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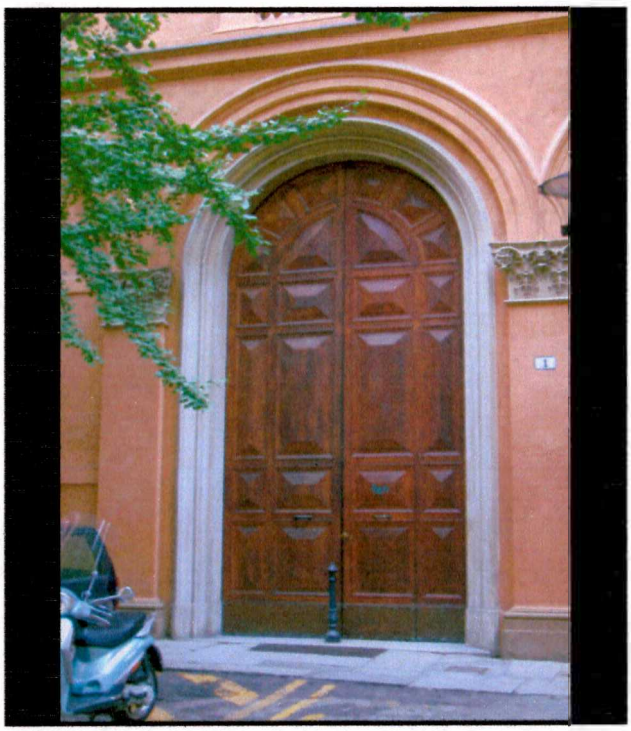
HERITAGE STUDY TOUR TO ITALY

OCTOBER 2005

Colin Trembath



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THE PRATT FOUNDATION
INTERNATIONAL SPECIALISED SKILLS INSTITUTE
FELLOWSHIP

HERITAGE STUDY TOUR TO ITALY. OCTOBER 2005

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ADDRESSING ISSUES RELATING TO FIRST DRAFT REPORT

Teaching Methodology

History of Architecture

The Universities of Florence and Venice are both surrounded by architectural heritage dating back more than three millennia. Both Universities utilise this great wealth of history at their doorstep by the study of building design and technique, covering Italian cultural and building heritage.

Many American Universities take their students to Italy so they may study the building heritage readily available in metropolitan and regional Italy.

The University of Wisconsin Milwaukee take their Bachelor of Architecture students to Italy for six weeks of every year where they undertake critical surveys of the church of San Giovanni Battista in San Gemini in Umbria. Excursions are also organized to surrounding cities of Perugia, Spoleto, Todi, Assisi, Orvieto, Siena, Lucca, Montepulciano, Pienza, San Gimignano, Rome and Florence. This important research is in collaboration with The Associazione Per la Valorizzazione del Patrimonio Storico San Gemini.

The church of San Giovanni Battista was originally built in 1199 and research being undertaken by the University of Wisconsin is critical prior to restoration being started.

This most valuable program satisfies the heritage components of the Bachelor of Architecture and allows participants to experience the cultural heritage of Italy.

The University of Florence

Dr Carlo Alberto Garzonio, Director Dipartmento di conservation dei Archectonici, recommends his preferred teaching method of using an equal mix of theory and practical activities. Some of the practical activities include visiting specific heritage sites covering Italian history dating back to 1000BC. Florence and its surrounding countryside have possibly the world's most spectacular architecture.

Dr Carlo takes his students, as he took me, to specific heritage buildings. This experience gave me insight into architecture, materials and the specific restoration requirements of each building that we studied. It was wonderful to be surrounded by such magnificent architecture spanning more than 1000 years. His passion for history was truly inspiring and Dr Carlo spoke at length of his desire to relate the theory of conservation to the practical application of conservation techniques, and as such, learn more from history.

University of Venice

History of Architecture is also covered in great detail as a pre requisite unit to the History of Building Techniques unit. Students of the Venice school are taken on historic excursions similar to those conducted by the University of Florence. An appreciation of the culture of Italy is also developed through Italian language classes and by experiencing the unique regional foods available in Italy.

Motivation for the restoration process

Dr Carlo answered the question of motivation for the restoration process by indicating that tourism and developers were undoubtedly driving this restoration process. Large amounts of money are made available from the Italian Government. In fact, 55 cents in every euro spent on construction in Italy is spent to fund heritage restoration and conservation. Construction in this case includes all road, rail, bridge, major and minor public works, water, sewerage, and public buildings as well as domestic housing.

Developers eager to take advantage of the government`s generosity in providing low interest loans and tax incentives are restoring and conserving the facades to enhance streetscapes, while refitting the interiors into modern apartment style accommodation.

Tourism generates 22 billion euros for Italy according to United Nation estimates and a large percentage of these tourists visit Italy to see and experience Italian heritage buildings. Because of this fact, the Government initiative makes good business sense.

International tourism spend figures (Italy)

Accommodation	11.7 billion Euros
Shopping	6.6 billion Euros
Food	6.1 billion Euros
Travel in Italy	2.6 billion Euros
Other	1.2 billion Euros
Total	**28.2 billion Euros**

The sudden increase in restoration activity has placed some strain on the facilities of the University of Florence, who consult with developers and heritage focused owners intending to restore and preserve fine Italian buildings.

Dr Carlo expressed concern with some of the restoration projects, citing poor standards and lack of adequate planning, which results in an absence of quality at many heritage sites.

Cultural issues relating to heritage

The overwhelming cultural identity of Italy is found its churches, cathedrals, medieval walled cities and towers. This architecture and culture are intertwined into the Italian way of life. Most cities have narrow streets with stone paved paths and balconied windows that allow for conversations far above the street below and also a fine place to dry one`s washing.

For regional Italians, life has changed little over the centuries, although most homes now have microwave ovens, DVD players and televisions. Despite this, ancient cultural traditions still remain.

Italian people are fiercely proud of their cultural heritage, and, in particular, their religious beliefs. Churches dominate the skyline of every Italian city and town. During my visit a short walk of 100 metres would present another church to view and to marvel at its architecture.

Often the rough exterior will not prepare one for the spectacle waiting inside. A particularly good example of this is the church of San Lorenzo in Florence. This church was originally planned to have a white marble façade, but was left incomplete. The interior was designed by Michelangelo, and it houses sculptures by Donatello and a sacristy by Brunelleschi. This magnificent church is also decorated inside with the most spectacular frescoes by Fillipo Lippi and words fail to express the magnificence of the interior. The church of San Lorenzo is the burial place of Giovanni de Bicci de Medici, who originally commissioned its construction, and is dedicated to Lorenzo il Magnifico.

Italians respect their building heritage, be it a humble stone dwelling, an opulent house, built by wealthy influential families such as the Medici, or grandiose religious cathedrals such as the Duomo Cathedral dedicated to Santa Maria del Fiore in 1436, situated in the centre of Florence.

Overview of course

The three Universities visited during the heritage tour were the University of Wisconsin (Milwaukee, USA), the University of Florence (Italy) and the University of Venice (Italy).

All universities place an overview of their heritage course into their teaching program stating the guiding principles that underpin the educational philosophy that supports cultural and heritage conservation. For example:

University of Wisconsin (Milwaukee)

This project (San Gemini) aims at a long term collaboration between San Gemini and SARUP (School of Architecture and Rural Planning). It is a relationship of mutual benefit that involves the sharing of work, ideas, skills and material resources in order to further education in historic preservation and mutual friendships. (Taken from Graduate School Bulletin 2005-2006)

University of Venice
The centre provides training courses of two weeks to three months duration for craftspeople and professionals wishing to learn or improve the techniques of traditional crafts, which can be applied both in the conservation of architectural heritage, and in the modern building industry. (Taken from Handout Information Proforma)

Conservation techniques

University of Florence
Dr Carlo Alberto Garzonio, director of the department of Technology Restoration and Conservation of the Architectonic Assetts, and his team specialise in the conservation of stone. This is due to fact that a great deal of heritage buildings in Italy are constructed from stone, and clay base material, with fired brick and terra cotta being the most prevalent.

Dr Carlo, with the help of Professor Elena Pecchioni, have also mapped and documented all of the known stone quarries in Italy. Professor Elena took residual samples of stone from each site and analysed them using reflective spectroscopy. This methodology utilises laser light plus x-rays to identify stone taken from specific heritage sites, and matches it to the original quarry source. This will allow replacements of matching natural stone during a restoration, if necessary.

Dr Carlo specialises in the effects of geological and petro-physic characteristics on creep phenomena, relating to marble used in cultural heritage. Dr Carlo researched the physical parameters correlating to bending phenomena in marble slabs.

In his laboratory Dr Carlo showed me a slab of white marble of approximately 900 x 400 x 15mm. It showed a bowing across the width of almost 6mm. This bending phenomena has caused much of ancient façade to break free of the substrate, allowing in particular, moisture to enter the fabric of the structure.

His research revealed inferior quality marble and stone dating back to when the Piedmonts ruled the Florence region almost two centuries ago. The sound buildings used marble prized by stonemasons for millennia, whilst those that were crumbling bypassed this, using inferior marble instead, which was selling at a lower price.

Research data collected by Dr Carlo and his staff has provided scientific understanding and furthered the preservation of stone and marble facades by aiming at the stabilisation of existing block work, and the reversal of decay.

Professor Gennaro Tampone has specialised in the conservation and preservation of wooden structures. Prof Gennaro is currently President of the Collegio degli ingegnere Architetto, and Com. Dir. ICOMOS Italia. Prof Gennaro, his research assistant Michela Pacelli and colleague Dr Paolo Lavisci provide consulting to heritage projects to give expert advice and solutions in restoration and conservation.

At the time I was attending Florence University Dr Carlo arranged Prof Gennaro to take me to a heritage site under restoration in Lucca (circa 1560) originally built for the Medici family.

The new owner of this building had contracted Prof Gennaro to take supervisory control of the heritage restoration process for the company undertaking the reconstruction. Contracting Gennaro to engineer solutions aimed at stabilising the timber fabric of this heritage building, will streamline the restoration project. Prof Gennaro and Paolo Lavisci introduced me to restoration and conservation under onsite conditions.

Many months of research and careful analysis had preceeded this inspection. Scaffolding covered the exterior façade, and also supported ceiling beams (ceiling height 4.8m). Externally, workers were replacing damaged render, were repairing corbels and other fine decorations common to this style of building and were internally restoring lime rendered walls within the ground floor.

The value of Prof Gennaro's consultation was shown in one of the conversations we had as we inspected the site. He told me that the building contractors' two most senior tradespersons had positioned pre-tensioned steel into slots carefully grooved 220mm into the exposed beam using a modified chain saw. This steel reinforcing is fixed into position using an epoxy resin and stainless steel pins. Prof Gennaro explained that the central beam had deflected under a load almost 30mm mainly due to moisture absorbed from the leaking roof. Visual inspection of the beam did not show moisture. Nicola Macchioni of the CNR-IVALSA Trees and Timber Institute had developed an ultra sound device to detect defects inside a timber beam without having to cut into the timber surface. This device was used by Dr Paolo and had detected wet rot inside the core of the beam. With this knowledge Gennaro and Paolo were able to design the most efficient method of support intervention.

Prof Gennaro utilised differing methods to stabilise timber beams. One case he told me of involved a beam trenched out to remove decayed fibre, then a rolled steel beam was placed into the trench, taking all the concentrated load off the timber, the metal being totally hidden.

The techniques of ultra sound detection and steel insertion resulted in minimal visual evidence of intervention, especially in this case as the beam was faced with frescoes and painted ornamentation. The intervention took a few days to implement and the beam was not removed in the process other than to realign its height.

After long and careful consideration, Gennaro made the decision to replace the roof trusses (constructed originally using tree trunks) badly weathered by leaking water from the roof. They were replaced with squared flitches of old timber sourced from a demolition supply company. The replacement trusses are designed by Prof Gennaro to adequately support the significant weight of the roof, while maintaining the integrity of the building.

This decision required the introduction of a tower crane to lift the original roof clear of the building, and position the replacement trusses, as well as to assist in re-establishing the roof materials, and the replacing of the damaged lead flashing. The tower crane was in position waiting for the rain to stop whilst we inspected the site. Prof Gennaro spoke of the high cost of the tower crane but that its introduction was necessary so that the above tasks could be completed safely.

This building is listed on the Italian National Trust due to the frescoes adorning its walls. The frescoes were discovered as Prof Gennaro undertook the critical analysis of the building. The building had been a bank during its history and the bank governors had painted the walls and ceiling white, covering and hiding the frescoes.

Prof Gennaro suggested that the owner employ a specialist in the restoration of frescoes. We watched this specialist remove the white paint quite methodically, exposing truly spectacular religious frescoes. Over the white paint he had drawn in pencil a grid, dividing the wall surface into rectangles 250 x 150mm. Each rectangle was wiped with solution, applied with a sponge, carefully rubbed with a soft brush, wiped again with clean water, and repeated until all traces of paint were removed. One section can take about 20-30 minutes. In the adjacent room we viewed the resurrected frescoes and his efforts were well worth the time and the cost.

The owner, who inherited the building from his father, had decided to convert the building into apartments with covenants preventing the lessees from fixing anything to walls, floors or ceilings. The twelve apartments will range in price (for a long term lease) and are expected to be valued at many hundred thousands of euros per lease.

The following day Prof Gennaro Tampone arranged for me to visit another restoration in progress that he was supervising.

The Villa Demidoff was originally built by the Medici family as a country retreat, north of Florence. It covers 74 acres and the forest was planted with exotic trees collected from all parts of the globe including Australia.

Originally named Villa Pratolino, in 1758 it was a fine palace house, which boasted an ornamental lake with a 6m sculpture of an old bearded man looking into the water. In 1872, the villa was purchased by Prince Paul Demidoff. Unfortunately over the past 75 years the villa has fallen into disrepair.

The Villa Demidoff has recently been acquired by the Italian Government who is responsible for funding the building's restoration and transformation into a School of Restoration and Conservation of the Architectural Environment. This complex, when completed in 2008, will become the principle restoration training establishment in Italy.

The Italian Minister for Education has forecast that the role of this School will also be to provide training in brick and block laying, rendering, painting and decorating and metal working skills. It will also provide numeracy and literacy skills to unemployed youth in Italy.

Prof Gennaro is supervising the restoration of this two story building, focusing mainly on the timber fabric and designing and initiating engineered solutions.

The construction company is from Naples and is highly skilled in heritage restoration. So far it has been working on this project for one and a half years, and forecasts that work will continue for another year at least. However, parts of the building are to be left for students to complete when the School is established in 2008.

Many load bearing beams have suffered serious decay from the effects of moisture penetrating the roof surface and resultant wet rot as timber beams absorbed the water. Each beam in turn was tested by the ultrasound device, the result analysed and a specific solution designed to support the timber initiated. Some of the beams were supported by cable trusses, deemed to be sufficient given their position and visibility status.

University of Venice
Venice European Centre for the Trades and Professions of Conservation of Architectural Heritage, Island of San Servolo Venice.

The University of Venice European Centre for the Trades and Professions of the Conservation of Architectural Heritage was established in 1977 and was created by the Council of Europe, UNESCO, the Italian Government and other international bodies.
The Centre's major activities have centred on providing advanced courses in traditional techniques, specific to restoration and conservation, and the innovative techniques for planned maintenance and sustainable conservation. Their specialist courses appeal to architects, craftspeople, engineers, technicians, entrepreneurs and teachers.

The centres senior registrar Mariella spoke of her teaching staff as being the "most specialist in the world" and very passionate about what they teach, often working with students up to twelve hours a day. The staff are selected specifically for their skills and are world-recognised master craftspersons (Maestro). Some staff told me they would "do this for no pay" such was their dedication to the skills of traditional trades being ongoing. Artisans travel from all over the world to teach at the island.

Areas covered
Conservation of stone
Conservation of metals
Conservation of Stucco and Plaster
Conservation of Wall Paintings
Conservation of Wood

Maestro

Giovanni Morigi
Mario Fogliata
Renato Giangualano
Patrick Poly

Students studying on the Island are accommodated and pay approximately 8,000 Euros for three months tuition.

Specialist interpreters attend most classes so every student is readily informed as to the conservation in the workshop. Students enjoy long access times with and without supervision The centre is principally involved in teaching hand and specialist techniques.

Only the wood school was involved in restoration of a historical product, a cabinet circa 1410. The cabinet consisted of primary and secondary veneers with the primary being ebony. The students were all involved in the restoration of this piece of history, carefully removing veneers and scraping every trace of old glue and refixing with the same type of adhesive (rabbit skin glue).

School of Wood Conservation
The Conservation of Wood Maestro, Patrick Poly, specialises in restoration of wooden furniture. Patrick showed me a photograph album showing a spectacular history and experience in restoration projects. His most revered restoration was the restoration of carriages of the Orient Express. He also specialises in restoration of timber veneered cabinetry.

When I visited this university the eight students were of many nationalities, including German, Austrian, Danish, American, Trinidad and Australian. All students spoke English, and communicated around the workshop speaking English, which was good for me. Patrick Poly, who is French spoke very little English and gave all his lessons in French which were translated by the girl from Denmark into German and English as she spoke seven languages fluently.

When I arrived the students had been studying for about a month and had completed most of the pre-requisite units; The History of Building, Materials and their Pathologies, Conservation Concepts, Analysis and Documentation, and Drawing and Survey.

Most of these units need to be completed prior to practical activities starting. Depending on the conservation stream the student chose, the practical activity centred on traditional hand skills, including wood carving, specific jointing techniques, marquetry, producing positive and negative design in brass, and black Japan mediums.

Patrick Poly demonstrated time-honoured skills in removing and replacing these delicate veneers, removing them with "98% proof hospital grade grappa". This alcohol injected under the veneer dissolved the original glue with a little help from a heat source (soldering iron), and hand levering tools.

School of Stone Conservation

The students studying conservation of stone were under the tuition of a German Maestro who was observed on the first day showing the students a power point presentation of preservation of historic stone work in Europe. The students travelled every day to a nearby island where they were reinstating some damaged masonry. These students and their instructor were not available to me to see or evaluate their activities.

School of Conservation of Metal

The centre provides a workshop traditional in layout, and most tooling was over 100 years old. However, modern oxy acetylene welding equipment was available and used mainly as a heat source along with four forges equipped with compressed air instead of the traditional bellows.

The students were being taught traditional blacksmithing skills with a Venice archaeological style by Giovanni Morigi. He was quite obviously a Maestro in metalwork. He did not speak English.

Students produced decorative wrought iron grills for arched and Gothic style windows, very elaborate street light brackets and barley sugar twisted metal components. The quality of the finished and completed work was spectacular. Unfortunately, none of the products that a student creates is able to be purchased by the student and when finished remains the property of the centre. All students working in this area were taking many photographs of their work and progress, for their own benefit and for assignments.

School of Conservation of Stucco and Plaster

Students working in this area were under the guidance of Mario Fogliata who impressed me greatly as he was working with the students, involved in the mixing preparation and application of the stucco, and not just supervising and directing, like many teachers who provide training to their students. The students were involved in many activities within this department and many examples of plaster moulding were on shelving. The most intriguing was the drawing of a perspective view of a doorway with pilasters, pediments and special decorations. The students were required to produce a perspective bas-relief produced in hand mixed, coloured and grained stucco.

The students were instructed in traditional preparation and mixing application of plaster stucco, using traditional materials.

2.0 Introduction

Report into issues arising from heritage study tour
To Italian Universities in October 2005

2.1 International Specialised Skills Institute Pratt Fellowship 2004

2.2 Sponsors

Pratt Foundation

2.3 Australian Context

Australia has been very slow at appreciating and valuing its built heritage. Our cultural tendency has unfortunately been to destroy any building seen as old and replace it with something new.

Many Victorians would riot if some person talked of demolishing The Melbourne Cricket Ground, but would remain silent when a developer was given permission to demolish a heritage building to erect modern architecture.

We are so fortunate in Australia to have organisations such as The National Trust and Heritage Victoria, which are committed to preserving Australian cultural and built heritage. Without them many of the older buildings that we are beginning to appreciate as a nation would be only a memory.

In Australia we have a very unique and eclectic mix of styles because of our multicultural makeup. British building design is the most prevalent for public buildings. In just one block of Ballarat's main street you will find Classical, Georgian, Victorian, Art Nouveau, Art Deco and Modern. Many have had their post supported veranda removed and replaced by cantilever support. In many cases aluminium windows have replaced the original timber windows.

The City of Ballarat has realised the intrinsic value of the heritage buildings and has placed a heritage template over Ballarat with the aim of protecting the streetscape from inappropriate development. Post supported veranda have reappeared and some of our most important buildings are to be restored fully or some just the façade.

The University of Ballarat moved their Art Faculty into the city. The Arts Academy moved into a renovated and restored regional Library. When the render on the façade was removed, beautiful brickwork was revealed, which was covered up in the 1960's to modernise the building.

The time has arrived to restore and protect our heritage buildings. Australia, in architectural terms, is a very young country. We can boast about our beautiful, old buildings, the oldest being approximately 220 years of age, which by European standards is quite modern.

School of Conservation of Wall Paintings and Frescoes

Under the guidance of Maestro Renato Giangualano, the students learned the traditional skills of preparing surfaces for the application of traditional paints prepared and mixed from the original pigments and base materials used in Europe for well over three millennia.
Many jars of ground coloured pigment were collected by the students from places all over Italy from traditional sources, and were mixed with egg yolk and distilled water (or 68% proof Grappa). This creates Tempera, which, when applied to a surface by brush, becomes a permanent frescoe.

Frescoes painted using traditional techniques will maintain their colour long after other contemporary paints have flaked or disappeared. Perhaps there is something to be learned from this ancient technique which uses only natural ingredients and not the cocktail of chemicals used today.

In other areas students were applying and carving plaster simulating an overmantel decoration incorporating wreaths and leaves from Italy, with provision for an elliptical portrait to be positioned centrally. Again the techniques were traditional, and required a steady hand and a full size drawing for scaling and reference.

Students were required to produce a stucco square 300 x 300 x 12 coloured and grained to simulate natural marble, one face to be fine polished, the other prepared for application of fresco. Students were then given a reproduction of a historic fresco in a fine Art book to copy only a section onto the prepared surface.

The results of the students work were stunning, a collaboration of Maestro teacher and talented student in an environment that supports and encourages excellence.

My visit to the Island of San Servolo Venice was an inspiration.

It has been noted that escalation of depreciation of heritage buildings has come since the beginning of the industrial revolution.

Whether a stone building is 200 or 2000 years old, resultant damage in the present day is similar, such as that seen in Italy or Australia. Restoration may not be the answer, but conservation may well be a realistic option in preserving heritage buildings.

Modern chemical based products applied to or impregnated into the stone will no doubt form part of the solution.

Damp courses need to be reinstated to prevent rising damp and resultant salt damage. The same salt damage can be seen in Ballarat and Venice, and this similarity is quite surprising.

At the University of Florence Dr Carlo Alberto Garzonio and Prof Elena Pecchioni have done a great deal of research into the conservation and preservation of natural stone, Dr Garzonio and Prof Pecchioni have documented every known stone quarry in Italy, analysing residual stone and utilising Reflective Spectroscopy, which uses laser light and x-ray to identify the fingerprint of the stone.

This research has enabled restorers and conservators to identify the composition and origin of the stone, which allows for careful planning and critical analysis, which is so important to successful outcomes.

The experience of restoration and conservation of heritage buildings in Italy provide obvious lessons for Australia. Our restoration should therefore be guided by the Athens Charter, (1931), the Venice Charter (1964) and the Australian Burra Charter (1979-1999) .

Guiding principles for restoration and conservation in Australia

Historical link

Athens Charter
The International Congress of Architects and Technicians of Historic Monuments met in 1931 and produced seven main resolutions developed to control restoration and conservation worldwide.

- Resolution 1: Called for international organizations for restoration on operational and advisory levels to be established
- Resolution 2: Proposed that restoration projects be subjected to knowledgeable criticism to prevent mistakes that could cause loss of character and historic value to structure.
- Resolution 3: Problems of preservation of historic sites to be solved by legislation at a national level for all countries,
- Resolution 4: Excavated sites not subject to immediate restoration should be reburied for protection.
- Resolution 5: Modern techniques and materials may be used in restoration work.
- Resolution 6: Historical sites to be given strict custodial protection
- Resolution 7: Attention given to protection of the area surrounding historical sites.

The most important resolution was unanimous; before any Consolidation of Partial Restoration is undertaken a thorough analysis should be made of the defects and the nature of the decay of those monuments.

Venice Charter (1964)

Developed to further the aims and objectives of the Athens Charter. The International Congress of Architects and Technicians of Historic Monuments, met and developed sixteen definitions for the Athens Charter. The definitions covered conservation. restoration. historic sites. excavations and publications.

Burra Charter (1979)

First adopted at Burra in South Australia (Revised in 1981, 1988, with the latest version in 1999). Supported by ICOMOS (International Council on Monuments and Sites), the 1999 version takes into account the advances in conservation practices and the conservation philosophy in Australia.

The Charter sets a standard of practice for those persons who provide advice, make decisions about or undertake works in places of cultural significance, including owners, managers and custodians.

The Burra Charter applies to all types of places of cultural significance, including natural, indigenous or cultural.

The Burra Charter in Australia

The Burra Charter is the basis of all restoration and conservation of the built or cultural environment.

The youthfulness of this country will work in our favour as we can learn and profit from others who have been conserving for hundreds of years.

Significant heritage buildings in Australia require (as in Italy) survey and analysis, documentation, careful planning and preparations (guided by conservation principles). They require skilled artisans and technical innovations to restore and preserve the fabric of buildings and to maintain the integrity and cultural significance for future generations.

2.3 Australian context (cont)

Australia has specific preservation requirements. Ballarat, as an example, has heritage buildings dating back to 1840. Most surviving public building are of solid stone and clay brick construction, rendered over with lime based render, very much the same as in Italy. There is a good reason for this phenomenon as many of the early Australian architects were influenced by the Italianate architecture of the 18th century.

An Italian link to Ballarat was extended to many stonemasons, bricklayers, joiners, carpenters, painters and plasterers who were lured by the gold rush of 1851. Some failed to make their fortune with gold but succeeded within a fledgling building industry.

The Italian influence in architecture within Australia cannot be underestimated, as many of our most treasured historical buildings display Italian stylisation, decoration and design inspiration.

However, there has been subsequent decay in these buildings over 150 years due to environmental effects such as:

* Pollution (eg. acid rain, exhaust fumes, industrial air pollution)
* Rising salt damage caused by the breaking down of damp proofing layers
* Inappropriate intervention or modernisation.
* Extremes of climatic conditions (heat, cold or wind).
* Earthquakes
* Effects of conflict.

Apart from the effects of conflict, the decay in Italy and Australia bear a striking resemblance.

The dilemma facing conservators is to select the most appropriate methodology to resolve or reverse the decay or to maintain the project with minimal intervention (eg Pompeii).

Lessons learned from the restoration of Italian heritage buildings, the research and development of techniques of intervention and specific heritage hand skills are paramount to successful restoration of Australian cultural heritage.

The development of international organizations and research needs to be designed to maximise efficiencies in the restoration process. The provision of solutions proven by extensive testing and evaluation, to any person or organization committed to heritage should be encouraged and valued.

The Australian context (learning from others)

Conservation of timber buildings and issues relating to their preservation in Italy and Australia have great similarity. The effects of weathering and subsequent deterioration of the timber fabric within the structure due to moisture (wet rot), extreme dryness (dry rot), structural fibrous breakdown due to prolonged excessive loading, or insect attacks are issues common to both countries.

The CNR Ivalsa Trees and Timber Institute in Florence has undertaken extensive research into the effects of insect attacks on timber (with reference to heritage as well as new timber). Their research facility is funded by the Italian Government and theTimber Industry, (at the forestry and end user levels).

Scientific approaches were observed at the institute that were being used to create laboratory conditions most favourable to insects in order to study the life cycles of the insects and, in particular, the most efficient methods of eradication. The Australian timber industry could benefit from this research.

The CNR Ivalsa institute is also involved in value adding processes to promote more efficient usage of poor grade or low quality timber and the development of resins and adhesives for specific applications. This research will have implications for the Australian furniture industry. In collaboration with the University of Florence, the CNR Ivalsa Institute has an important role in identification of timber species.

Example

Ancient trees, possibly washed as a result of a tsunami into a clay quarry (used for centuries for manufacturing terracotta) was brought to the attention of the senior researcher.

Nicola Macchioni was required to identify the species, and determine its age given the position in the clay it was found in.

The result was that it was a conifer species now extinct in Italy. Carbon dating resulted in an estimate of one and a half million years. This is the oldest known unfossilised timber ever found. Extensive excavation at the quarry site produced approximately 11 cubic metres of timber, which, considering its age, was in very good condition.

The question now for Nicola Macchioni is how to preserve this timber and reverse the decay. As now that the timber is exposed to air the decay has escalated. Treating the timber with a preservative developed by CNR Ivalsa Institute will have far reaching implications for the preservation of timber worldwide

2.4 Who will benefit from this fellowship?

The University of Ballarat in 2006 is offering Certificate IV in Heritage Restoration and Conservation at its TAFE campus in Ballarat.

The University of Ballarat funded a visit to the University of Wisconsin Milwaukee, and an extended tour of Italian Heritage Restoration sites.
Including

- Spoleto medieval walled city in Umbria
- Assisi medieval walled city in Umbria
- San Gimignano medieval walled city in Tuscany
- San Gemini medieval walled city Umbria
- Empoli Tuscany 8th century
- Pisa Tuscany 5th century BC
- Bologna University city est. 600BC
- Naples Campania est. 1000BC
- Pompeii Campania est. 700BC
- Prato medieval walled city Tuscany
- Lucca medieval walled city Tuscany

At every city restoration was evident, with cranes and scaffolding dominating the skyline.

The heritage tour and contacts with three overseas universities has given credibility and validity to my co-ordinating a heritage training school along the lines of the Venice Centre focusing on the specialist skills of heritage restoration.

The introduction of a heritage-focused school is long overdue and with the support and collaboration of the International Specialised Skills Institute, the National Trust, HeritageVictoria and the City of Ballarat we might equal the Venice Centre in the future.

2.5 The aim of the Pratt Fellowship

The aim of my Fellowship, which was sponsored by the Pratt foundation, was to study heritage restoration and conservation of the built environment in Italy, by attending the Universities of Florence and Venice.

These two universities have dedicated departments in the restoration and conservation of cultural heritage ranging from restoration and preservation of Italian culture in the arts and humanities to the conservation of the built environment.

To undertake an overseas study program to gain a comprehensive understanding in traditional joinery techniques, materials and equipment in areas such as windows, doors and staircases and in related areas including carpentry. Transposing these skills into contemporary applications as
specified in the fellowship agreement.

Added to the Italian university experiences I was able to visit The University of Wisconsin Milwaukee where I was able to stay in a house designed by Architect Frank Lloyd Wright, owned by and being restored by the University in Milwaukee.
Prof Matthew Jarosz is on the advisory board of the American Preservation Trust and is a senior partner in an Architectural Practice in Milwaukee that specialises in heritage restoration.

Prof Matthew Jarosz, head of the School of Architecture and Urban Design and William Kreuger, Restoration Co-ordinator of the Frank Lloyd Wright house, showed me extensive restoration activities currently being undertaken within the city of Milwaukee and other activities of the SARUP School.

The University of Ballarat seeks to collaborate with the University Of Wisconsin Milwaukee to further the aims and objectives of heritage restoration worldwide. We envisage teaching exchanges and possibly student transfers between both organizations.

The University of Ballarat, with the co-operation and collaboration of the International Specialist Skills Institute, seek to collaborate with the universities of Florence and Venice, in activities of mutual benefit and for the furthering of heritage restoration worldwide.

2.6 The skill / knowledge gaps

The major skill gap that I was seeking to fill for my own benefit was to do with the organisational aspects of setting up a heritage school in Ballarat.

Issues relating to methodology of training

- Student demographic
- Theory content
- Practical restoration activities
- Project selection
- Skills based training
- Training needs
- Funding models
- Entry levels
- Recognition of prior learning
- Articulation / international recognition
- Affiliations
- Reporting
- Scholarships
- International students
- Assessment criteria
- Employment / accreditation
- Sourcing suitable materials
- Timber mouldings and profiles
- Maestro qualification (Venice Centre)

Consultation with contact persons at the universities have given insight into all of the issues listed above. The most important issue highlighted was the requirement to undertake critical analysis prior to any work commencing.

The Certificate IV in heritage proposed will offer a career path for tradespeople working within the heritage trades sector and to gain qualification to PHD levels proposed by the ISSI and currently being considered by the Federal Minister of Education as a national Australian qualification.

4.0 Recommendations

What has been learnt that impacts on the following?

(A) What has to change?

(B) What do 'they' have to do?

4.1 Government – Federal, state and local Government

(A) Heritage training within the TAFE system nationally accredited and delivered by recognised centres of excellence

(B) Proactive rather than reactive restoration and funding for specified buildings at risk. Initiate a public program to educate on the value of Australian cultural and built heritage to our future as a nation.

4.2 Industry various sectors

(A) Industry focus on the price, not on the quality of the outcome.

(B) Educate and appreciate the value of quality workmanship

*Provide training for their managers and staff on issues relating to heritage restoration, conservation or replacement to exacting specifications.

*Appreciation of artisans with special skills.

*Recognition of Master Craftsperson Qualifications with appropriate pay scale.

*Provide a career path for workers within their industy sector.

4.3 Firms & specialist organizations

(A) Firms set up and dedicated to heritage restoration with specialist expertise may not need to change.

(B) Recognise and appreciate qualifications and actively encourage their staff to undertake further learning.

4.4 Professional associations

(A) Their appreciation of the importance of cultural identity in the overall psychology of the Australian community.

*inappropriate placement of contemporary design amongst heritage sensitive environments.

(B) Become more involved with the heritage organizations and educational institutes to resolve heritage issues sensitively and with knowledge appropriate to the issue.

*Liase with specialist institutes for mutual benefit taking students onsite to allow them to appreciate the complexities of architectural design and implementation.

4.5 Training providers and Universities

(A) The courses offered for Architecture having greater emphasis on the history of architecture and opportunities to visit cities such as Florence in Italy.

(B) Embrace new thinking and appreciation of the value of heritage Restoration and its value to the community by developing curriculum supporting heritage restoration and conservation.

* Providing teachers with specialist heritage skills within the class environment to motivate and imbue passion into the students.
* Support the heritage departments with appropriate funding and facilities to enhance the experience for the student and teacher.

4.6 Community Marketing

(A) The attitudes and appreciation of the intrinsic value of heritage to the quality of life and culture within Australia generally.

(B) Educate the community in the value of them in monetary terms relating to lifestyle, cost of living, land values and rate revenues generated by local government.

4.7 What can the ISSI do to help with the change?

The ISSI has been instrumental in bringing master artisans from overseas to workshop their special skills with great success and providing fellowships for passionate people to further their knowledge and opportunities by travelling overseas to study and to learn, in return to disseminate their newfound knowledge with the community at large.

Conferences and special seminars aimed at educating the public is an excellent method of education, which can lead on to special workshops and projects. Lobbying state and federal education ministers for recognition and change to the qualification structure within the education sector is producing positive responses. Also, encouraging industry to support philanthropy, like the Pratt Foundation, is essential in eradicating skill gaps in Australia.

Networking is also necessary to enhance opportunities for Fellows to gain promotion within their organization and to open doors and create opportunities for further education.

Underpinning knowledge

University of Florence

At the time of my visit, students studying at The School of Architecture were engaged in visiting heritage cities and participating in on site archaeology.

Students studying technological studies, specifically with heritage focus were working within a laboratory environment. Under the supervision of Professor Elena Pecchioni analysis of stone fragments (using Electron Microscopy to identify contaminants). Some students were involved in carbon dating stone fragments. Many students were utilising the universities vast geological collection. Glass cases display unique crystal formations, and hundreds of samples of stone fragments and antiquities.
Students must have sufficient underpinning knowledge prior to restoring or conserving stone due to the fragile condition of some projects.

University of Venice

Students are required to complete 250 hours of pre requisite units

- History of building techniques
- Materials and pathologies
- Conservation concepts
- Analysis and documentation
- Drawing and survey

Restoration Strategies and Implementation

University of Florence

The University of Florence acts as consultants to heritage bodies and developers and also to the Italian Government giving direction and advice on heritage projects all over Italy.

On my last day at Florence University, Dr. Carlo was flying to Palestine to consult on a heritage building and do critical analysis of the structure. He was to bring back to Florence University, samples for testing and mineral analysis, by Professor Elena Pecchioni.

Restoration Strategies

The strategy for conservation is in the critical analysis stage. All restorative projects should follow the recommendations listed below by Professor Gennaro Tampone based on the ICOMOS Charter.

1. Inspection, recording, documentation.
2. Monitoring and maintenance. Ongoing evaluation.
3. Interventions to maintain the integrity to be as minimal as possible. (All interventions should be traditional and reversible).
4. Repair or replace within relevant historical and aesthetic values.
5. Professor Gennaro champions the protection of historic forests to supply appropriate timber for the preservation and repair of historic timber structures.
6. Contemporary materials. Resins, structural steel implants to be used with caution.
7. Education and training to develop programs on protection, preservation and conservation of historic timber structures at local, regional and international level.

Sourcing Funding

The University of Florence sources money through heritage funding bodies, and from fee for service activities delivered to industry and developers.

The University of Florence have people skilled in submission writing. Allocation of funds from Government or Industry is highly prized and greatly sought after.

Dr. Carlo spoke of the great cost of providing technical equipment for the staff and students to utilise within the university. He operated his department within a budget that necessitated supplementation from outside funding to operate efficiently.

The University of Venice on the other hand, sources most of it's funding from fee paying students. This is supplemented by funding from the Government of Italy and bequests and donations. Students pay approximately 8,000 euro for 3 months tuition.

The Venice Centre also offers short courses of 2 weeks duration teaching specialist techniques to professionals already working in the heritage field. Short courses cost students up to 1,500 euro.

Human Resource Implications

Both universities require teaching and support staff with the following attributes.

- Expert in their chosen profession
- Multilingual
- Ability to educate young, and mature age students
- Ability to teach in a multicultural environment
- Organise and liaise with industry, heritage organisations, and Government departments.
- Possess the ability to provide training, and assessment for certification purposes.
- Be knowledgeable in area of heritage issues.
- Be able to converse with tradespeople within industry settings.
- Have the ability to pass on their skills to students.
- Be passionate about what they teach.

Requirements of Heritage Funding Bodies and Supervisory controls

Florence University

Dr. Carlo, addressing this question, answered that the aims, objectives and controls within the University of Florence exceeded those of bodies that he spoke of. In many cases the heritage councils contacted him personally for advice on heritage projects.

University of Venice

The University of Venice Centre is not affected by heritage supervision due to the fact that the centre provides specialist skills **training only**. Most of the work that students produce at the Venice Centre remains at the centre.

The Venice Centre noted that some money is provided through heritage funding bodies, and the Centre greatly appreciates their support.

Occupational Health and Safety

O.H. & S. theory was addressed at both universities within the Materials and Their Pathologies. units. These units are a pre-requisite to any practical activities.

All work rooms displayed work safety signage. Students were observed at both university workshop areas wearing personal, protective equipment.

On heritage construction sites not controlled by the universities, I observed signage outside building sites listing O.H. & S. site regulations and requirements, but inside very little prevention strategies were evident.

I sought permission to enter approximately 100 heritage building sites, but was allowed access to observe and photograph only one (Naples).

Approximately 99 actively discouraged my photographing their site, I believe, due to their breaches of safety regulations. Some site supervisors threatened to break my camera if I took photographs (Spoleto).

Many workers I observed took little or no notice of O.H. & S. in their workplaces. This situation is very worrying given the toxic nature of many ancient building materials, e.g. asbestos, lead paint.

Scaffold was often covered in fabric printed with a full size image of the completed building to avoid interruption to the aesthetics of streetscapes during renovation. (Florence)

Project Based Training

At the University of Florence, the Department of Architecture uses projects such as the Medici restorations at Lucca and Villa Demidoff to give students skills in critical analysis, documentation, drawing, testing engineered solutions, analysing materials (using the laboratory facilities), discuss design solutions with Professor Gennaro Tampone. Interaction with contractors on site creates a working environment for excellent on site learning.
I believe some students on field excursions with Dr. Carlo Alberto Garzonio perform some cleaning and conservation techniques under the supervision of Dr. Carlo but not until proper investigation of action and repercussion and reversibility have been fully explored.

Both universities concentrate on the traditional skills required to undertake heritage conservation. The site visit and projects give reason and meaning to the students learning and study.

Project selection

University of Florence

Professor Gennaro Tampone is an engineer and architect who specializes in restoration and conservation of timber structure. His business is called on by developers to consult on projects. He has a very good working relationship with the University of Florence, using his teaching and technical expertise with the students and giving them access to heritage construction sites. A suitable project might be one that has an Italian national trust (FAI) classification.
Prof Gennaro selects projects on merit associated with the level of expertise required, due to the high level of research time required to undertake such projects.

Professor Gennaro Tampones' fee structure was not available to me, but his Personal Assistant, Michaela, told me he is "not cheap". He has had very wide experience, written many books and scientific papers and is regarded by his peers as "the best". 'People like him don't come cheap.'

Skills Based Training

At the University of Venice there are pre-requisites.

- Students must speak one of four languages – Italian, French, English and German.
- Completion of at least a 3 year apprenticeship and have practical experience in restoration or conservation.
- Have a university qualification in a technical field or have 3 years minimum professional practice
- There is no allowance for recognition of prior learning so the university provides a comprehensive learning experience for all.

Attendance and completion

Students are required to attend all classes in order to qualify to sit for the examinations which take 14 hours over 2 days.

International recognition

Both universities have international recognition which allows students to travel world wide and have qualifications recognised. Some heritage funding bodies require Artisans to hold minimum qualifications for employment on funded sites.

Affiliations with other Training Institutions

The University of Florence, Department of Technology Restoration and Conservation of the Architectonic Assetts, and the University of Ballarat, are in the process of collaboration for the joint advancement of heritage studies in both universities.

Director of the TAFE sector and Deputy Vice Chancellor of the University of Ballarat. Terry Lloyd, is expecting to travel to Italy this year to sign collaboration documents with Dr. Carlo Alberto Garzonio and the University of Florence Directors, in conjunction with the International Specialised Skills Institute

.

The University of Florence has affiliations with ICOMOS, and the Italian National Trust, Fondo Per l' Ambienta Italiano (FAI)

Access for Students with Disabilities.

University of Florence

Dr. Carlo suggested that a person with physical disability e.g. wheelchair dependant, could easily be accommodated with minimal access problems, for theory and laboratory based research. Practical site based activities would create concern. To date no students with physical disability had applied for a position in his department.

University of Venice

Mariella, when asked, stated that students with a physical disability could be accommodated, but problems could be encountered on the ferries to and from the island. Most practical activities were on the ground floor and pathways and door openings would accommodate wheelchair access.

Articulation

Successful completion of studies in heritage conservation will allow for further study to PHD level. The University of Florence has facilities for post graduation research activities.

Reporting

The University of Florence, Department of Technology Restoration and Conservation Architectonic Assetts has reporting responsibility to the Board of Governors and ultimately to the Minister of Education. All teaching departments are subject to performance review.

The University of Venice Centre has reporting responsibility to the Directors of the Centre. Wolfdeitrich Elbert reports to the Board of Directors and the Italian Education Minister. All departments are subject to performance review.

International Students

Both universities cater for international students with teaching and support staff being multilingual. The University of Venice Centre has interpreters available 3 days per week and students are required to speak 1 of 4 languages. Italian, French, English and German. Students are accommodated on the island in modern apartments.

Assessment Criteria

Both universities have examinations that include an oral and written theory and an underpinning knowledge test. Students are also assessed on practical activities undertaken over the duration of the training. The classroom facilitator has responsibility to ensure that their assessment methods are fair, repeatable and equitable.

Employment Requirements

Many heritage funding organisations require certification of qualification of artisans employed on sites being funded by them.

Completion of courses by both universities would give the recipient job security and remuneration appropriate to their qualifications.

Sourcing Heritage Materials

In Italy buildings are demolished in the name of progress. Thankfully there is a thriving recycling business operating across Italy. These buildings can supply timber beams, mouldings, stone, blockwork, doors, windows, furniture and hardware for restoration purposes.

Professor Gennaro Tampone has access to suppliers of re-cycled timber of correct species and age. He was not willing to use new timber unless original was not available. (He has utilised glue laminated beams to be used when not visible).

Small quantities of recovered material were evident at both universities.

Timber Mouldings and Profiles

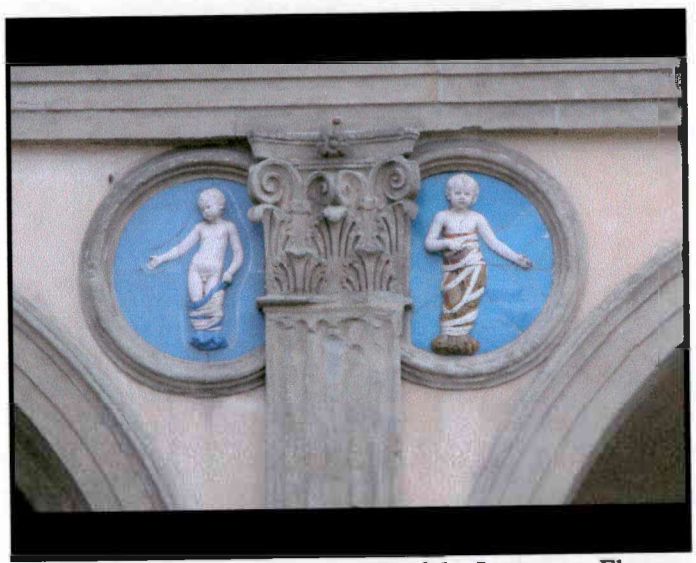
Neither university had the capability to mould timber other than simple profiles applied by electric router. No substantial moulding machines were employed. Patrick Poly of Venice Centre said any major moulding required was sourced in the city of Venice or in nearby cities.

Prof Elena Pecchioni and Dr Carlo Alberto Garzonio

Michela Pacelli and Prof Gennaro Tampone
speaking with site supervisor

Maestro Patrick Poly and students. Venice Centre

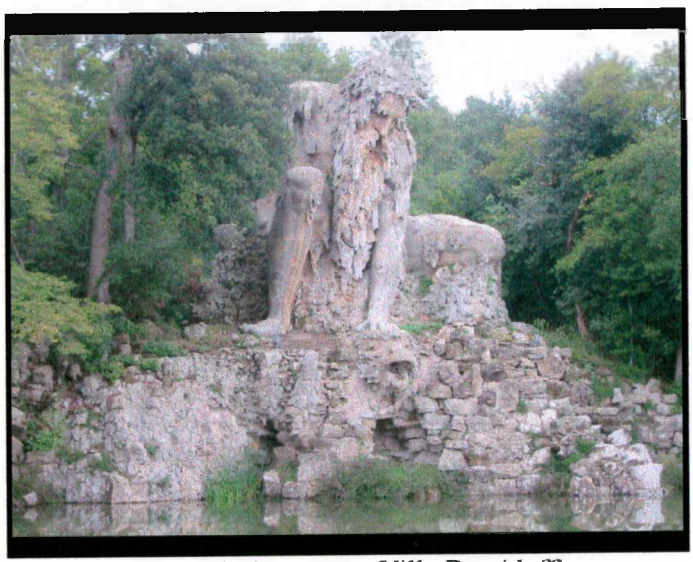
Church of San Lorenzo Façade. Florence



Ceramic Terracotta discs. Church of the Innocents.Florence

Marble façade. Church of Santa Maria Novella. Florence.

Façade restoration. Villa Demidoff. Florence.



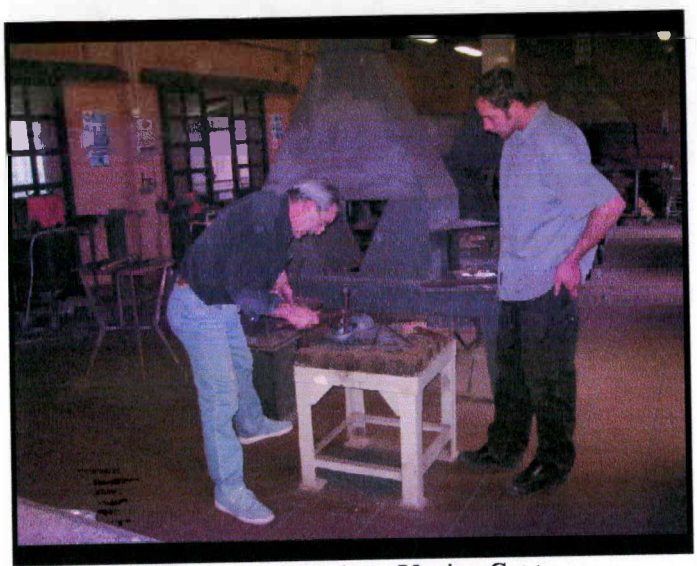
Bearded Man statue. Villa Demidoff.

Steel Intervention. Villa Demidoff. Florence

Water Damage. Villa Demidoff. Florence

Colin Trembath. Venice Centre. San Servolo

Application and carving of plaster. Venice Centre



Maestro and Student. Venice Centre

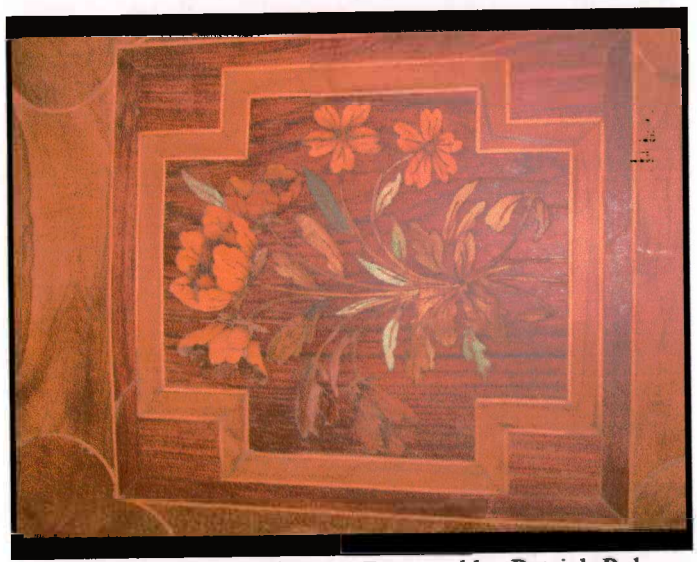
Senior Administrator, Venice Centre. Mariella, with Colin

Wood School. Venice Centre

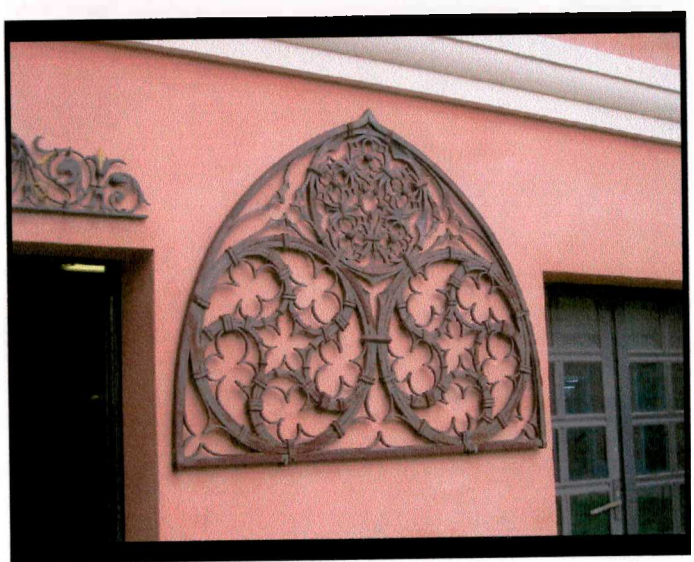
Stucco School. Venice Centre

Wall Painting. Venice Centre

Marquetry c.1410 Restoration by students. Venice Centre

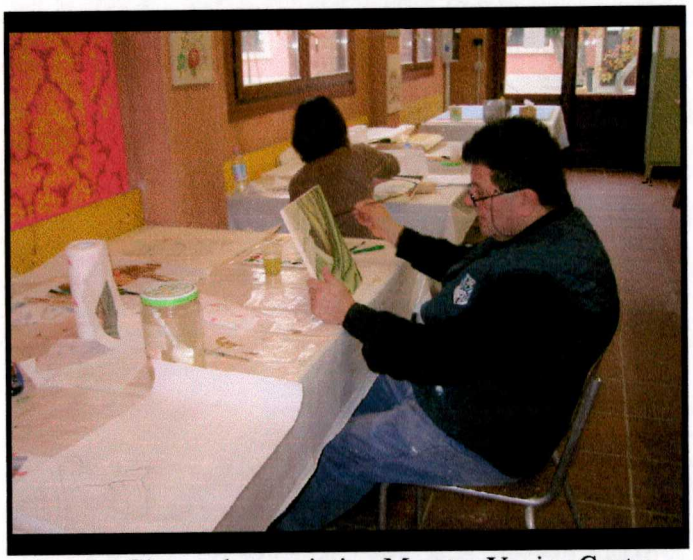


Marquetry Venice Centre. Restored by Patrick Poly



Venice. Gothic metal screen

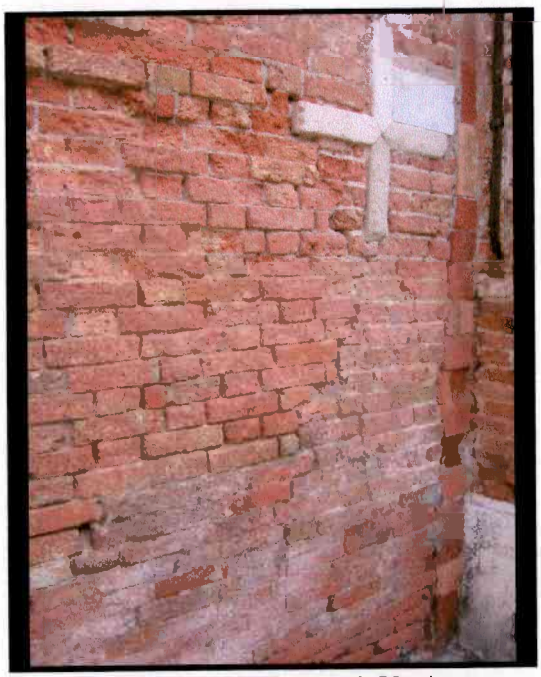
Maestro Mario Fogliata preparing stucco



Renato Giangualano painting Maestro.Venice Centre.

Student preparing stucco.Venice Centre.

Weathered brick work Venice



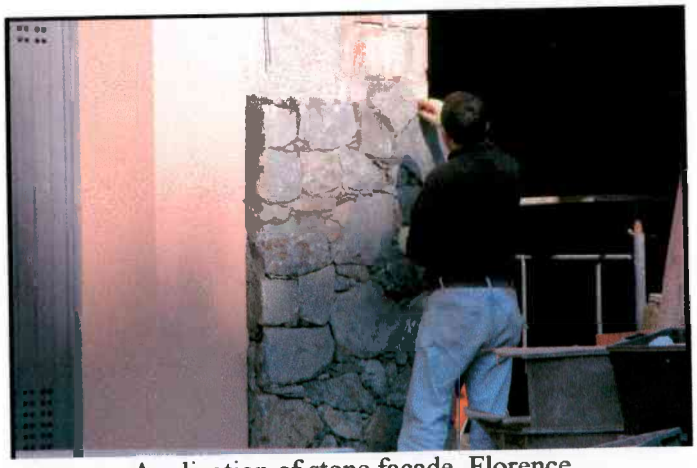
Salt damaged brickwork Venice

Decaying brickwork Venice

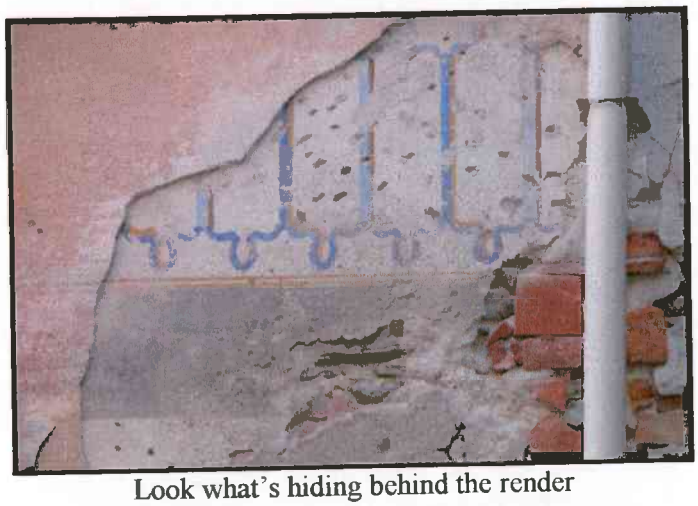
Crumbling brickwork. Venice

Crumbling brickwork. Venice.

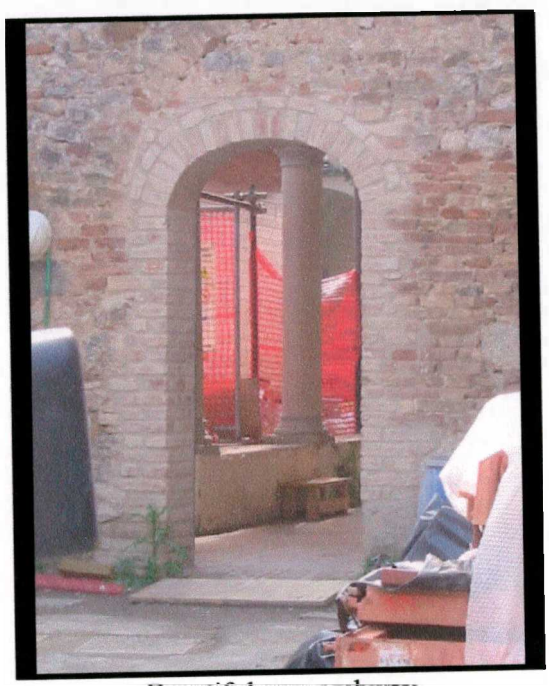
Scaffold delivery. Venice



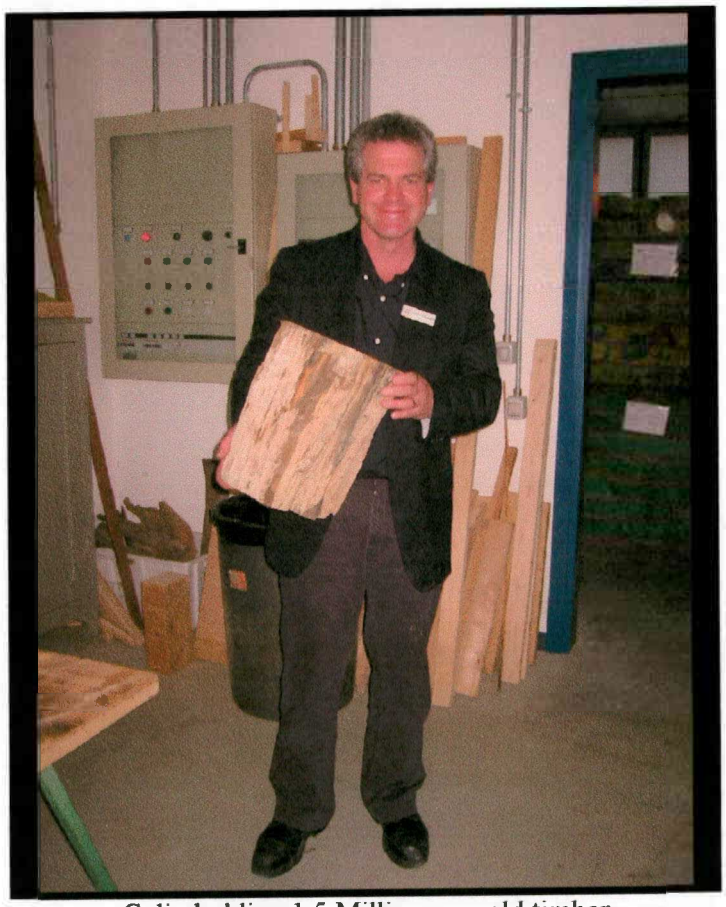
Application of stone façade. Florence



Look what's hiding behind the render



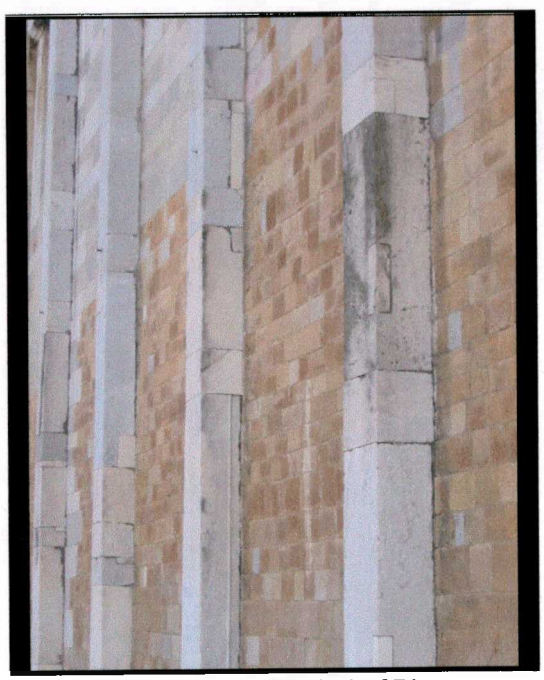
Beautiful new archway



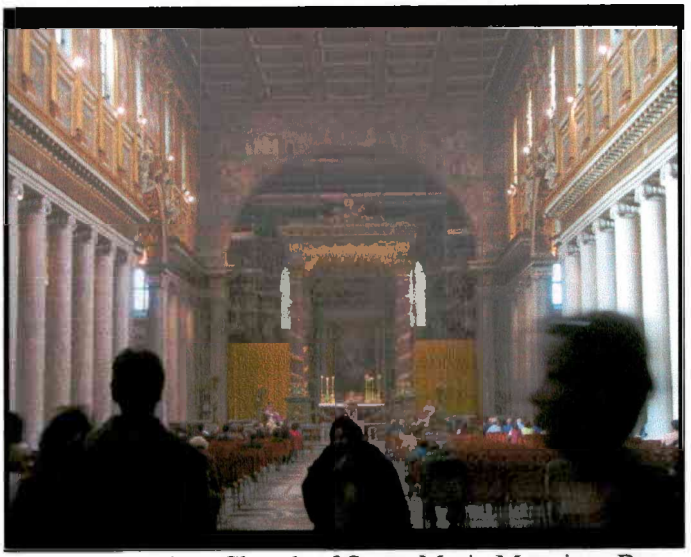
Colin holding 1.5 Million year old timber
CNR Ivalsa Institute Florence

Church of San Petronio. Bologna.

Cathedral of Pisa.

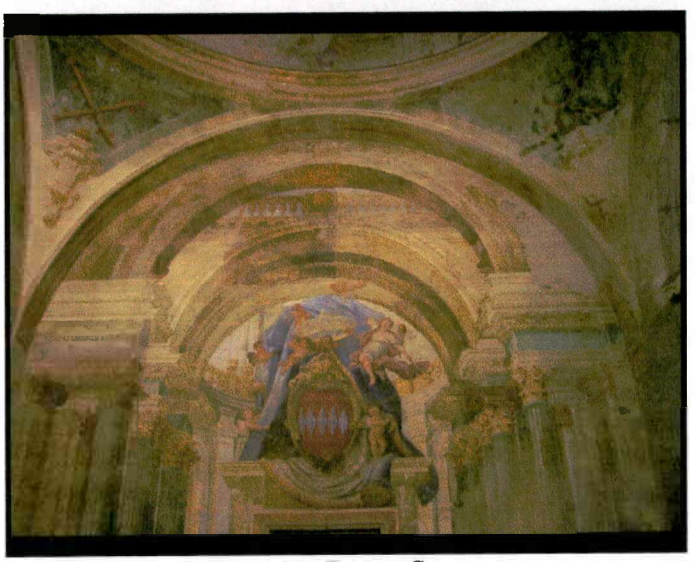


Left side of Cathedral of Pisa.

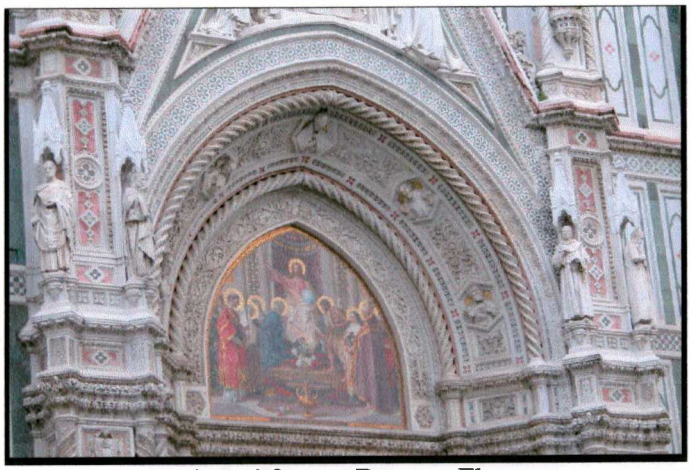


Fresco restoration. Church of Santa Maria Maggiore.Rome.

Perspective Fresco Sorrento

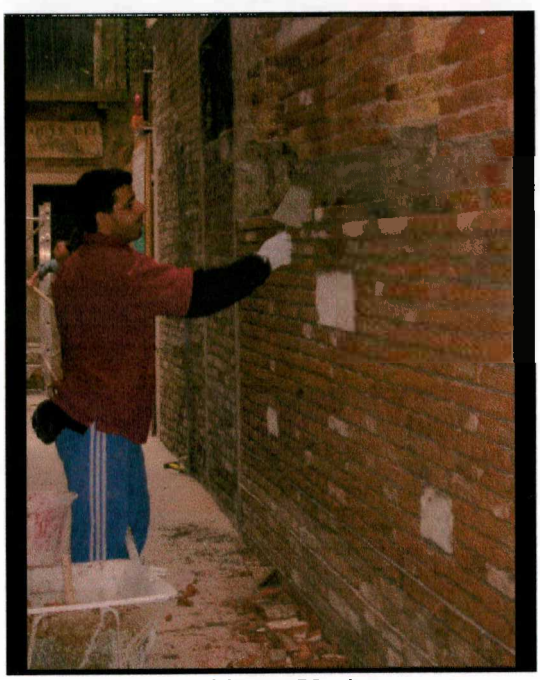


Perspective Fresco Sorrento



Facade and fresco. Duomo. Florence

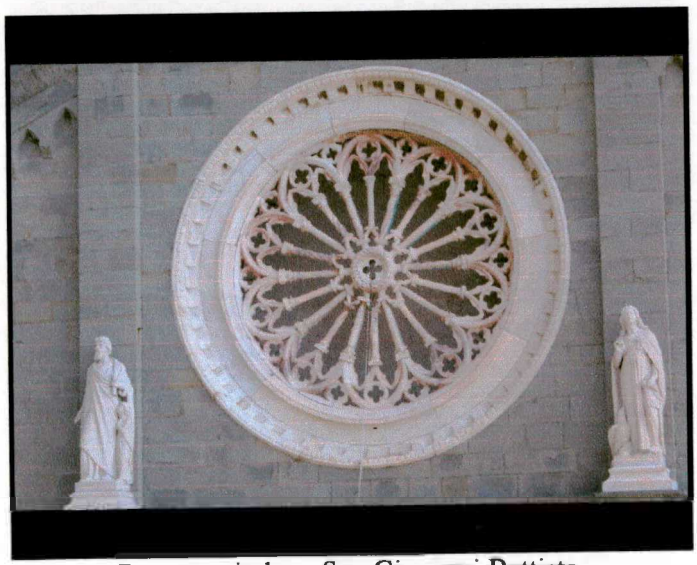
Printed building façade concealing scaffold. Florence



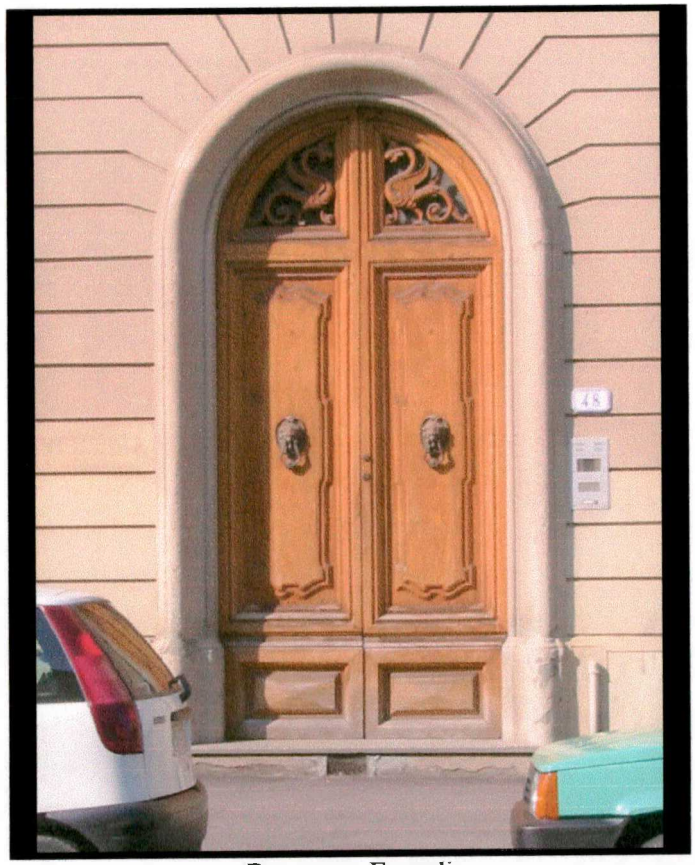
Bricklayer. Venice

Fresco. Piazza Santa Maria Novella. Florence

Brick work and window. San Gimignano

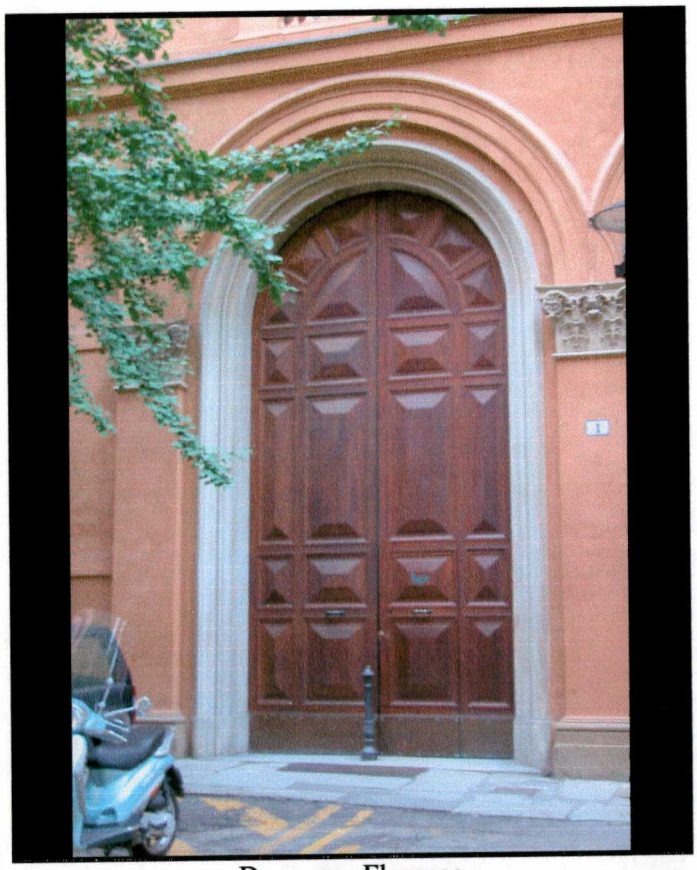


Rosette window. San Giovanni Battista.
Monterosso Del Mare

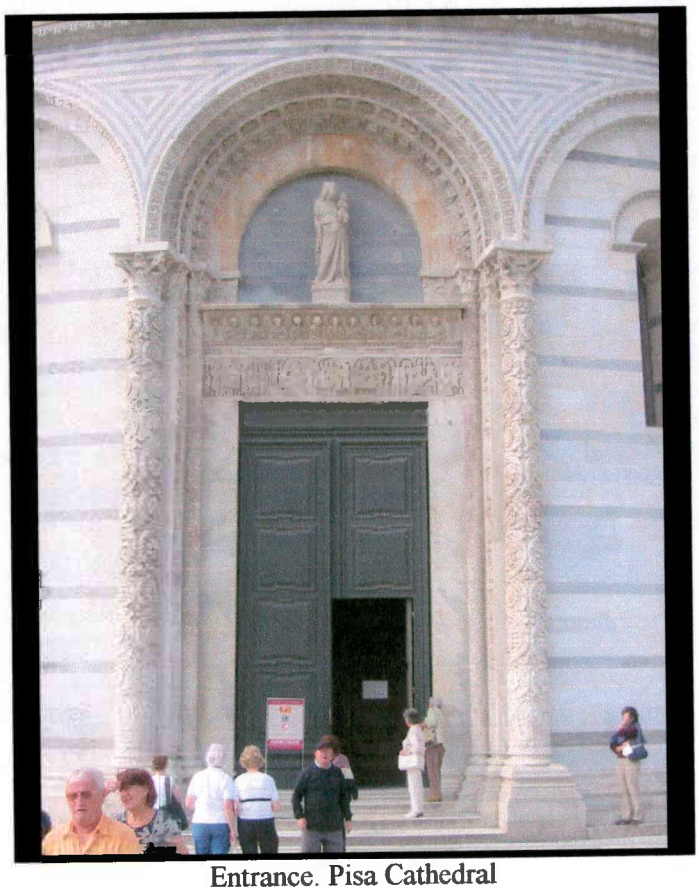


Doorway. Empoli

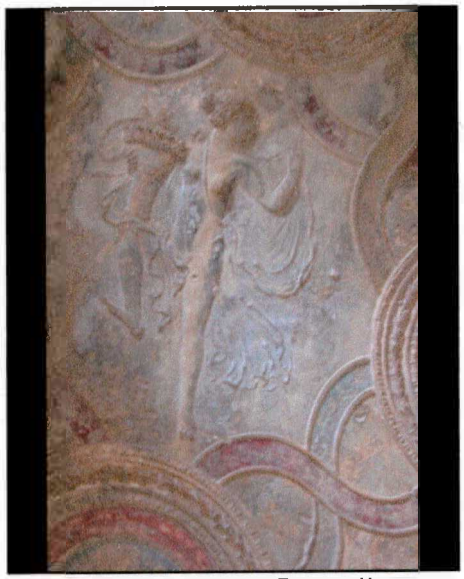
Doorway. Naples



Doorway. Florence



Entrance. Pisa Cathedral

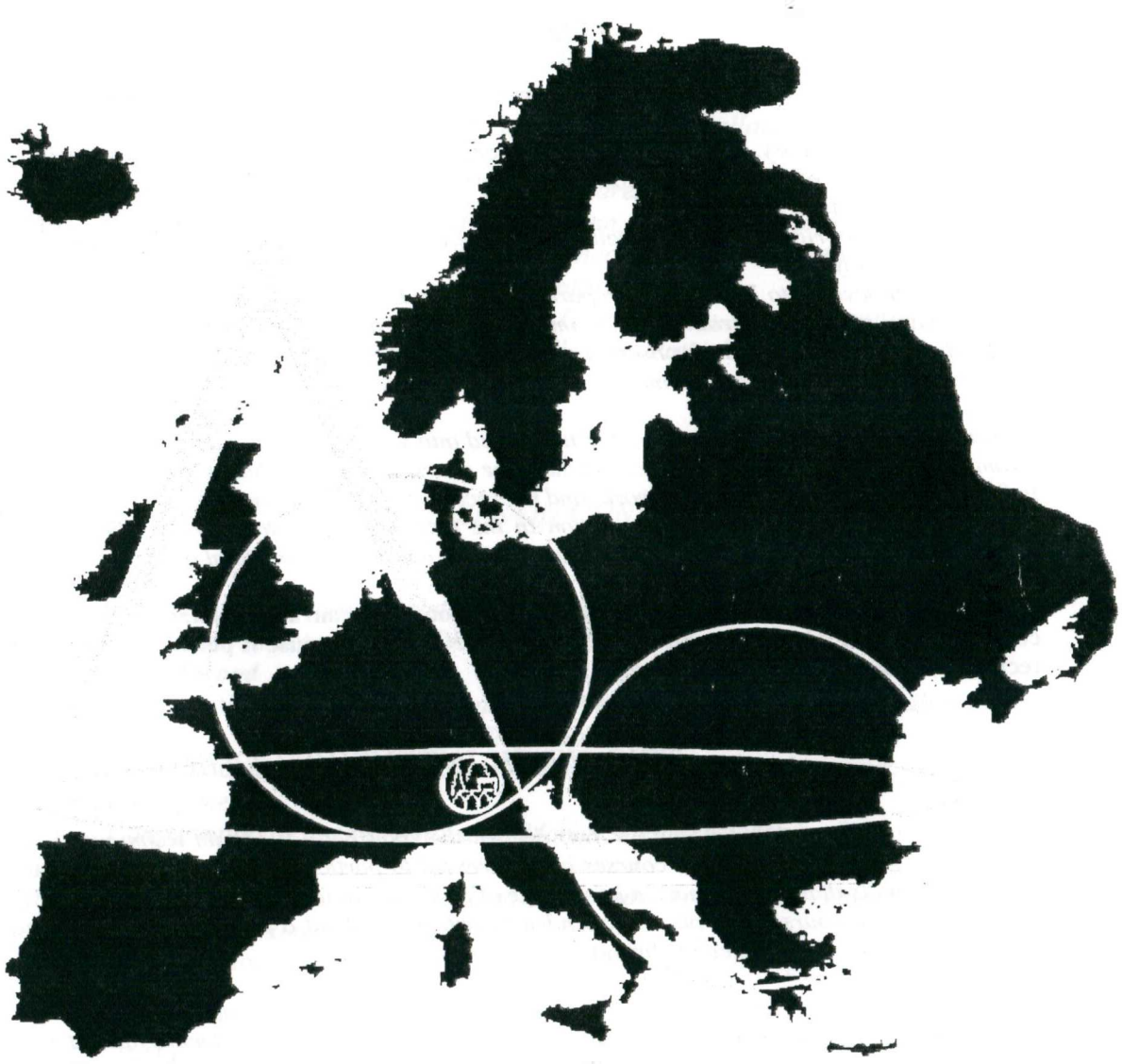


Plaster pattern. Pompeii

Fresco. Pompeii

Brick column. Pompeii

VENICE EUROPEAN CENTRE FOR THE TRADES AND PROFESSIONS OF CONSERVATION OF ARCHITECTURAI HERITAGE



PRO VENETIA VIVA
ONLUS

Created by the Council of Europe, the European Community, the European Parliamentary , UNESCO, Italian Government and other international bodies and Ministries, the Centre was established in Venice in 1977 with the objective of organising training courses for craftspeople of architecture and applied arts who could be subsequently involved in the restoration of architectural heritage.

Over the years, the Centre's training activity has begun to focus upon two complementary objectives: on the one hand, the provision of advanced courses in traditional techniques to be applied both in restoration and modern construction, on the other hand, the dissemination of traditional and innovative techniques for planned maintenance and sustainable conservation measures.

Courses have thus involved not only craftspeople, but also architects, technicians, engineers and entrepreneurs.

The wide experience gained over the years has lead the Centre to base the teaching of heritage conservation on the principles of "knowing how to do" and "knowing how to observe" in order to "know how to intervene." This shall guarantee heritage maintenance and conservation based on conscientious and intelligent practices and most of all on the quality of the profession..

Palazzo di San Clemente was assigned to the Architecture Faculty, together with its annex, the "palazzetto" (corresponding to Via Micheli, 8) taken over by the Istituto di Restauro dei Monumenti (Institute for the study of the restoration of buildings), founded by Piero Sanpaolesi. At present the ground floor of the Palazzo accomodates the main Library with a range of indispensable, efficiently run services, small lecture rooms and the caretakers' rooms. On one of the mezzanines is the Dean's office. The Assembly Hall is on the first floor. The Dipartimento di Urbanistica (Town Planning Department), with its staff rooms and a whole range of related activities, among which the Department library and the map and chart collection, is partly on this floor, partly on a mezzanine below. This Department is also accessible from the ground floor, by the main Library, via another staircase.

The second floor accomodates the History section of the Dipartimento di Storia dell'Architettura e Restauro delle Strutture Architettoniche (History of Architecture and Restoration of Buildings Dept.). The Restoration section, instead, together with its own archives, photography laboratory, library and secretarial offices, has kept the premises belonging to the former Institute. The History section is provided with similar facilities, with the exception of the archives.

Veduta del Palazzo di San Clemente dal Palazzo Capponi

View of Palazzo di San Clemente from Palazzo Capponi