, which is headquartered in the *Squero ai Servi* in the Cannaregio district of Venice. The *squero* was built in the 15th century, and remained active until 1920. Although no longer active, Arzanà uses the *squero* building for boat preservation and as a storage facility for maritime accessories. Founded in 1992, Arzanà promotes the study, restoration and conservation of the traditional boats of Venice. In the last fifteen years it has acquired, and in part restored, about fifty typical boats of Venice and the lagoon, many of them the only one surviving of their kind.⁴⁹



Figure 15: Arzanà, located in an ancient *squero*

To be maintained efficiently and, where possible, fully returned to sailing and rowing capacity, many of the traditional boats in the Arzanà collection need radical restoration. This is something that requires financial support that Arzanà – a non-profit organization run by volunteers – often lacks. Arzanà has rented parts of the collection to films making period pieces about Venice. For example, several of Arzanà’s boats and nautical artifacts can be seen in the recent movies, *The Merchant of Venice*, and *Casanova*. Arzanà also appeals to local and international agencies, companies, foundations and associations, who understand the need to safeguard traditional boats and to convey to future generations the importance of what was once, and still should be, the most common aspect of the Venetian culture.

⁴⁹ Arzanà statuto

Appendix F – Alumni Newsletter

VOLUME 1, ISSUE 1


VENICE PROJECT CENTER
HELPING VENICE SINCE 1988
NOVEMBER 28, 2007

CELEBRATING THE 20TH ANNIVERSARY OF THE VPC

INSIDE THIS ISSUE:

PRESERVING THE NAUTICAL HERITAGE OF VENICE	2
STRIVING FOR AN ACCESSIBLE VENICE	2
VENETIAN BOATS: HARMFUL OR HELPFUL TO THE ENVIRONMENT	2
SOCIO-ECONOMICS: THE PERSONAL VENICE	3
PRESERVENICE: SAVING PUBLIC ART	3
A VENICE MQP	3
HOW WELL DO YOU REMEMBER VENICE?	4

SPECIAL POINTS OF INTEREST:

- The 20th year anniversary! What's being done to celebrate
- See what this year's groups are doing for IQP's in Venice
- Read about the Venice experience from an advisor's point of view
- Check out the crossword puzzle, and see how much you remember about Venice!

Welcome to the first edition of the Venice Project Center Newsletter! In 1988, a study was conducted by a group of students from Worcester Polytechnic Institute to determine the feasibility of a project center in Venice. Now, 19 years later, the Center is still running successfully. Since the creation of the Venice Project Center, 119 projects have been conducted by over 400 students.

You, the Venice Project Center Alumni, were those students. Tremendous effort, along with countless hours of research and field work, has contributed to the creation of one of the most extensive collections of information about the city of Venice that the world has ever seen. Your efforts have been recognized: 9 Presidential IQP Awards, and mentions in several major publi-

cations, including *National Geographic*, *Wired* magazine, *Smithsonian*, and *New Scientist*. As the students of the "year 19" IQP projects, we plan to organize a celebration for the 20th anniversary of the Venice Project Center. Not only would this celebration commemorate the outstanding achievements of the past 20 years of work done in Venice, but it would also be a chance for alumni to reunite with fellow students who made

the IQP experience memorable. We hope to have both a celebration in Venice, where the work done by students could be presented as an exhibition, and in Worcester, where more alumni would be able to attend. Feel free to read about what this year's projects and the plans for the celebration at the VPC website! <http://www.wpi.edu/Academics/Depts/IGSD/Projects/Venice/Center/VPC.html>



Just a few of this year's Venice IQP students. From left to right, top: Michael Morin, Jennifer Richards, Kevin Black, Sara Migdal. Middle: Michelle Dubuke, Amanda Kent, Nicholas Vitello. Bottom: Marc Balbo, Michelle Carboneau, Kyle Feeley

20 YEARS: ONE PUBLICATION

Nineteen years of IQP's in Venice have produced some of the most complete information about Venice that is in existence. However, this information is not easily accessible to the public. This year, the Venice IQP students are dedicated to writing a comprehensive book containing all of the information gathered over the years. Because the past IQP projects will be referenced,

all Venice alumni will be recognized. The Urban Maintenance group will be discussing canals, docks, bridges, and utilities that are unique in Venice. The Environment group will be writing a chapter on the effect that boat traffic has on the environment, while Socio-Economics plan to discuss cargo, retail, and tourism in Venice. The Art group will be writing two book chapters, one on

public art and the other on the unique church floors of Venice. Finally, the Miscellaneous group will be writing a chapter on the traditional boats of Venice. This book will include all of the data and information gathered by the dedicated students of the Venice Project Center, and will hopefully be published in Christmas of 2008.

PRESERVING THE NAUTICAL HERITAGE OF VENICE

The beautiful city of Venice depends on boats for everything, including transportation, tourism, and services required for everyday life. However, traditional wooden rowed boats are becoming extinct as motorized boats become the standard. These boats, which have been the backbone of Venetian culture, are disappearing. Our group is attempting to help solve this problem by working with Arzaná, an organization dedi-

cated to the preservation of the traditions and heritage of nautical Venice.

Arzaná, named for the naval base in Venice, the Arsenale, was founded in 1992. In the past 15 years, the organization has accumulated an extensive collection of boats, equipment, and tools used in the craft. However, Arzaná has no efficient means of communication with the public; there is also no system to collect donations for restoration. It is

our goal to help Arzaná more effectively advertise their mission and to create a system of raising funds for preservation. We will use the Arzaná inventory to plan and start a traditional boats museum, which will be open to the public. As another way to raise awareness about this cause, we are going to produce a website that will promote Arzaná and allow for donations.



A decorative parlock found on one of Venice's traditional boats—just one of the many examples of nautical heritage in Venice



One of Venice's hundreds of bridges—one of the many obstacles for handicapped travelers

STRIVING FOR AN ACCESSIBLE VENICE

The upkeep for the city of Venice has been an important topic in IQP projects ever since the Venice Project Center has been created. We are the "Urban Maintenance" group, and we originally started looking at four different topics: Canals, Bridges, Docks, and Sewers. We soon realized that because of the remarkable effort of the past IQP students, the majority of these topics were complete and do not need

to be researched further.

Our group has decided to look into the level of handicap accessibility of many of the bridges throughout the city, especially those around touristic areas of Venice. Handicapped accessibility is important to the city because of the amount of people who are mobility impaired, including the elderly, those with canes, wheelchairs, carts, luggage, baby strollers, and the in-

creased amount of people with disabilities. We are taking traffic counts of people moving over bridges and determining how many people are mobility impaired, and what kind of problems they have crossing bridges. During our 7-week stay, our group will attempt to assess the possibility of adding more permanent and useful handicap accessible ramps in the city of Venice.

VENETIAN BOATS: HARMFUL OR HELPFUL TO THE ENVIRONMENT?

There have been studies done that measure the social and economic implications that boat traffic has on Venice. As the Environment group, we plan to explore traffic's effects on the environment by analyzing trends in canal traffic over time. Most noticeably, traffic is responsible for wake, water, and noise pollution, which has become a

growing problem in Venice. During our 7-weeks in Venice, we will be taking boat traffic data counts at intermediate canal intersections. Existing data is updated twice annually at major intersections, but no such information exists yet for intermediate points. We will be looking at boat type, the number of passengers, origin, and destination. Attempts are

also being made to record license plates. This information would be used to help create a more accurate traffic model for the city of Venice. The Redfish Group of the Santa Fe Institute is making an autonomous agent traffic model; with the addition of these data counts, their model will improve greatly, allowing it to better reflect reality.



A canal in Venice—one of many that are at a risk of higher pollution because of heavy boat traffic.

SOCIO-ECONOMICS: THE PERSONAL VENICE



Fruit and vegetable cargo boat making deliveries in the early morning—an example of the cargo transportation system found in Venice

The Socioeconomics IQP group is focusing on three mini-projects: Cargo Transportation, Tourism, and Retail. We are gathering information from past work done in these areas and tying up loose ends. We are also adding to previous field work by performing our own new studies. We plan on writing a chapter on each of the

three topics, which will be added to the comprehensive book written by this year's IQP students. Since our arrival we have explored the city, performing new research and interviewing a number of prolific Venetian figures such as Luigino Vianello ("Crazy Luigino") to establish new developments in our focus areas. Our group has even woken up at 3:30 a.m. to

observe and photograph the loading of cargo at *Scalo Fluviale!* In addition, we have met with Thierry Morel, a scholar from Cambridge, who is writing a book on the effect of tourism on Venetian socio-economics; he will be collaborating with us, as well as exchanging data and ideas. Due to the fact that it has been five years since any tourism data has been updated, we plan to add the missing information. The group has also set up meetings with the Venetian Commerce Department to talk about the database obtained by the previous Retail IQP group. If you have any questions or comments, or you would just like to see our work, feel free to email us at ve07-soc@wpi.edu.

PRESERVENICE: SAVING PUBLIC ART



The winged lion of Venice—one of the many examples of public art in Venice

There have been many projects over the years that have focused on the widespread and beautiful public art in Venice. This year, the Art group is adding to the databases created by past IQP groups by surveying several lagoon islands, including Murano, Burano, and Torcello. In particular, we will be cataloging any missing *lunette*, *portali*, and *mascaroni*. We will also generate a specific method for determining the cost and priority of restoration; these methods will then be applied to the existing catalogs to create a list of the most endangered pieces. We plan to found a non-profit organization called "PreserVenice": this organization will be dedicated to the restoration and preservation of Venetian public art. Our group must determine funding sources and select a qualified individual to run the organization. Also, we will create promotional materials such as a website (www.preservenice.com), and a book about Venetian public art, in order to advance the cause of the endangered public art in Venice.

A VENICE MQP: USING SCIENCE TO PROTECT CANAL WALLS

The canal walls in Venice, Italy are eroding, largely due to boat wake and the corrosive sea water. Ideally, a protective barrier would exist in front of the walls to shield them from erosion. The primary focus of this project is to determine the feasibility of using microbial fuel cells to power the accretion of sea water minerals to form a protective barrier for the canal walls. Accretion, or the accumulation of minerals on metallic objects submerged in seawater, is a naturally occurring process which can be enhanced by an induced-current. Microbial fuel cells generate current by harnessing the electrons produced by the microbial digestion of organic material. This project will use the microbes present in the sediment below the canal waters to provide current to drive accretion onto wire mesh. To test this various experiments are being performed in the lagoon of Venice.



Jessica Balesano and Jodi Lowell with Fabio Carrera, constructing the apparatus necessary for their MQP, entitled "Microbial Fuel Cells Powering an Accretion Process in the Venetian Canals"

A WORD TO THE ALUMNI OF VENICE

This year has been very special because of the emphasis placed on the past work of the Venice alumni. The IQP students this year have worked very hard to complete book chapters on the main focus of the past 19 years of work. This newsletter has a dual purpose: we are excited to re-open the channels of communication between the past and present Venice IQP students,

and we would also like your input. All of the book chapters in the categories of Art, Environment, Socio-Economics, Urban Maintenance, and Traditional Boats are online and available to anyone interested. Do you remember something about your IQP that you would like to include in the book? Feel free to email us at carrera@wpi.edu if you would like to read the book

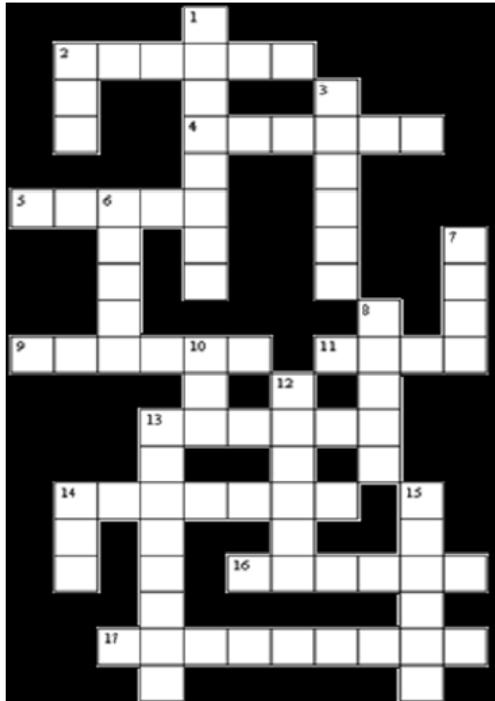
chapters or contribute your knowledge based on your experience in Venice.

Venice Survey:

Venice Alumni! We would love your feedback. Please take our survey to answer some questions about the 20th anniversary and the publication of the book. Any help would be greatly appreciated. Thanks!



The Bridge of Sights—one of many sights that make Venice a priceless experience

HOW WELL DO YOU REMEMBER VENICE?

Hello Venice Alumni! We all know that you worked very hard on your IQP while in Venice, but we want to know: how much do you *really* remember about Venice? We made this crossword to find out...Enjoy!

ACROSS

- 2 The most beautiful city in the world
- 4 Comes in many flavors, and is delicious!
- 5 The Venetian himself
- 9 "Thank you"
- 11 Italian word for "hi" and "bye"
- 13 Fabio's favorite drink
- 14 Think striped shirts and straw hats
- 16 The best restaurant in Venice
- 17 San Marco gets wet when this happens

DOWN

- 1 The second highest population in Venice (hint: They live in St. Mark's Square)
- 2 IQP headquarters
- 3 The waterways of Venice
- 6 Our favorite supermarket
- 7 The Italian red and white
- 8 The Italian word for "pizza"
- 10 The actual reason for being in Venice (hint: not the pizza)
- 12 The big bridge
- 13 The main attraction in Venice
- 14 Layers can be added
- 15 How Italians answer the phone

Appendix G - Alumni Survey

http://www.surveymonkey.com - Venice Project Center: Celebrating 20 years - Mozilla Firefox

File Edit View History Bookmarks Yahoo! Tools Help

Venice Project Center: Celebrating 20 years

Exit this survey >>

1 / 1 | 100%

1. Would you be interested in receiving a yearly newsletter, giving updates and information about what projects are being worked on in Venice?

Yes
 No

2. Would you be interested in purchasing a book about Venice that was written by IQP students, showcasing the incredible work done and projects completed in Venice over the past 20 years?

Yes
 No

3. Do you think any of your relatives would like to purchase this book, or if you would purchase more than one copy as gifts?

Yes
 No

4. Can you think of a reasonable price range that you would be willing to pay for a book of this nature (please respond in US dollars)?

Upper
Lower

5. Would you prefer a hard-cover book?

Yes
 No

6. If "Yes", what would be a good price range for a hardcover book?

Upper
Lower

7. Would you be interested in celebrating the 20th anniversary of the Venice project center by attending an event held at WPI?

Yes
 No

8. Would you be able to and willing to celebrate the 20th anniversary of the Venice Project center by attending an event in Venice?

Yes
 No

Done

start SurveyMonkey - Que... http://www.surveym... Inbox - Microsoft Out... Desktop - ve07misc@... /home/ve07misc/publish... 3:11 PM

Appendix H - Executive Summary Poster

Bryan Bidga[†], Michelle Dubuke[‡], Daniel LaTorella[¶] and Jennifer Richards^{*}
 Worcester Polytechnic Institute - [†] Mechanical Engineering, [‡] Biology and Biotechnology, [¶] Physics, ^{*} Biomedical Engineering -
 Interdisciplinary Qualifying Project

MUSEO ARZANÀ: Preserving the Traditional Boats of Venice

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INTERDISCIPLINARY QUALIFYING PROJECT

Introduction
 Preserving historical artifacts is one of the best ways to keep important historical and cultural traditions alive. In Venice, these artifacts are traditional boats, which have begun to disappear since the introduction of motorboats after the Second World War. One non-profit organization, Arzanà, is dedicated to the restoration and preservation of Venetian traditional boats; however, their efforts are limited due to lack of funds and no efficient way of publicizing their cause. One aspect of our project was to create a public website that includes a method for collecting donations, and houses the archives of information collected and catalogued by previous students. We also created a brochure filled with information about Arzanà's collection in order to promote awareness about nautical heritage in Venice. The second half of our project is a commemoration of the 20 years of the Venice Project Center, and organizing the publication of a book comprised of the information gathered by all of the students from past Venice projects.

Sandolo in the process of being restored

Background
 As a city whose history has long been linked to the ocean, Venice has a heritage deeply rooted in maritime traditions. The traditional boats of Venice, however, are the most significant indication of the Venetian connection to the sea. Boats were used for most of the main needs in the Venetian culture: fishing, hunting and transportation. Based on their intended use, traditional boats were built differently. However, all Venetian traditional boats have two similar characteristics: a flat bottom and a shallow draft hull. The flat bottom is essential for the shallow canals, and the shallow hull allows for easy entrance and exit of the boat.

An abandoned traditional boat

Arzanà—a non-profit organization dedicated to the preservation of traditional venetian boats

A hydrodynamic study of the canals is one of the topics that is unique to the Venice Project Center. As of now, this study is the only information available on the hydrodynamics of the Venetian canals. Other projects include the restoration and cataloguing of public art, environment issues, and the proposal of a more efficient sewer system in Venice. Through the years, the Venice Project Center has been awarded 9 IQP awards, a significant honor. However, all of this important information is not easily accessible to the public, nor can it all be found in one location. The Center has also not been recognized for all of the achievements and substantial amounts of work that hundreds of dedicated students have invested in their IQP's in Venice.

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Methods
 In order to help Arzanà raise funds for preserving and restoring traditional boats, our group created a website that includes descriptions of Arzanà's collection, its mission, and the reasons why preservation is important. The website is comprised of two parts: information about the Arzanà association, and information about Arzanà's collection of traditional boats and nautical artifacts. The design was given to us by Silvia Caprieta, and the coding was done by the group. As a first step towards making Arzanà part of a museum, this project focused on creating a brochure that would not only provide information about the organization and its collection, but also to provide a walking tour of its headquarters.

As the production group, we did extensive research on book publishing, copyright laws, and pricing for the publication of a book containing information gathered by past students. We contacted Franco Filippi, a local publisher, who gave us information concerning the logistics of printing, publishing, and distributing such a book. In order to reach the alumni whose work would be published in the book, our group created a newsletter to update them on the current status of the Venice Project Center. We included summaries of each project, written by their respective groups, as well as an update on the book publication and the 20th anniversary celebration. A survey was attached to the newsletter, which will provide feedback from the alumni concerning the 20th anniversary of the Venice Project Center.

Results
 This project produced a number of tangible results. The first is the successful creation a website for Arzanà (www.arzana.org) that will contribute greatly to the preservation of traditional boats. Not only does the website provide information about the nautical heritage and traditional boats of Venice, it also gives Arzanà a more widespread way of reaching out to the public for donations. The second major result from this project is Arzanà's first step to creating a traditional boats museum – the creation of a bilingual brochure which outlines a guided tour of the Arzanà building. The brochure includes a floor plan of the old boat yard, with photographs and descriptions of notable artifacts inside the building. As another method of promoting awareness about the traditional boats and nautical heritage of Venice, our group also produced a book chapter encompassing these topics, which will be part of the book being published by the Venice Project Center.

The Collection

 The Arzanà website—bringing the Arzanà message to the public

The brochure created for Arzanà which acts as a guided tour of the exhibit


The outreach newsletter sent to Venice alumni


This project had to produce the logistics and information required for the successful publication of the book. After meeting with the local publisher, we determined that a book of about 208-256 pages would be ideal and would cost about 18 dollars a copy, with a minimum number of 1,000 copies. Once the book is fully edited and formatted, it will take approximately 20 days to one month to be ready to sell. In order to advertise both the creation of the book and the celebration of the 20th anniversary of the Venice Project Center, our group produced and distributed an alumni newsletter in both electronic and hard copy form. A survey was also included as a means to get feedback from the alumni with regards to the purchasing of the book and the 20th anniversary commemoration.

Conclusion
 To ensure the preservation of traditional Venetian boats, it is important to continue current preservation efforts. We developed several recommendations that will allow the continuation of this project, in order to better preserve the traditional boats of Venice. In addition, we feel that it is important to celebrate the great milestone the Venice Project Center has reached – its 20th anniversary – as well as involving the Venice alumni to a greater degree. There are also several ways we recommend advertising and selling the book that this year's project groups have dedicated themselves to writing.

Arzanà needs funding to restore the boats in the collection and get them back on the water.
