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Scientific-Executive Cooperation Report on the Research Project
**"Architectural Technology Transfer on the Silk Road:
Iranian Double-Shell Domes and the West"**
2016–2025



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Faculty of Architecture and Urban Planning, Shahid Beheshti University
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Kunsthistorisches
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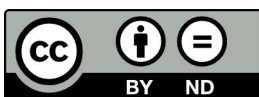
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Introduction

The academic collaboration between the Faculty of Architecture and Urban Planning of Shahid Beheshti University (SBU) and the Faculty of Architecture of the University of Florence was initiated in the 1960s, resulting in the establishment of the "Institute for the Restoration of Historical Monuments" under the leadership of Professor Sanpaolesi in 1967 and the signing of contracts for the restoration of several prominent historical buildings. This academic relationship gradually weakened during the 1980s and 1990s; however, it was revived from 2016 onwards through the efforts of the then Dean, Prof. Zargar, and with the active follow-up of the faculty members of the Center for Documentation, Architectural Studies, and Restoration at the Faculty of Architecture and Urban Planning. Accordingly, a new series of international academic collaborations between this faculty, the Faculty of Architecture of the University of Florence, and the Kunsthistorisches Institut in Florenz was defined with two major goals: first, "Revisiting of the architectural heritage of the Soltaniyeh Dome," and second, "Recognition of Professor Sanpaolesi's legacy."

To achieve these goals, in June 2018, a preliminary workshop titled "Soltaniyeh Double-Shell Dome: Revisiting the Structural System" was held at the Kunsthistorisches Institut in Florenz, alongside another workshop titled "Examining the Relationship between the Soltaniyeh Dome and the Dome of Florence Cathedral" at the Faculty of Architecture of the University of Florence. Subsequently, from February 23 to 28, 2019, with the efforts of the members of the Faculty of Architecture and Urban Planning and the support of the "Vice Presidency for Research and Technology" and the "Office of International Affairs" of SBU, as well as the "General Directorate of Heritage Site Affairs of the Cultural Heritage, Handicrafts, and Tourism Organization," the "Soltaniyeh Dome World Heritage Site," the "Faculty of Architecture of the University of Florence," and the "Kunsthistorisches Institut in Florenz," an international scholarly event titled "From Soltaniyeh to Florence: Design and Craftsmanship Traditions in fourteenth-and-fifteenth-Century Architecture" was held.

This event consisted of five main programs: a one-day conference, an exhibition of restoration documents of the monument, a visit to it and its restoration workshops, and the signing of a cooperation memorandum between the Faculty of Architecture and Urban Planning of SBU and the Faculty of Architecture of the University of Florence.

In the following year, two main axes were defined for the development of scholarly collaborations in this research: One axis was holding joint workshops to conduct field studies on the monument; The other was authoring a book to document the restoration project of it, utilizing documents archived at the two faculties and the private archive of the Sanpaolesi family.

In 2020, to achieve the first axis, a three-stage series of workshops under the title "From Soltaniyeh to Florence (2)" was planned in cooperation between the two faculties. According to this program, one workshop was to be held in Florence in August 2019, and another in Tehran in August 2020, enabling Iranian and Italian students to become familiar with restoration techniques and masonry structures of Iran and to acquire the necessary skills to participate in the third workshop, scheduled to be held at the Soltaniyeh Mausoleum in September 2020.

Thus, a new phase of field studies of this historic monument was to be launched with the joint participation of students from both faculties. However, unfortunately, military and political unrest in the second half of 2019 and the subsequent outbreak of the COVID-19 pandemic prevented Italian colleagues from traveling to Iran and executing the complete program. As a result, only the first workshop in Florence, Italy, was held, from July 4 to July 17, 2019, attended by professors from SBU, the School of Advanced Studies in Lucca, the Faculty of Architecture of the University of Florence, the Kunsthistorisches Institut in Florenz, and the Italian National Research Council, hosted at the Faculty of Architecture of the University of Florence.

The second research axis involved the compilation of a book documenting the restoration project of the monument. To realize this goal, it was agreed that the two principal researchers involved, Safaeipour and Viggotti, would begin preparing and publishing the book after securing the necessary financial and executive resources. Accordingly, in 2021 and 2022, these two researchers jointly prepared project proposals and submitted them to various international institutions. Among them, Mr. Viggotti succeeded in winning a three-year research project hosted by the University of Bologna under the title "Transfer of Architectural Technology along the Silk Road: Iranian Double-Shell Domes and the West: 14th to 20th Centuries," financially supported by the "Marie Curie" grant.

Based on this success, Viggotti and Safaeipour began authoring a book regarding the monument restoration project documentation, which will be published by the University of Bologna upon completion. To this end, as a first step, both researchers will study the restoration documents of the monument which are preserved in the archive of the Faculty of Architecture and Urban Planning at SBU, the University of Florence archives, the Cultural Heritage Administration of Zanjan Province archives, the Soltaniyeh Dome World Heritage Site archive, and the private archive of the Sanpaolzi family. The second part is a

research project developed for the comprehensive study of the technical details of the double-shell dome structure of the monument.

To refine the methods of studying the technical aspects of the structure and to introduce the project, the three-day event "From Soltaniyeh to Florence (3): Architectural History Through the Lens of Construction History" was held in June 2024 in collaboration with the Zanjan branch of the Iranology Foundation and the Soltaniyeh Dome World Heritage Site at the Soltaniyeh Dome and SBU.

Subsequently, field studies of the monument included tomography testing in July 2024, and photogrammetry operations, laser scanning, georadar, virtual modeling, and endoscopy carried out in December 2024 and February 2025.

It is hoped that these studies will open new windows into the knowledge of structural technologies used in east and west and build a foundation for revitalization of academic collaborations.

The following sections will present in detail the activities and measures taken in 10 chapters.

1. Background of Cooperations; 1967–1978



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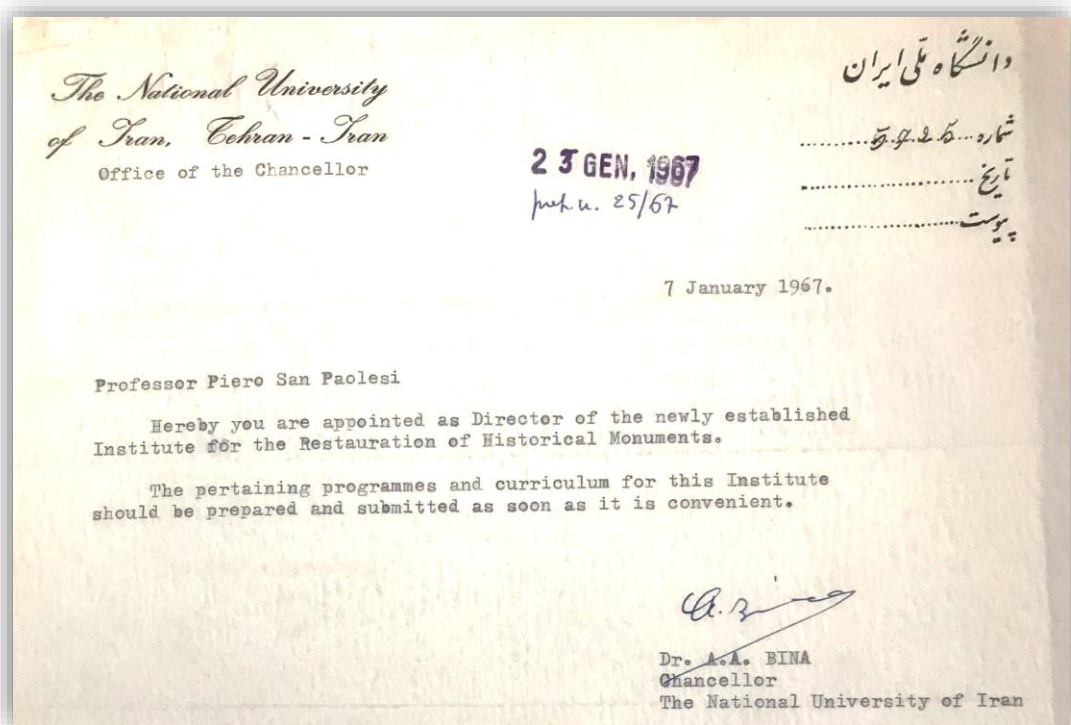


ISMEO



1. Establishment of the Institute for the Restoration of Historical Monuments; January 1967

In the early second half of the 1960s, the National Organization for the Preservation of Ancient Monuments of Iran decided to restore the historic monument of the Soltaniyeh Dome. This organization entrusted the study and restoration operations of this monument to a academic institution — the National University (now SBU) — and Professor Sanpaolesi, a faculty member of the University of Florence and a UNESCO-certified specialist. During the restoration works between 1969 and 1978, numerous documents and records were prepared, a significant part of which are now preserved at the Faculty of Architecture and Urban Planning archive at SBU.



Appointment of Professor Sanpaolesi as director of the Institute
for the Restoration of Historical Monuments

2. Restoration of the Soltaniyeh Dome; 1969-1978

14) Les honoraires au titre de remboursement de frais, accordés au Prof. Sanpaulesi seront pour une moitié à la charge de l'Université, et pour l'autre moitié à la charge de l'Organisation, et ils se monteront à \$ 80⁰⁰ par jour pour la durée effective de son séjour en Iran. Au cas où le Prof. Sanpaulesi serait chargé de dresser des projets pendant qu'il séjourne en Italie, ils lui seraient payés extra, selon un accord établi entre l'Organisation et lui-même.

Les frais de voyage de l'Italie en Iran et viceversa, aussi bien que l'assurance maladies et accidents, seront de même payés par l'Organisation et par l'Université, moitié pour chacune, selon les accords semblables pour les experts de l'U.N.E.S.C.O.

Les moyens de transport pour le Prof. Sanpaulesi, nécessités pour visiter les monuments historiques et établir les plans et les programmes, seront mis à sa disposition par l'Organisation, ainsi que tous frais de séjour hors de la ville de Téhéran.

15) Le présent accord a une durée de trois années, à partir du 9 Mehr 1346 (1er octobre 1967) et pourra être renouvelé. Chacune des parties contractantes peut annuler ledit accord à la fin de chaque année, en notifiant la résiliation y relative trois mois au préalable.

16) Le présent accord sera rédigé en quatre copies, en langue persane et française, et sera signé par les représentants de l'Organisation, de l'Université, de l'ISMEO, et par le Prof. Sanpaulesi.

(1) net.

Prof. Sanpaulesi

Sanpaulesi
avec la référence (1)

Président de l'ISMEO

G. Tucci

Tucci

۱۴- حق الزحمه آقای پروسور سانپاؤلزی برای تمامین مخارج اوصف بمحمد دانشگاه متصف بمحمد سازمان خواهد بود و بقرار روزی هشتاد دلار برای هر روز که صلا در ایران قامت داشته باشد • در صورتیکه آقای پروسور سانپاؤلزی از طرف سازمان ناموریت پیدا کند که در مدت اقامت در ایتالیا طرحهایی را برای سازمان تهیه نماید حق الزحمه او جداگانه بموجب قرارداد یک به یک بین او و سازمان تنظیم میشود از طرف سازمان پرداخته خواهد شد •

مخارج مسافرت از ایتالیا به ایران و بالعکس و نیز مخارج بیمه امراض و حوادث بر اساس مقررات مشابهه که برای کارشناسان یونسکو مقرر است نصف بوسیله سازمان و نصف بوسیله دانشگاه پرداخت میشود •

وسایل مسافرت آقای پروسور سانپاؤلزی برای ایزد پد پناههای تاریخی و تنظیم طرحها و برنامهها و نیز مخارج اقامت اورد و مخارج تهران از طرف سازمان تامین میگردد •

۱۵- مدت این موافقت نامه سه سال از تاریخ ۹ مهر ۱۳۴۶ (اول اکتبر ۱۹۶۷) میباشد و سکن است بعد از خاتمه تجدید گردد و هر یک از امضاء کنندگان قرارداد میتوانند در پایان هر سال آنرا با اطلاع قبلی سه ماه فسخ نمایند •

۱۶- این موافقت نامه در چهار نسخه بنهان فارسی و فرانسه تنظیم و امضای نمایندگان سازمان و دانشگاه و ISMEO و آقای پروسور سانپاؤلزی رسیده •

مدیر عامل سازمان ملی حفاظت آثار باستانی ایران
دکتر محمود مهران

رئیس دانشگاه ملی ایران

دکتر علی اکبر بهمنی

The written documents related to this project total approximately 1100 pages. These documents generally include: Historical studies of the city and the monument, Geographical studies, Technical studies of the building (stability and decorations), Restoration reports, Intervention Justification reports, Administrative correspondences, Contracts and financial estimates. The written documents also include a paper by Professor Sanpaolesi titled "The Influence of the Soltaniyeh Dome Architecture of Iran on the Construction of the Dome of Santa Maria del Fiore in Italy" and a volume of the book *Restoration Project of the Mosque and Mausoleum of Sultan Muhammad Khodabandeh in Soltaniyeh*. This 180-page bilingual book (Persian and Italian) contains materials such as: General workshop report, Structural stability quality of the building, Sampling locations for laboratory testing, Interior decorations and maintenance proposals, Description of restoration operations, Quantitative and descriptive estimates of work, List of cost estimates.



Mahmood Mehran



Aliakbar Bina



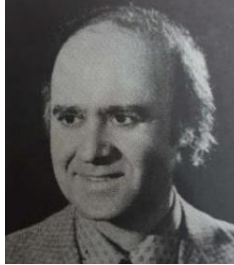
Iraj Parvin



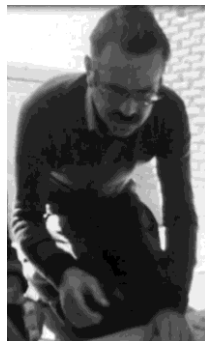
Piero Sanpaolesi



Marco G.
Brambila



Reza Kassaei



Enrico d'Errico



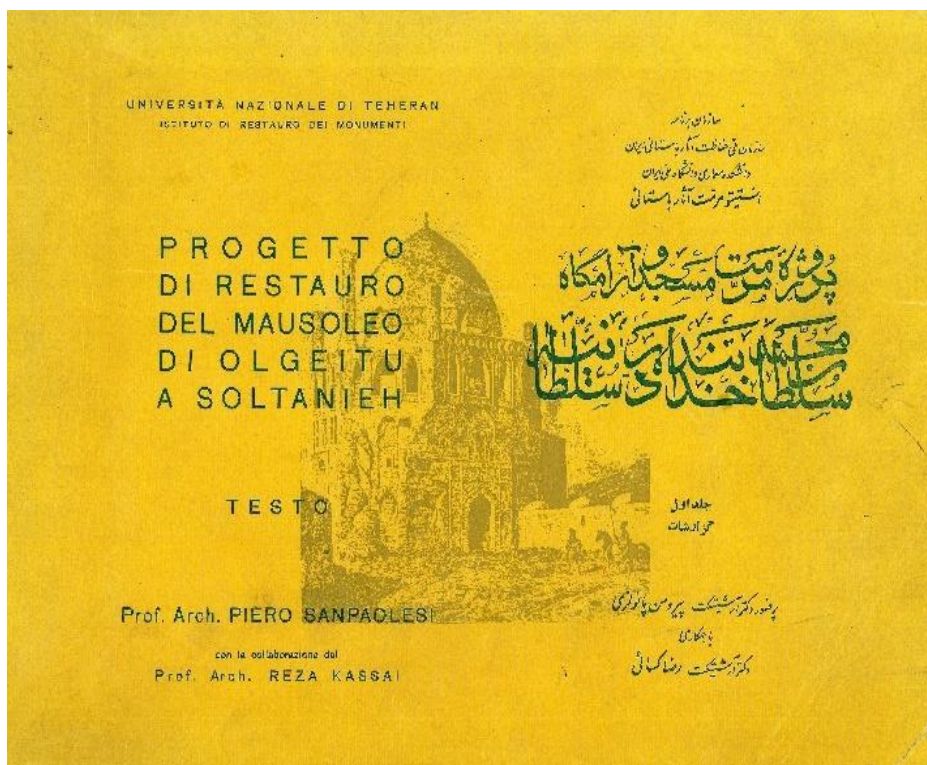
Ahmad Asgharian
Jeddi



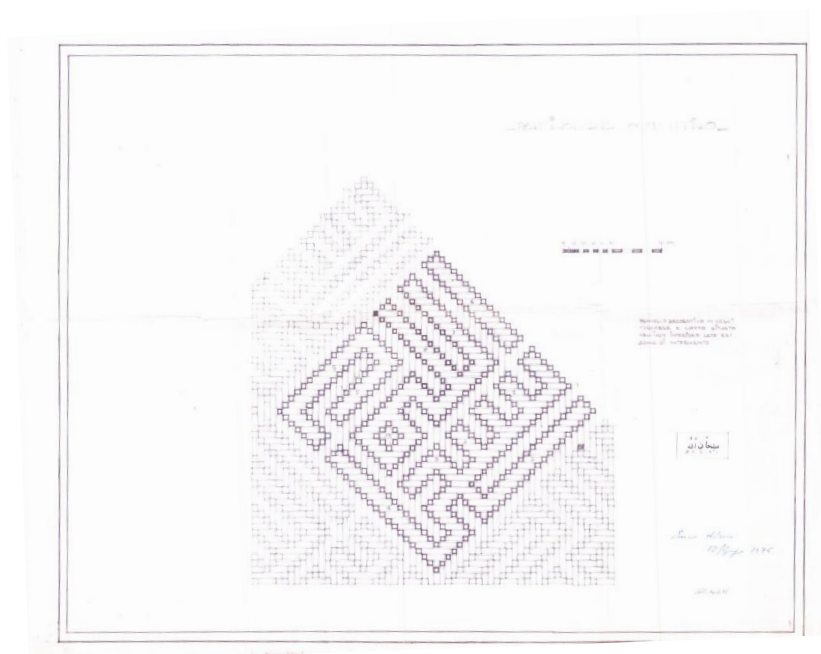
Marco Grassi



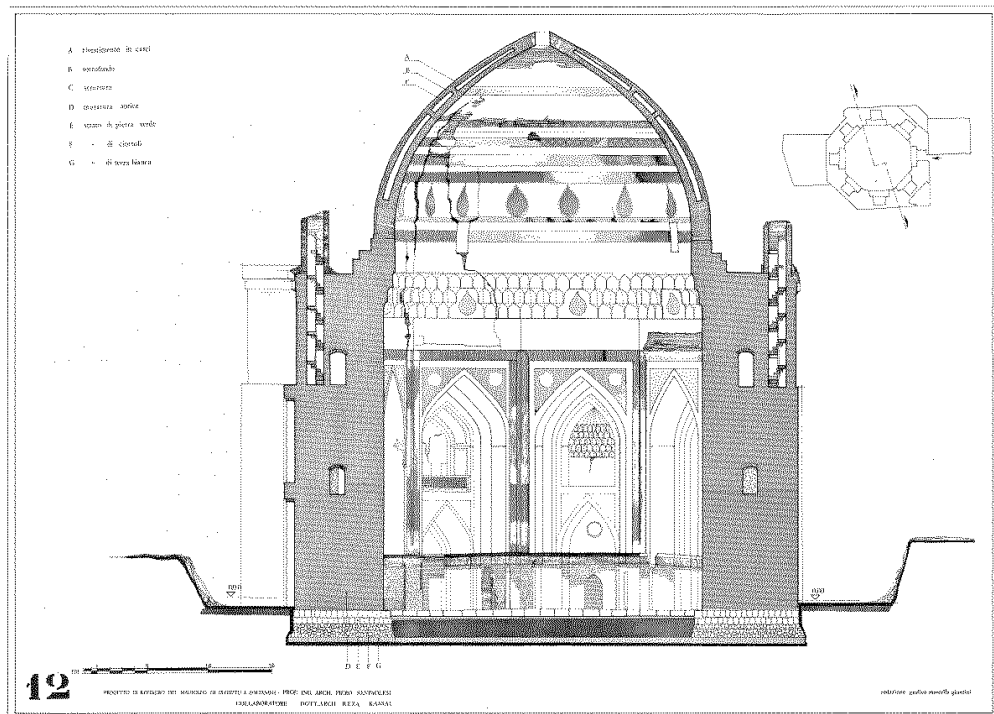
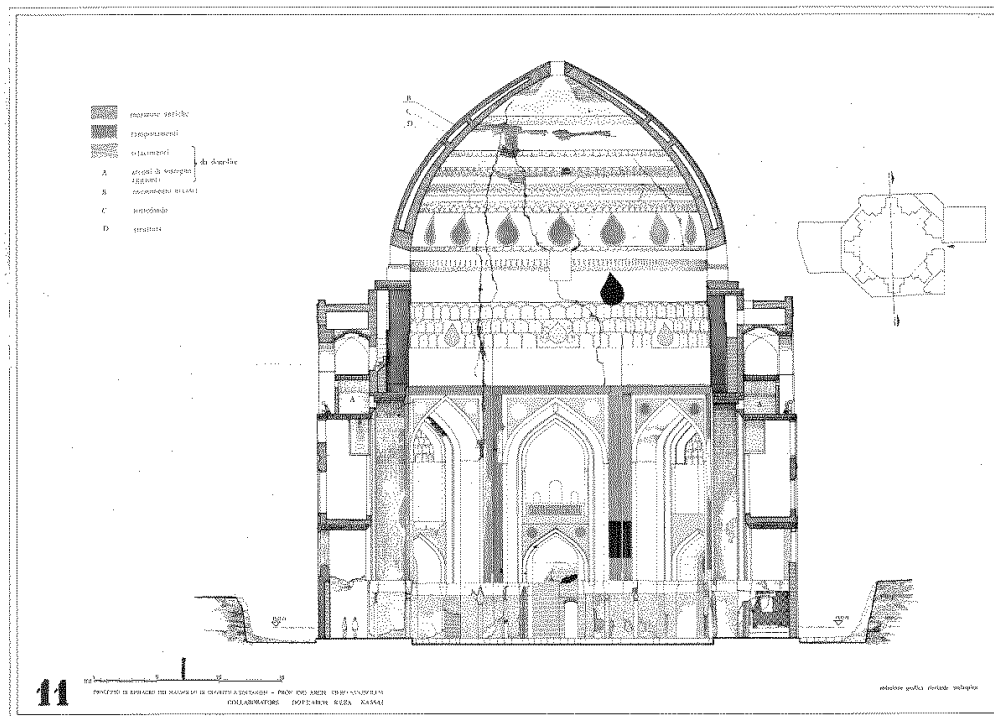
Monument restoration workshop



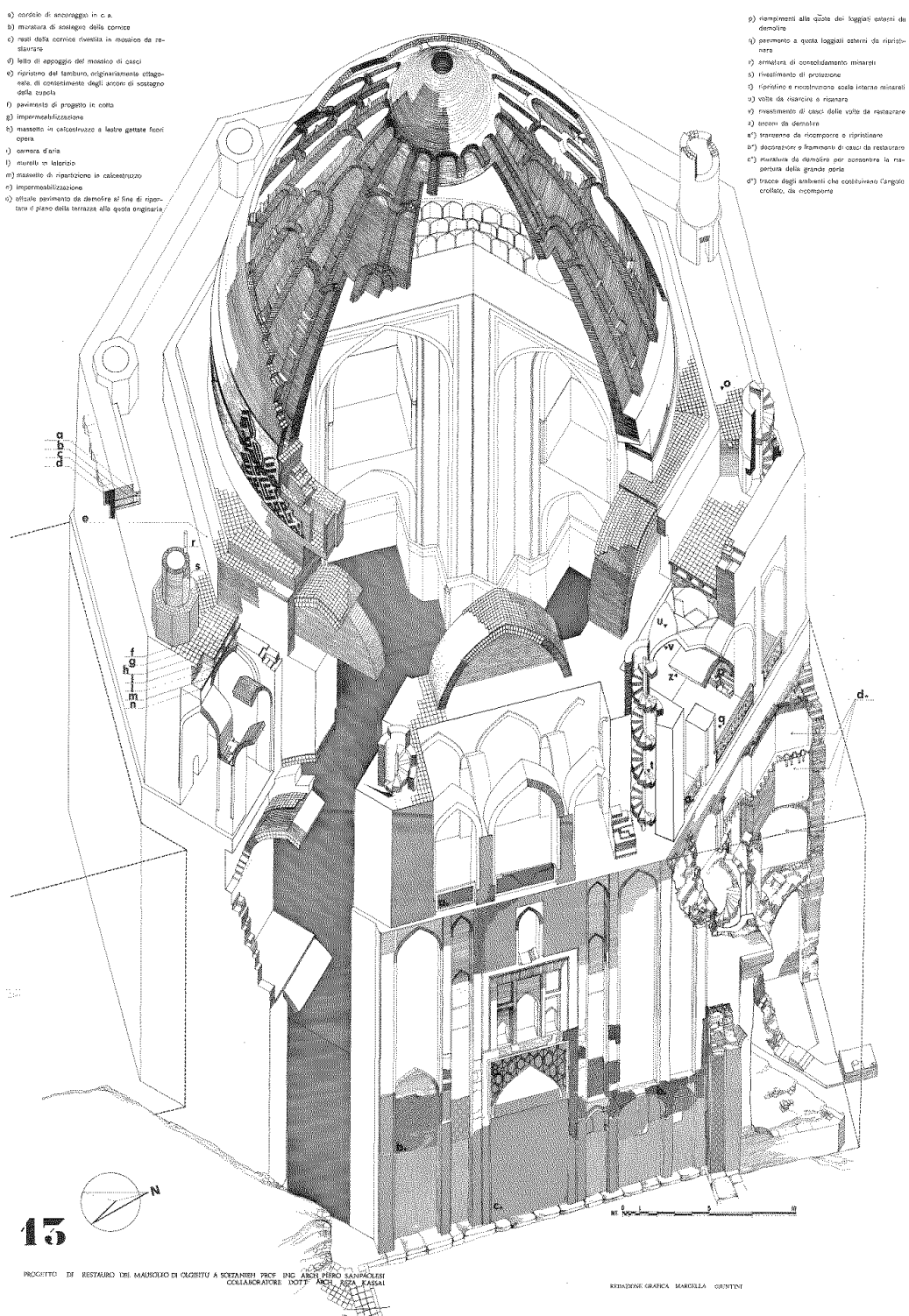
Report on the monument restoration project



Restoration reports sample technical drawings



Architectural drawings as presented in the restoration report



Architectural drawings as presented in the restoration report

2. Revitalization of Studies and International Cooperations



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1. Visit of the President, PhD students & Postdoc Scholars of the Kunsthistorisches Institut in Florenz - Max-Planck Institut

The Institute of Kunsthistorisches Institut in Florenz is a private institute that has been directing and supporting research activities in the fields of art and architectural history since 1897. Currently, the institute consists of two main groups, managed by Professors Alessandro Nova and Gerhard Wolf, with financial support from the "Max Planck Society," providing a framework for research on various academic themes. One of these research themes, titled "Critique of the Renaissance", is supervised by Professor Nova, with collaboration from Francesco Borgo, Dario Donetti, Rodolfo Maffei, and Tommaso Muzzatti. Part of this research explores the links and cultural-artistic interactions of the Italian Renaissance beyond its geographic boundaries. More specifically, the relationship between the architecture and art of the Italian Renaissance and contemporary Ilkhanid Iranian architecture was previously studied by Professor Sanpaolesi. This existing background encouraged Professor Nova and his colleagues to plan a trip to Iran to follow up on previous studies. Thus, in October 2016, the research team of the "Critique of the Renaissance" project traveled to Iran, looking for Prof. Sanpaolesi's legacy. They visited the Faculty of Architecture and Urban Planning at SBU and proposed for further collaboration on the revitalization of academic relationships. After a meeting with the Dean, the Deputy of Research, and the Director of the Center for Documentation and Iranian Architectural Studies, they visited the faculty's archive.



Meeting of the president and researchers of the Kunsthistorisches Institut in Florenz with the Architecture and Urban Planning Faculty members of SBU

During this brief visit, encountering the documents related to Professor Sanpaolesi's restoration activities in Soltaniyeh, along with the faculty's expertise, attracted the attention of the Italian scholars. This led Professor Nova to express, through a letter, his interest in expanding scholarly cooperation with the faculty and its archives. As a result, a short-term letter of intent was reached between the institute and the faculty, comprising two main parts. First, the Kunsthistorisches Institut invited Safaeipour to travel to Florence as the university's representative to hold a workshop titled "Examining the Relationship between the Soltaniyeh Dome and the Florence Cathedral Dome" and to explore possibilities for broader academic cooperations. Second, it was agreed that the Faculty of Architecture and Urban Planning of SBU would invite Lorenzo Viggotti and Dario Donetti to study documents related to Sanpaolesi's activities for one week in Tehran. The decisions regarding exchange of documents, and developing broader scholarly collaborations were postponed to the next stages of collaborations.



**Kunsthistorisches
Institut
in
Florenz**

Max-Planck-Institut



SHAHID BEHESHTI UNIVERSITY

To:
Dr. Akbar Zargar
Dean of the Department of Architecture
Shahid Beheshti University, Tehran, Iran

Florence, 9 February 2017

Dear Dr. Akbar Zargar

As one of the two directors of the Kunsthistorisches Institut in Florence (KHI), I am writing to you to propose a collaboration between our academic institutions. I was favorably impressed by the exchange of ideas on architectural themes during our recent meeting in your office at the Shahid Beheshti University.

Therefore, as promised, I would like to invite you and your institution to join me and my collaborators in an academic cooperation. We have developed a project in three stages that I would like to submit to your attention:

1. A short visit to your university (a week?) by two of my collaborators, whom you met during our recent stay in Tehran. The goal is to compare the drawings and photographs held in the Sanpaolesi collection here in Florence, and your archive. The KHI will cover their travel expenses, and I would like to propose that the SBU will be responsible for their appropriate accommodation in Tehran.
2. A lecture or a seminar given in Florence by a guest scholar from your university (perhaps Dr. Hadi Safaeipour), followed by a study-day with other Italian scholars. The KHI will cover the expenses for travel and accommodation of this guest lecture up to a week. The aim of the workshop/conference is to expand the knowledge of Iranian medieval domes and their influence in Italy. We will invite professors from the University of Florence and local students to attend, in order to increase the awareness of these themes in our country.
3. A temporarily limited partnership with the University of Florence, where Prof. Sanpaolesi taught, and the current depository of his archive. Together with the KHI and the SBU, the collaboration will favor the exchange of documentation produced by Sanpaolesi during his stays in Iran, and it will be finalized in the organization of a traveling exhibition with significant material, to be shown in both Florence and hopefully in Tehran.

I feel that in this historical moment it is even more important for cultural and academic institutions to cooperate in an international context. I hope that this project will encounter the favor of your University and that you will join me in promoting the exchange of ideas and young scholars across borders. I look forward to hearing from you.
Sincerely,

Kunsthistorisches Institut in
Florenz - Max-Planck-Institut
Via Giuseppe Giusti 41
50121 Firenze, Italia
C.F. 801594210581
www.khi.it

Seite 1/1



SHAHID BEHESHTI UNIVERSITY

EVIN TEHRAN 198942313
(E. RAY)
TEL: (0216) 129951

Tehran, 30 July 2017

Dear Professor Alessandro Nova,

As the Dean of the Faculty of Architecture and Urban Planning in Shahid Beheshti University (SBU), I would like to thank you and the Kunsthistorisches Institut for opening the intellectual dialogue and research collaborations with our colleagues.

After a review of your proposed program, and a careful examination of the relevant research prospects at SBU, I am happy to inform you that the Faculty of Architecture and Urban Planning is ready and willing to enter into this collaboration.

We also believe that our esteemed colleague, Dr. Hadi Safaeipour is the best candidate for representing the interest and research goals of SBU. Therefore, we concur on coordinating the details for the current program through Dr. Safaeipour and KHI elected scholars. In addition, we hope that the capacity building for future prospects in this collaboration could be achieved after the first two phases of your proposed program.

Meanwhile, I hope for a congruent teamwork and a prosperous research project.

Regards

Prof. Dr. Akbar Zargar

A-Zargar
Dean, Faculty of Architecture and Urban Planning



SHAHID BEHESHTI UNIVERSITY
FACULTY OF
ARCHITECTURE &
URBAN PLANNING

Letter of request from Professor Nova to
Zargar (then Dean of the faculty)

Response from the then Dean of the
Faculty of Architecture and Urban
Planning

2. The Kunsthistorisches Institut Workshop

Thus, the first part of the agreement was implemented in June 2018, and Safaeipour traveled to Florence. During this trip, he held a workshop on the structural system of the Soltaniyeh Dome and delivered a lecture on vaulting traditions of Iranian architecture.

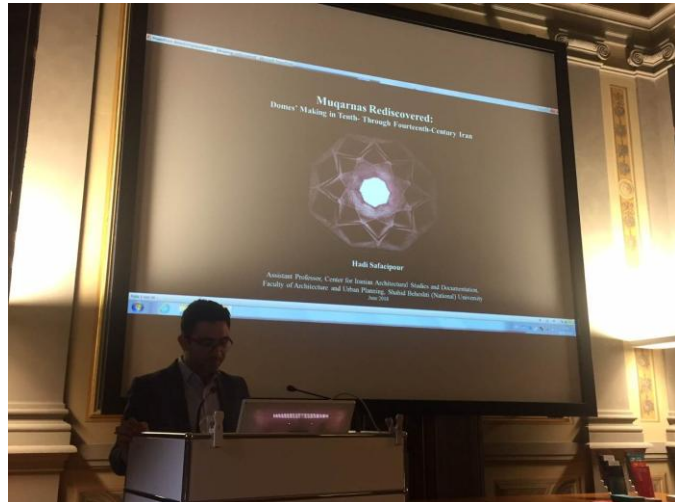
Additionally, during this trip, archives related to the comparative study of the Soltaniyeh Dome and the Florence Cathedral Dome were visited in Florence, including the Opera Duomo Florence Archives., the Florence Cathedral Museum, the archive of the Kunsthistorisches Institut in Florenz, the Library of the Faculty of Architecture and Urban Planning of the University of Florence. Their potential for outlining joint research projects was evaluated.

At the end of this trip, it was agreed that the second part of the agreement would take place in Tehran in February 2019. Both parties also agreed that the results of the joint studies by Donetti, Viggotti, and Safaeipour would be published as three separate articles in a special issue of the journal of the Kunsthistorisches Institut in Florenz — the same journal in which Professor Sanpaolesi had published his theories in 1972 on the relationship between the Soltaniyeh Dome and the Florence Cathedral Dome.

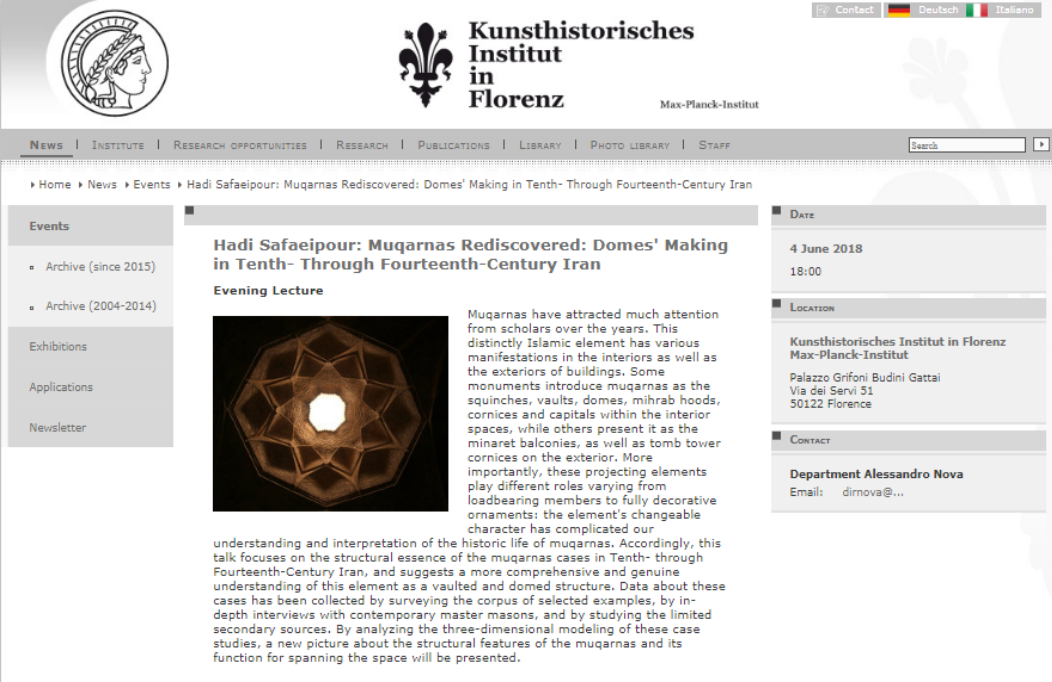
Step One: The Workshops



Lecture by Safaeipour on the structural system of the monument



Lecture by Safaeipour titled "Muqarnas Rediscovered: Domes' Making in Tenth-Through Fourteenth-Century Iran"



Kunsthistorisches Institut in Florenz
Max-Planck-Institut

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Events


- Archive (since 2015)
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Exhibitions

Applications

Newsletter

Hadi Safaeipour: Muqarnas Rediscovered: Domes' Making in Tenth- Through Fourteenth-Century Iran
Evening Lecture



Muqarnas have attracted much attention from scholars over the years. This distinctly Islamic element has various manifestations in the interiors as well as the exteriors of buildings. Some monuments introduce muqarnas as the squinches, vaults, domes, mihrab hoods, cornices and capitals within the interior spaces, while others present it as the minaret balconies, as well as tomb tower cornices on the exterior. More importantly, these projecting elements play different roles varying from loadbearing members to fully decorative ornaments: the element's changeable character has complicated our understanding and interpretation of the historic life of muqarnas. Accordingly, this talk focuses on the structural essence of the muqarnas cases in Tenth- through Fourteenth-Century Iran, and suggests a more comprehensive and genuine understanding of this element as a vaulted and domed structure. Data about these cases has been collected by surveying the corpus of selected examples, by in-depth interviews with contemporary master masons, and by studying the limited secondary sources. By analyzing the three-dimensional modeling of these case studies, a new picture about the structural features of the muqarnas and its function for spanning the space will be presented.

DATE
4 June 2018
18:00

LOCATION
Kunsthistorisches Institut in Florenz
Max-Planck-Institut
Palazzo Grifoni Budini Gattai
Via dei Servi 51
50122 Florence

CONTACT
Department Alessandro Nova
Email: dirnova@...

Reflections on the presence of Safaeipour at the Kunsthistorisches Institut in Florenz

Step Two: Identification and Examination of Archives Related to the Monument Restoration Project in Italy



Visit to the Opera Duomo Florence Archives



The Faculty of Architecture archive, University of Florence

3. "From Soltaniyeh to Florence: Design and Craftsmanship Traditions in fourteenth- and-fifteenth-Century Architecture" Event



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1. The Conference

The first program was the conference "From Soltaniyeh to Florence: Design and Craftsmanship Traditions in fourteenth-and-fifteenth-Century Architecture", held on February 23, 2019, at the Khwarazmi Hall of the International Conference Center at SBU. This event included six lecture sessions, three question-and-answer sessions, and a specialized panel discussion on the "Restoration and Revitalization of the Citadel and Soltaniyeh Dome Monument". The conference speakers, in the order of the program, were Eng. Seyyed Mehdi Mojabi, Lorenzo Viggotti, Dr. Bahareh Taghavi-Nejad, Dr. Mahsa Feyzi, Dr. Dario Donetti (his speech was read by Dr. Arash Boustani), Safaeipour. The specialized panel was conducted with the participation of Prof. Akbar Zargar, Eng. Seyyed Mehdi Mojabi, Eng. Mohammad Hassan Mobahali, Dr. Alireza Razeghi.



"From Soltaniyeh to Florence" conference poster



Photos of "From Soltaniyeh to Florence" conference

2. Soltaniyeh Dome Restoration Documents Exhibition

The second program was an exhibition held in the main hall of the Faculty of Architecture and Urban Planning. This exhibition showcased twenty-six panels containing documents and records related to the restoration of the monument, preserved in the archive of Faculty of Architecture and Urban Planning archive at SBU, and displayed publicly for the first time.



Monument restoration documents exhibition at the Faculty of Architecture and Urban Planning, SBU



Sample documents displayed in the exhibition

3. Visit to the Soltaniyeh Dome and Its Restoration Workshops

The third program involved a group trip including the conference speakers, representatives of the Dean of the Faculty of Architecture at the University of Florence, a number of professors and students of SBU, and a selection of experts from the Cultural Heritage, Handicrafts, and Tourism Organization, to the city of Soltaniyeh to visit the monument. This event was organized with the support of the "General Directorate of National and World Heritage Sites" of the Cultural Heritage, Handicrafts, and Tourism Organization and hosted by the "Soltaniyeh Dome World Heritage Site." The visit took place on February 24, and was attended by the governor of Zanzan and the head of the Cultural Heritage, Handicrafts, and Tourism Organization of Zanzan Province. During this visit, thanks to the arrangements by the Site Director, MirMousa Aniran, one of the recent restoration achievements was unveiled and its technical specifications were explained. Other programs of the one-day visit included visits to the monument, the citadel, its restoration workshops, the restored Chelebi Oghlu monument, and the historical site of Tappe Nour.



Visit to the monument and brick production workshop

4. Signing a Memorandum of Understanding for Joint Collaborations

The next program of this event was the signing of a memorandum of understanding for joint scholarly collaborations, which was signed on Monday, February 25, 2019, by the Dean of the Faculty of Architecture and Urban Planning of SBU and the representative of the Dean of the Faculty of Architecture at the University of Florence. Following the signing of this MoU, representatives from both faculties engaged in negotiations regarding future collaborative scholarly programs. Based on these negotiations, several future plans were outlined, including Launching dual master's degree programs, Defining joint Ph.D. dissertations, Organizing joint workshops to complete previous studies on the monument, Authoring the book *Restoration Documents of the Soltaniyeh Dome*.



Signing of the memorandum of understanding between the Faculty of Architecture and Urban Planning at SBU and the Faculty of Architecture at the University of Florence

5. Study of Archival Documents at the Faculty of Architecture and Urban Planning, Shahid Beheshti University

Following the signing of the MoU, supplementary negotiations were conducted to define and detail the future collaborative programs. These meetings were held at the Faculty of Architecture and Urban Planning archive, attended by Lorenzo Viggotti (Representative of the Kunsthistorisches Institut in Florenz), Susanna Gerardini and Giovanni Anzani (Representatives of the Faculty of Architecture at the University of Florence), and Safaeipour.

The first part of these supplementary negotiations was dedicated to the introduction of the restoration documents of the monument in Faculty of Architecture and Urban Planning archive.

In the second part, the digital copies of documents related to Iran, prepared by Professor Sanpaolesi and kept at the Faculty of Architecture archive at the University of Florence, as well as documents kept by the Sanpaolesi family, were reviewed. A list of these documents was presented by Gerardini. The objective was to create a mutual understanding regarding the quantity and quality of the available materials.

In the third part, there was a discussion and exchange of ideas regarding the content and implementation plans for authoring the book, organizing the exhibition, and conducting workshops.



Study of the monument restoration project documents at the Faculty of Architecture and Urban Planning archive, SBU

4. " From Soltaniyeh to Florence II " ; Joint Workshops



COLUMBIA UNIVERSITY
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FOR ADVANCED STUDIES IN AMERICA



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To further develop this scholarly collaboration, the project for the event "From Soltaniyeh to Florence II" was devised and approved by the faculties of architecture in Iran and Italy. This event included three educational workshops on preliminary studies for the restoration of historical buildings, scheduled to be held on the following dates:

- Workshop in Florence, July 2019
- Workshop in Tehran, August 2020
- Workshop in Soltaniyeh, September 2020

Unfortunately, military and political unrest in the second half of 2019, followed by the COVID-19 pandemic, prevented the Italian colleagues from traveling to Iran and fully executing the program. Thus, only the first workshop in Florence, Italy, was held.

The goals set for this trip were as follows: conducting an introductory educational course for Italian participants; planning for the second and third phases of the educational course (subject areas, expected outcomes, collaboration methods, etc.); executive planning for the second and third phases (timelines, locations, equipment, administrative permits, groupings, etc.); studying archival documents from Professor Sanpaolesi's family archive; scholarly and executive planning for future collaborative activities (exhibition, book, conference, website); familiarization with the educational programs of the Faculty of Architecture of the University of Florence and the research and educational fields of its professors; planning for the writing of joint articles.



Preliminary design of the conference website banner



Preliminary design of the conference poster

1. Introductory Educational Courses for Italian Students

This workshop was held from June 25 to July 10, 2019, with professors from the "Faculty of Architecture and Urban Planning at SBU," the "School of Advanced Studies Lucca," the "Faculty of Architecture of the University of Florence," the "Kunsthistorisches Institut in Florenz," and the "National Research Council of Italy," over 7 days at the Faculty of Architecture of the University of Florence. In this workshop, preliminary theoretical topics on the identification and restoration of brick structures were presented to Italian students.

IL MAUSOLEO DI ULJAYTU, SOLTANYIEH | IRAN

4 Luglio

Aula 208, Santa Teresa

ore 14:00-16:00

Hadi Safaeipour, Lamia Hadda

*An Introduction to Iranian
Domed and Vaulted Structures*

16:00-18:00

Ugo Tonietti

*Constructive and structural aspects of
S. Maria del Fiore dome*

5 Luglio

Aula 402, Santa Teresa

ore 10:00-12:00

Emanuele Pellegrini

*Piero Sanpaulesi and Italian art
criticism in twentieth century*

14:30-16:30

Hadi Safaeipour

*Double shell domes in Iranian Architecture:
the structure and construction of the Dome of
Soltaniye*

8 Luglio

Aula 19, Santa Verdiana

ore 10:00-12:00

Fabio Fratini

Decay of stone materials in architecture

14:30-16:30

Alessandro Merlo

*Digital survey for restoration and consolidation
of historical architecture.*

9 Luglio

Aula seminari, Santa Teresa

ore 11:00-13:00

Raffaele Paloscia

*The Islamic city, the constituent components
between tradition and globalization*

14:30-16:30

Lorenzo Vigotti

*Diplomatic Exchanges and Architectural Inven-
tions
along the Silk Road between Soltaniyeh and Italy
during the Fourteenth Century*

10 Luglio

Aula 208, Santa Teresa

ore 10:00-12:00

Letizia Dipasquale

*Bricks: characteristic, production, use and
degradation*

14:00-16:00

Susanna Caccia Gherardini

*What deserves to be preserved? Facing an
UNESCO site after Sanpaulesi restoration*

12 Luglio

Aula 401, Santa Teresa

ore 10:00-13:00

*Bricks: characteristic, production, use and degra-
dation*

Ugo Tonietti

*Construction techniques, traditional
strengthening strategies, critical issues*

Luisa Rovero

Interpretation issues and analysis tools

14:00-16:00

Emma Cantisani

*Raw materials and technologies for the
production of historical mortars*

17 Luglio

Aula 401, Santa Teresa

ore 14:00-16:00

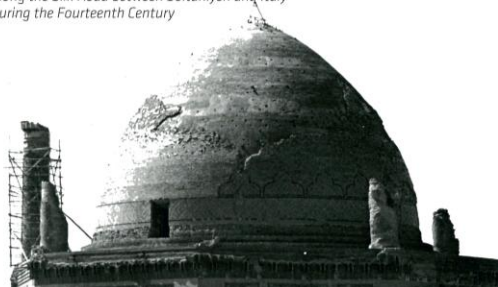
Barbara Sacchi

*Materiali lapidei naturali ed artificiali: fenomeni di
degrado e criteri di intervento per la loro conser-
vazione*

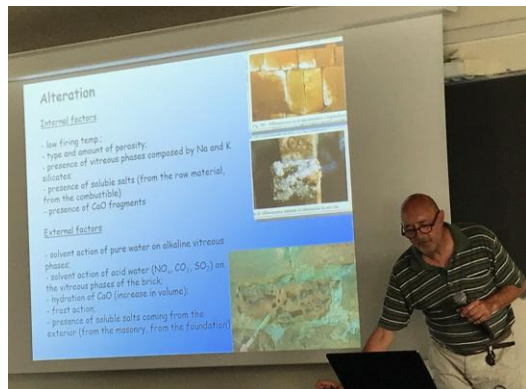
16:00-18:00

Dario Donetti

*Santa Maria del Fiore and Soltaniyeh's Domes:
context, precedents, historiography*



List of lecturers at the first workshop



Lectures at the first workshop

2. Visit to Professor Sanpaolesi's Private Archive

Based on arrangements made the previous year with Professor Sanpaolesi's family, Safaeipour, together with Lorenzo Viggotti and Ms. Francesca Gusti (a Ph.D. student under supervision of Susanna Caccia Gherardini), visited the storage site of these documents. The documents are stored in dozens of cardboard boxes in the storage room of Sanpaolesi's daughter's house. She lives in New York, and the house remains uninhabited most of the year. These conditions have led to the documents being kept in very poor circumstances, exposed to damage from rising and falling humidity, decay, and pests. Among the document boxes, there is one containing two thick folders titled "Iran." Sanpaolesi's daughter has not yet permitted the digitalization of any of these documents. Therefore, a complete registration of the documents was not possible at this stage. However, all the documents in these two folders were reviewed, and a list was prepared. At a general glance, these documents can be categorized into four groups:

1. Administrative documents regarding the establishment of the Restoration Institute at the Faculty of Architecture and Urban Planning at the National University (SBU), including administrative letters and technical reports.
2. Administrative and technical documents on the restoration and development plan for the Museum of Ancient Iran, prepared by Professor Sanpaolesi.
3. Administrative and legal documents related to the restoration projects of the Soltaniyeh Dome, Saveh Jameh Mosque, Sajās Jameh Mosque, and Qorveh Jameh Mosque. These documents mostly pertain to the initial phases of these projects.
4. Technical drawings and image of the above-mentioned projects. The number of these documents is very limited.



Sanpaolesi's private archive

List of Soltaniyeh restoration project documents prepared by Professor Sanpaolesi held by his family:

Folder 1: Soltaniyeh

- 1) Contracts, drafts, copies of contracts and additions (various dates 1967, 1969, 1972)
- 2) Estimates, projects (without drawings), programs, reports, technical reports, expenditures (no date - 1978)
- 3) Sanpaolesi Luca - structural calculations and chemical analysis (1970)
- 4) bill of quantities of the works (1970 - 1975)
- 5) Sheets: plans and drawings of Sanpaolesi + instructions attached to the drawings
 - a. Sanpaolesi, restoration project of the Mausoleum and survey, 1970
 - b. D'Errico, 2 drawings, 1973
 - c. Sanpaolesi, restoration project of the Mausoleum, 1978
 - d. pictures
- 6) Correspondence (miscellaneous, 1968-1978)
- 7) Miscellaneous (no date)
- 8) Ricceri Gabriele (invoices – miscellaneous)

Folder 2: Soltanieh, Saveh, Gazvin

Soltaniyeh: correspondence (miscellaneous)

- 1) Draft of contracts, overall contracts
- 2) Reports, technical reports, programs, estimates, expenditures
- 3) Pictures (miscellaneous, 1976)

Saveh

- 1) Reports, contracts, technical reports, programs, estimates, expenditures (1968-1980)
- 2) Drawings, 1968 (8 envelopes)
 - a. project with notes "things to do"
 - b. drawings with notes "verifications and works to be carried out on Friday at the Mosque << 2
 - c. restoration project
 - d. drawings, no date nor author
 - e. Sanpaolesi, consolidation project of the front arch and the one behind the Iwan
 - f. Bartolucci, project of metal scaffolding assembly
 - g. Institute for the Restoration of Monuments University of Iran, amendment/variation
 - h. pictures (miscellaneous)
- 3) Press articles (Sanpaolesi, no date, Godard André, 1956)

Gazvin

- 1) Reports, contracts, technical reports, programs, estimates, expenditures (1968-1980)
- 2) Drawings, 1965 (5 envelopes)
 - a. 3 restoration projects + 1 sketch
 - b. 5 restoration projects
 - c. 60 sheets + 1 plan
 - d. reproduction from "L'Iman islamique" with the plan of Gazvin mosque (no date)
 - e. a scenographic extract from "Repertoires chronologique de l'Epigraphie arabe" (no date)
 - f. D'Errico, pictures of the mosque (1972-73)
 - g. Sanpaolesi, pictures without information
- 3) Correspondence (miscellaneous, no date, 1977)

Folder 3: Iran Bastan Museum, Gazvin

Iran Bastan Museum

- 1) Draft of the contract for the works to be carried out by Eng. Sanpaolesi
- 2) Projects, cost estimates, various calculations, technical reports, Sanpaolesi invoices
- 3) Correspondence regarding the Museum (no date or in Persian)
- 4) Miscellaneous (notes, annotations)
- 5) Drawings
 - a. Sanpaolesi, plan of the hall under the dome
 - b. Sanpaolesi, plan of 2nd floor, no date
 - c. Sanpaolesi, plan of 1st floor, no date
 - d. plan with blue colour, no information
 - e. coupe of New Museum, no date
 - f. Sanpaolesi, Pietramellara, detail of the steel framing, 1972
 - g. small drawings
 - h. envelope with 12 pictures of the museum interiors, no date

Gazvin

- 1) technical report of the University on the state of foundations and soil, including few tables (graphic results)
- 2) expenditures (miscellaneous), estimates (1973-75)

Folder 4: University of Teheran, miscellaneous

University of Teheran

- 1) Course programs (1966, 1967-68, 1970-71) and draft to establish the Institute of Restoration at the University
- 2) exchange programs between the University of Teheran and the University of Florence, October 1, 1970
 - a. programs for the visits of the two Deans
 - b. miscellaneous
- 3) List of books donated by ISMEO, the Institute of Italian Culture and the Department of Architecture of the University of Florence to the Department of Architecture of Teheran
- 4) Correspondence related to the University (miscellaneous 1966-67; 1968; 1970-72)

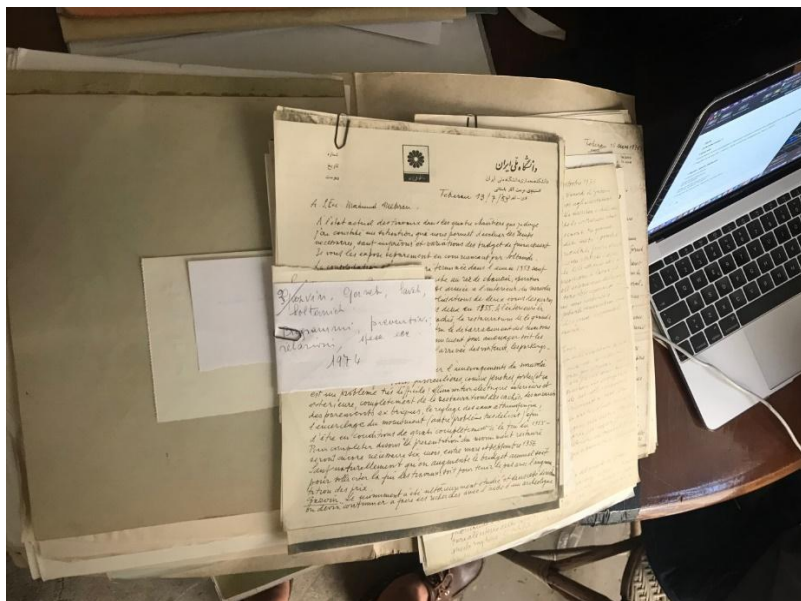
Miscellaneous

- 1) Journey with the Queen (silk map of Zanjan, 1976)
- 2) Drawings
 - a. envelope with text "Persian domes before 1400", n. 3 pictures
 - b. n. 2 reproductions, no information (plan of the Mosque? of the Museum?)
 - c. plan with notes in Persian
 - d. details of a plan, no information
 - e. large drawing (plan of the Mosque? Of the Museum?), no information
 - f. n. 3 drawings, no information
 - g. envelope with containing pictures, no date
 - h. n. 4 large drawings (details of a Mosque? of Tehran Museum?), no information
 - i. R. Kassai, n. 9 numbered plants on tracing paper (notes in Persian)
 - l. drawing signed by A. H. Pasoki, no date
- 3) Travel and hotel expenses
- 4) Writings in Persian

- 5) Contracts, drafts
- 6) Sanpaolesi, typewritten report of 18 cc on the "Mausoleum of Imam Reza in Machad", no date
- 7) Study of the Solarium in Teheran
- 8) Bossi Alessandra, project for mini mum houses in Tehran, no date
- 9) check with Persian characters
- 10) Travel tickets
- 11) Press reviews
- 12) Bibliography of Persia in French
- 13) Unesco, *Programme special de préservation et de mise en valoir de l'héritage culturel en liaison avec le développement de tourisme en Iran*, Paris, 1968
- 14) Correspondence (miscellaneous, 1966-79)



Photo of Professor Sanpaolesi on the roofs of Isfahan bazaar

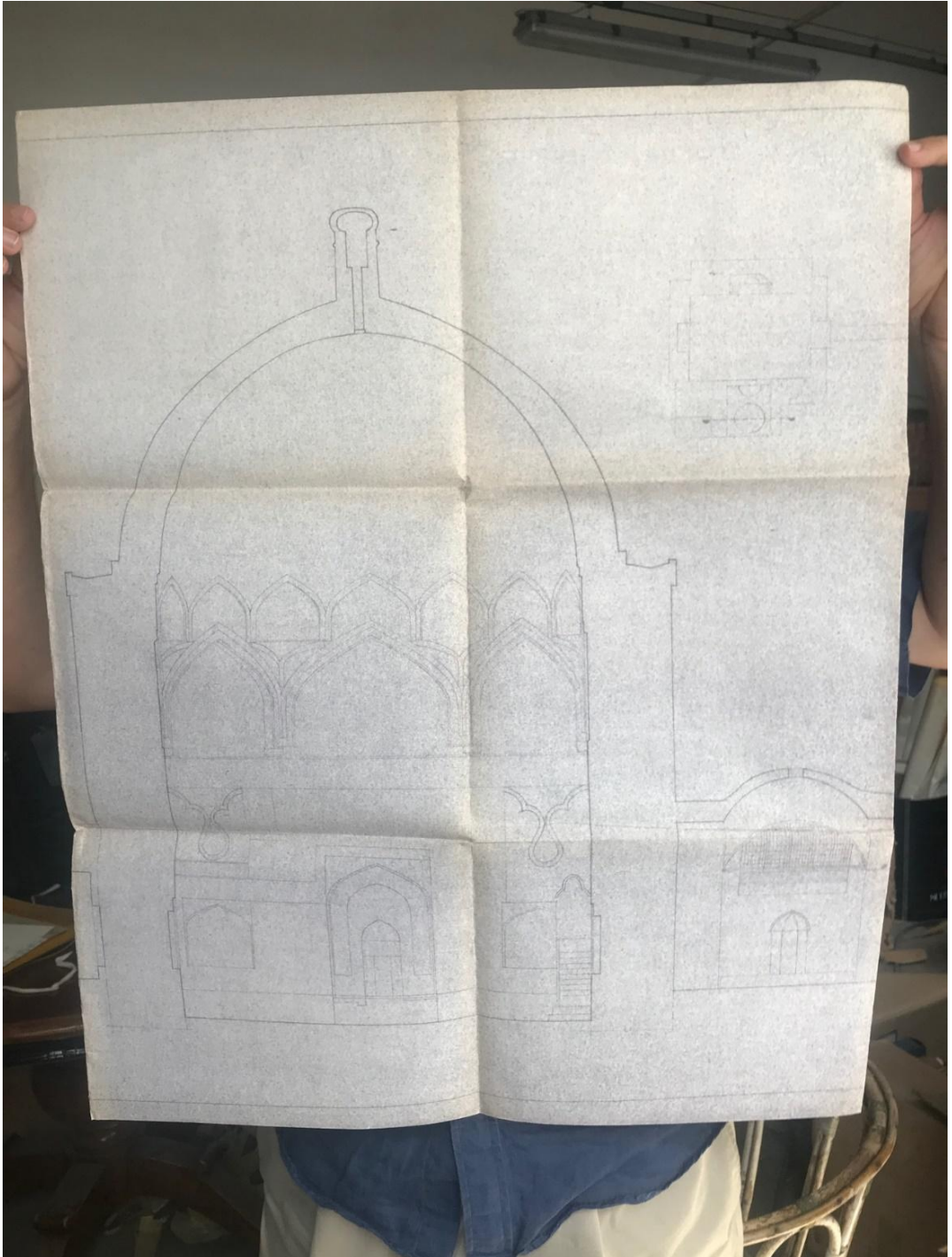


گزارش ساعت ۱۶ شنبه ۲۸ دیماه ۱۳۷۷

برای بهینه‌سازی و بهینه‌سازی بناهای تاریخی و آثار ملی ایران

روزها	موضوع	موضوع	موضوع
یکشنبه ۲۹ دیماه ۷۷	آقای سید محمد علی مصطفوی ساعت ۱۰ تا ۱۰	موضوعات بناهای تاریخی برجسته	بررسی بناهای تاریخی و آثار ملی ایران
دوشنبه ۳۰ دیماه ۷۷	آقای حضرت الممشکری ساعت ۹ تا ۱۰	نقشه‌برداری و نقشه‌برداری بناهای تاریخی	بررسی آثار تاریخی و آثار ملی ایران
سه‌شنبه ۳۱ دیماه ۷۷	آقای محمد کریم پیرنیا ساعت ۱۱ تا ۱۱	نقشه‌برداری و نقشه‌برداری بناهای تاریخی	بررسی آثار تاریخی و آثار ملی ایران
چهارشنبه ۱ بهمن ۷۷	آقای عزت الله‌نیکان ساعت ۹ تا ۱۰	نقشه‌برداری و نقشه‌برداری بناهای تاریخی	بررسی آثار تاریخی و آثار ملی ایران
پنجشنبه ۲ بهمن ۷۷	آقای عزیزمیرزاوند ساعت ۹ تا ۱۰	نقشه‌برداری و نقشه‌برداری بناهای تاریخی	بررسی آثار تاریخی و آثار ملی ایران
شنبه ۳ بهمن ۷۷	آقای شاکر محمدی ساعت ۱۰ تا ۱۱	نقشه‌برداری و نقشه‌برداری بناهای تاریخی	بررسی آثار تاریخی و آثار ملی ایران
یکشنبه ۴ بهمن ۷۷	آقای علی اصغر پناهی ساعت ۹ تا ۱۰	نقشه‌برداری و نقشه‌برداری بناهای تاریخی	بررسی آثار تاریخی و آثار ملی ایران
دوشنبه ۵ بهمن ۷۷	آقای حسن نوری ساعت ۱۱ تا ۱۱	نقشه‌برداری و نقشه‌برداری بناهای تاریخی	بررسی آثار تاریخی و آثار ملی ایران

Samples of documents at Sanpaolesi's private archive



Samples of documents at Sanpaolesi's private archive

3. Decision-Making on Continuation of Cooperations

The outcomes of the discussions held during the trip between the Iranian and Italian delegations were formalized in the minutes of two meetings on June 27 and July 3, as follows:

1. Resolutions of the June 27 Meeting:

In this meeting, the research and educational objectives of the trip and the university major, academic level, and number of workshop participants were discussed. The results are as follows:

- I. The study of the Soltaniyeh Dome was defined under two main axes. The first axis focuses on gathering basic field information about the monument, laying the groundwork for future historical and restoration studies. This study axis will be pursued in the next workshop. The second axis involves studying the documents collected from three archives: SBU, the University of Florence, and Professor Sanpaolesi's family, and preparing entries for a selection of these documents. Preparatory steps for this axis will be taken in the upcoming workshop and continued in another one.
- II. Given the financial resources of the University of Florence, nine students from this university will participate in the workshop. Seven students will receive financial aid, while two others will participate independently. A group of professors, research assistants, and Ph.D. students will accompany them.
- III. The workshop content will cover four subject areas: "Documentation," "Technology Studies," "Damage Assessment," and "Historiography." This structure will also determine the scholarly program and the grouping of participants.
- IV. The program timeline includes three stages. In the first stage, a group of professors will arrive in Tehran two days earlier than the others to present seminars introducing the scholarly program and methodological approaches for each thematic area. The second stage will be a six-day workshop with the second group of students and professors from the University of Florence. During this stage, all Iranian and Italian members will stay in Soltaniyeh and study the monument in three groups. The final stage will be dedicated to summarizing findings and presenting a short report at SBU, in an open session for all students.
- V. To ensure long-term benefits from the workshop results, professors from both faculties will strive to assign course projects and theses on the Soltaniyeh Dome.

2. Resolutions of the July 3 Meeting:

- I. The final travel dates were approved.
 - The group of invited professors will arrive in Tehran on August 31 and deliver lectures.
 - The group of students and assistants will arrive in Tehran on September 1 and proceed directly to Soltaniyeh. They will stay there until the afternoon of September 7.
 - All group members will return to Tehran on the afternoon of September 7, and the following day, they will present their findings in a one-day session.
 - On September 9, all group members will leave Tehran for Italy. (Some professors may remain in Iran and make a trip to the Gonbad-e Qabus.)
- II. The research areas, names of professors, assistants, and students were specified.

III. Participant accommodation arrangements were determined.

- Professors' accommodation (free of charge) and students' accommodation (at their own expense) will be provided at SBU's dormitory.
- Students' accommodation (free of charge) will be provided at two guesthouses of the Soltaniyeh Dome World Heritage Site.
- Professors will stay at a hotel in Zanjan city, paying their accommodation expenses themselves.

IV. Iranian and Italian students will work in joint groups according to a shared program.

V. Dissertations and Theses related to this research area will be define within the both universities



Resolutions taken during the meeting

Date for the workshop: Sunday 1 to Sunday 8 September

Flying during the night between 31 August and 1 September, and between 8 and 9 September.

The advanced group will travel on Friday 30, teaching at SBU on 31 July afternoon and 1 September).

List of participants from Unifi (23) + KHI/Columbia (2), total 25 from Italy (the names moved to the right will be accommodated in Soltaniyeh)

Preservation

Prof. Susanna Caccia Gherardini

Prof. Emanuele Pellegrini (IMT Lucca)

Dr. Stefania Aimar

Fabio Fratini (CNR)

Francesca Giusti (PhD student)

Francesco Pisani (PhD student)

Chiara Simoncini (student)

Simone Mancineschi (student)

Andrea Rossi (student)

Edoardo Gorini (student)

Structures/consolidation

Prof. Ugo Tonietti

Prof. Luisa Rovero

Dr. Giulia Misseri

Dr. Arash Boostani

Mehmaz Partow (student)

Fiorigia Prencipe (student)

Survey

Prof. Alessandro Merlo

Dr. Francesco Tioli

Giulia Lazzari (PhD student)

Arch. Francesco Frullini

Vittoria Ghiselli (student)

Federico Rocchi (student)

Filippo Romani (student)

History of Architecture

Prof. Dario Donetti

Dr. Lorenzo Vigotti

Sleeping in Soltaniyeh: 12 total, 7 male and 5 female students

Sleeping in Zanjan: 13 total, 8 male and 5 female professors



Florence, July 3, 2019

TO BE DISCUSS IN FLORENCE TO PREPARE THE WORKSHOP IN SEPTEMBER IN SOLTANIYEH/TEHRAN

1. Make a list of all **participants** to the workshop in Iran (professors, assistants/PhD students, students) in order to prepare letters of invitation for visas and to pair the Italian staff with an equal number of Iranian professors/students.
2. Discussion of **accommodation** in Soltaniyeh and Tehran: Zanjan or Soltaniyeh? Mixing Italian and Iranian students to foster their professional relationships. Costs of accommodation (also for professors coming earlier to Tehran) should be covered by Iranian partners. Do we want to give the possibility to Italian students to remain extra days in Tehran?
3. Approved **logistics**: the large Italian group can be bussed directly from IKA Airport to Soltaniyeh on the first day. A bus will bring back the group at the end of the workshop for the final day of presentation in Tehran. Costs of transportation should be covered by Iranian partners.
4. In order to activate funds by the Iranian Office for World Heritage Affairs at Iran's Cultural Heritage Handicrafts and Tourism Organization, an **agreement** must be signed between UniFi/SBU/OWHA. To facilitate an expedite signature, we can start with the template already signed between Sapienza and the OWHA.
5. How to **prepare the students** before the arrival in September. We can prepare a general package of readings for all people involved and specific lists for each section (survey, structure, preservation). For example: Sanpaulesi's article on the two domes, a brief history of Iranian architecture. For the specific topics, Italian and Iranian professors can cooperate to prepare a shared list.
6. Italian and Iranian professors should also prepare a **schedule of the work** to be done in Soltaniyeh, establishing the process and goals for the students.
7. Schedule of **lectures to be given at SBU** before the beginning of the workshop in Soltaniyeh. Two days in which Italian professors will present their work/methodologies, open to all interested students at SBU.
8. **Final presentation** of preliminary results at SBU on the last day of the Iranian trip. After an introduction, each group of students will show what they did, how they did it (methodologies), and the early results. SBU will prepare a poster to announce this event. These results will be included in the last section of the exhibition/catalog.

Minutes of the faculty members'
meeting for the Soltaniyeh educational
workshop, July 3, 2019

Agenda for the Soltaniyeh educational
workshop

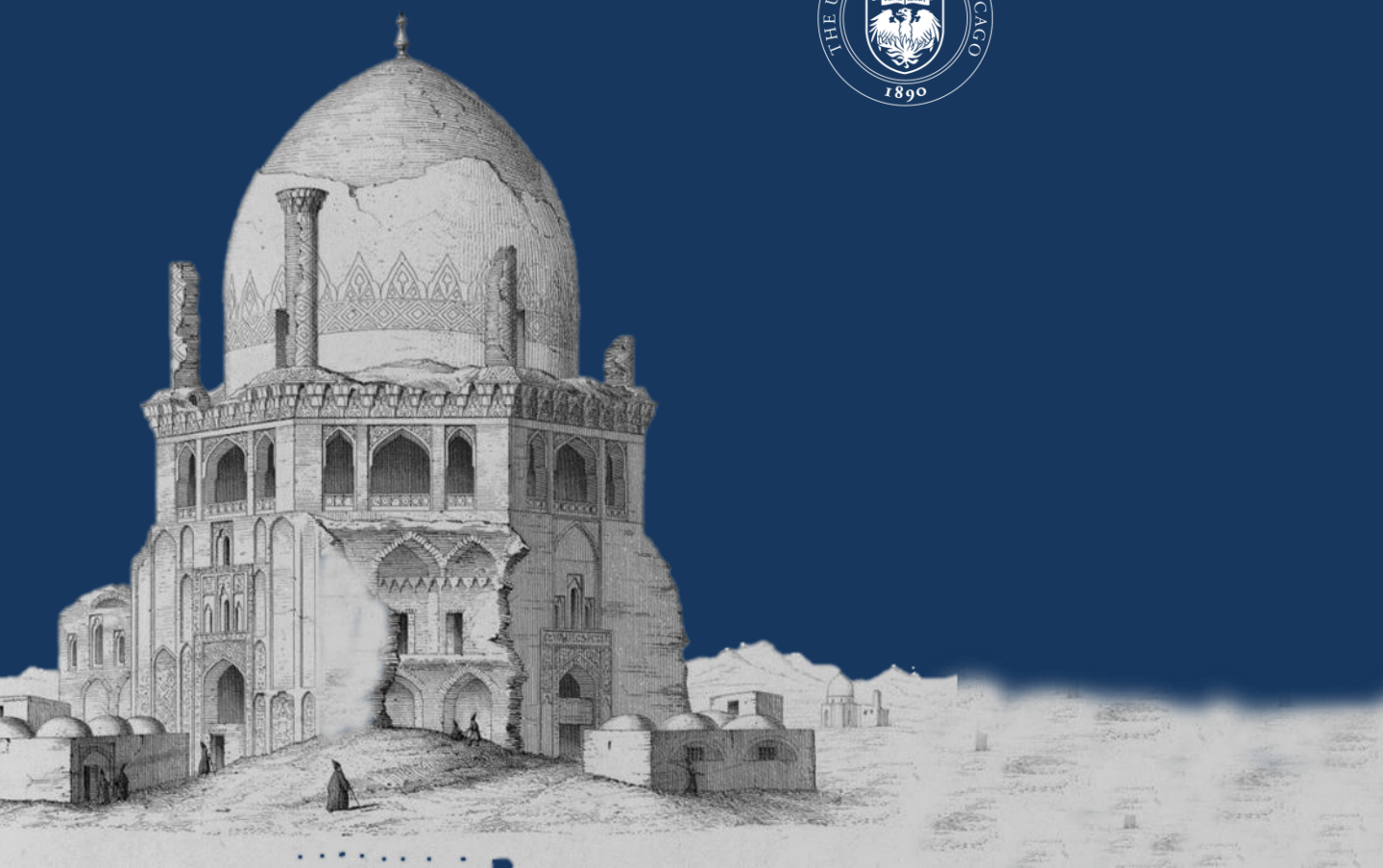
5. Project Presentation

b-tu

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Cottbus - Senftenberg



بنیاد پرانسانی



Following the workshop held in Florence, from 2019 to 2023, Safaeipour and Vigotti continued to develop and present their research project. Among these efforts was Vigotti's presentation titled "Middle Eastern and Local Models for the Construction of the Dome of the Church of San Michele" during the conference series Nel seicentesimo anniversario della cupola del Brunelleschi, held in Barberino Tavarnelle (FI) on 3 October 2020. In 2021, he published an essay entitled "The Ilkhanid-Italian Relationship during the Trecento: Medieval Persian Prototypes for Brunelleschi's Dome in Florence" in the volume *New Horizons in Trecento Italian Art*.

Vigotti and Dario Donetti also gave a lecture titled "Migration of Inventions: Brunelleschi's Dome and the East" at the University of Chicago. Meanwhile, Safaeipour presented "The Transfer of Architectural Technology: Double-Shell Domes and the West" as part of the "Heritage and History: Critical Participation" program at Brandenburg University.

In January 2022, Vigotti and Donetti presented "Migrating Inventions: The Double-Shell Domes of Soltaniyeh and Santa Maria del Fiore" at the Comité International d'Histoire de l'Art (CIHA) conference held in São Paulo, Brazil. A month later, Vigotti delivered a paper titled "Diplomatic Exchanges and Architectural Inventions along the Silk Road: The Case of Soltaniyeh and Santa Maria del Fiore" at the College Art Association conference in Chicago. Later that year, Safaeipour and Vigotti jointly presented "Diplomatic, Cultural, and Artistic Exchanges along the Silk Road between Ilkhanid Iran and Italy" at the Iranology Foundation in Tehran.

Throughout this period, Vigotti gave several additional lectures. In 2023, invited by Prof. Mark Rakatansky of Columbia University's Graduate School of Architecture, Planning and Preservation (GSAPP), he delivered a lecture titled "Renaissances, Plural: Exchanges with Ottoman, Persian, and African Cultures" to MA architecture students. The session focused on the global phenomenon of architectural exchange between the Mediterranean world and the Middle East.



HERITAGE AND HISTORY
Critical Engagements

Lectures 2021

<p>29 April Maria Huhner — Empire, Nation-Building and the Region in 19th-Century Egypt m.huhner@bnu.de</p> <p>4 May Lucia Allen — Colonialism, Modernity and the Architecture of Empire lucia.allen@bnu.de</p> <p>18 May Sabina Mahdavi — The Cultural European West on Major Cities in the Islamic World sabina.mahdavi@bnu.de</p>	<p>1 June Hadi Safaeipour — Architectural Technology Transfer: Iranian Double-Shell Domes and the West hadi.safaeipour@bnu.de</p> <p>27 June Mark Grogan — Architectural Access: Empire, the West, and the Middle East mark.grogan@bnu.de</p> <p>28 June Robert Hume — The Technology and Political History of the Ottoman Empire: The Case of the Ottoman Empire robert.hume@bnu.de</p> <p>18 July Edward Fikri — Cultural Heritage and the Role of the State in the Middle East edward.fikri@bnu.de</p>
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IPS Research Training Group 1913 "Cultural and Technological Significance of Historic Buildings"

All lectures start at 7 pm CEST online via zoom (please note online begin on June 1 at 5 pm CEST). For attendance please contact Research Assistant at IPS-RTG 1913, alberta.schneider@bnu.de to receive the zoom link.

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BTU Cottbus · Senftenberg · Postfach 10 15 54 · D-13055 Cottbus

Graduate Seminar 1913
"Cultural and Technological Significance of Historic Buildings"

Research Assistant
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F +49 (0) 306 169 4906
E alberta.schneider@bnu.de

Cottbus, 23 June 2021

To whom it may concern

I hereby confirm that **Professor Hadi Safaeipour** (Shahid Beheshti University, Tehran, Iran) has presented his current research "Architectural Technology Transfer: Iranian Double-Shell Domes and the West" in the lecture series "Heritage and History: Critical Engagements" that is organized by our Research Training Group "Cultural and Technological Significance of Historic Buildings" at BTU Cottbus-Senftenberg. His lecture and seminar took place on June 1, 2021. For further questions regarding his collaboration with BTU Cottbus-Senftenberg please contact me.

[Signature]

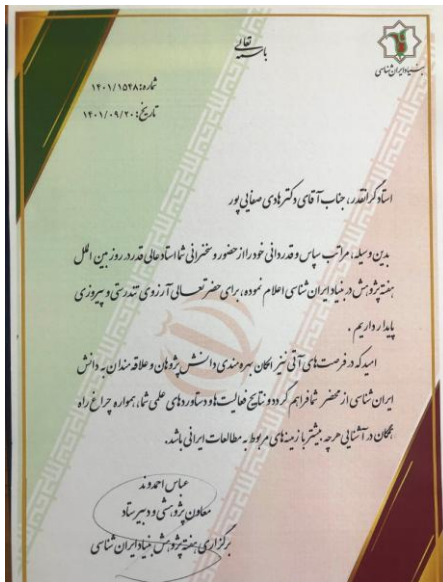
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Poster & confirmation letter of Safaeipour's lecture at Brandenburg University



Appreciation letter to Safaiepour for presenting the lecture on the project



Vigotti's Lecture during the College Art Association held in Chicago



Vigotti's Lecture during the College Art Association held in Chicago



Lecture by Donetti and Vigotti at the University of Chicago

6. Found-Rising and Grant Application



The project Scholars endeavored to secure funding by drafting proposals for reputable research institutions. One of these proposals titled "Iranian Double-Shell Domes and the West: Technological Transfer along the Silk Road, 14th to 20th Century" was submitted by Safaeipour to the Gerda Henkel Foundation. Unfortunately, the application was not successful. Vigotti also submitted a proposal with the same title to the Marie Curie Foundation and succeeded in obtaining funding.

Gerda Henkel Stiftung
RESEARCH PROJECT GRANT

PROJECT TITLE

***Iranian Double-Shell Domes and the West:
Technological Transfers on the Silk Road, 14th to 20th Century***

PREMISE

With a public lecture delivered in 1971, the Italian architect and conservator Piero Sanpaulesi (1904-80) presented for the first time a research hypothesis that challenged the canonic view of the artistic revolution of the early Renaissance as shaped by a distinctly humanistic ingenuity. His inquiry contested the traditional Western-centered representation of this new architecture at its very heart: Filippo Brunelleschi's design for the dome of the Florentine cathedral, completed in 1436. The lecture—later turned into a seminal article—addressed an outstanding comparison between such an iconic monument and a late medieval domed building, distant in time and space, but surprisingly similar in its constructive technique and typology: The Mausoleum of Oljaitü in Soltaniyeh, Iran built between 1302 and 1310.¹ In the 1960s Sanpaulesi was in charge of the restoration of prominent examples of Iranian heritage, such as the mosques of Qazvin and Saveh, in addition to Soltaniyeh's Mausoleum itself. As the director of the Institute for the Restoration of Historical Monuments, in both Florence and Tehran, he was a key figure in the field of conservation and a proponent of the 'diplomacy of academia' that, in the 1960s and 1970s, reinforced the relationship between Iran and Italy: among its results was the new awareness of the local heritage that the two countries share.² Surprisingly, the critical potential of this theory still waits to be unlocked. But within a global and comparative approach, such a groundbreaking hypothesis for the study of domed structures along the Silk Road gains new strength.

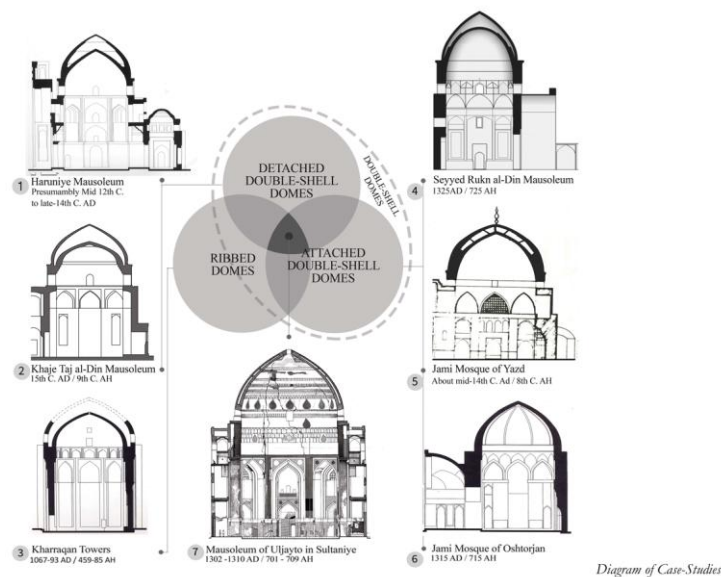
Responding to two historical moments in which exchanges between Florence and Iran were increasing, this project focuses on the circulation of material knowledge in the broad Mediterranean/Iranian world during the Early Modern age, as well as on the rise of historiographical interest in the relationship between the two countries during the second half of the twentieth century, when the premises for a material understanding of

¹ P. Sanpaulesi, "La cupola di Santa Maria del Fiore ed il mausoleo di Soltaniyeh. Rapporti di forma e struttura fra la cupola del Duomo di Firenze ed il mausoleo del Ilkhan Ulgiatü a Soltaniyeh in Persia," *Mitteilungen des Kunsthistorischen Institutes in Florenz*, 16, no. 3 (1972), 221–60; --- *La cupola di Santa Maria del Fiore: il progetto, la costruzione* (Roma, 1941); ---, *La chiesa dei SS. Sergio e Bacco a Costantinopoli* (Roma, 1961); ---, *La Chiesa di S. Sofia a Costantinopoli* (Firenze, 1965).

² Sanpaulesi was part of larger group of Italian archaeologists, architects, and restorers who worked in Iran in the same decades, establishing projects that are still running today: among others, Eugenio Galdieri, Pietro Zander, Rosario Paone.

Our project will foster the scientific documentation of a meaningful selection of case-studies according to a two-step program. The first phase will produce a comprehensive digital documentation of the Mausoleum of Oljaitü in Soltaniyeh, as the focal point of this research project. Such documentation will adopt different but coordinated tools, such as:

LASER SCANNER	Through application of laser scanner, the building dimensions, the location, as well as the geometry of the architectural and structural elements will be accurately surveyed and represented in a DWG-based three-dimensional model.
PHOTOS & -D MODEL	Multiple overlapping photographs of the external and internal surfaces of the building will be snapped by using aerial (a RTK equipped drone) and terrestrial (a full-frame digital single-lens reflex camera (DSLR)) close-range photogrammetry tools. The photos will be then incorporated with the 3D-model of the building and will produce an accurate and realistically photo textured model of it, representing the structural and constructional features of both the exterior and interior surfaces of the monument.
GROUND PENE- TRATING RADAR	With a technique specifically dedicated to study of detached double-shell domes, the space between the two shells will be surveyed through application of non-destructive methodologies. The space in between the two shells will be surveyed by using Ground-Penetrating Radar (GPR), a high-resolution technique that obtains an image of subsurface structures by using relatively short wavelength electromagnetic waves. This system comprises a signal generator, transmitting and receiving antennae, and a receiver with recording facilities or hardcopy graphical output. In this project, in order to identify wall thickness and detect the internal features of the brick coursing 600MHz to and 2600MHz antennas will be used.
ENDO- SCOPY	Photos and videos of the construction techniques used between the two shells will be snapped and recorded by the means of endoscopy of the space between the two shells.
FINAL MODEL	Finally, all the gathered information will be represented in the form of an integrated digital three-dimensional textured model as well as derived orthophotos.



Selected pages of the Gerda Henkel Foundation proposal

1. Excellence

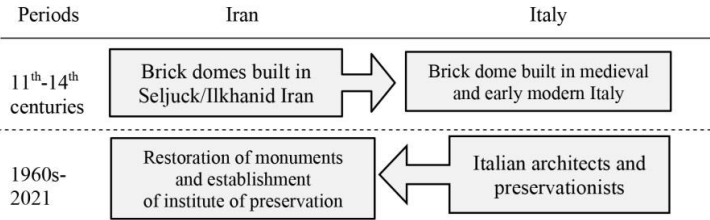
1.1 Quality and pertinence of the project's research and innovation objectives (and the extent to which they are ambitious, and go beyond the state of the art)

1.1.1 Introduction

Was Filippo Brunelleschi's unprecedented Florentine dome a new architectural invention of the European Renaissance or the continuation of a long (but distant) tradition? During a time when diplomatic and literal walls are being built between cultures, **DOMES is an exploration of the shared architectural legacy of Europe and the Middle East.** Specifically, my project details the transmission of architectural knowledge across the Silk Road from Persia to medieval Italy during the fourteenth century. Utilizing an innovative research methodology, DOMES uncovers the specific **construction techniques employed in large-scale brick domes.** To date, nearly all comparative architectural history projects utilize style choices rather than building structure to analyse the dissemination of architectural knowledge. Stylistic approaches, while helpful in their own right, are extremely limited in their comparative depth because decorative motifs differ so dramatically from culture to culture. As such, this project not only uncovers a critical link between historically disparate regions but originates a **new method of architectural history.**

Utilizing structural building techniques as the basis for the project, DOMES focuses on the transmission of two types of architectural knowledge: **technical knowledge and preservationist knowledge.** This project first proposes to **investigate the transmission of the technological knowledge of building double-shell brick domes from Iran to Italy.** The double-shell method was uniquely employed in Iran starting from the 11th century (5th AH), progressing from simple tomb towers to large mausoleums in the 14th century (8th AH). The largest among those domes, the Mausoleum of Oljaitü in Soltaniyeh (1302 CE/701 AH) was the object of an initial (and incomplete) study by Italian restorationist and conservator Piero Sanpaolesi during the 1960s-70s. Sanpaolesi compared the materials and the structural solutions to the dome of the Florentine cathedral built by Brunelleschi in the early 15th century (9th AH). Sanpaolesi realized that techniques employed by Brunelleschi (load-bearing double-shells built in bricks, herringbone brick patterns, construction without centring, wooden and metal chains, among others) were unprecedented in European architecture but widely used in medieval Iran. While Sanpaolesi originally noted this similarity, his original work was cut short by the Islamic revolution and there has been no additional research which systematically compares the structural components of double shell brick domes in Iran and Italy. DOMES aims to verify Sanpaolesi's early work and expand its structural investigation to five selected domed monuments (see 1.2.1) built during the period abovementioned (11th-14th centuries / 5th—9th AH).

Furthermore, DOMES investigates the historical exchange of Italian architectural restorers and Iranian preservationists through the study of the restorations of double shell brick-dome monuments. In fact, Sanpaolesi was not only in charge of the restorations of many medieval buildings in Italy, but he also established the first institute for architectural preservation in Iran in 1972. Through the combination of the study of unpublished archival documents left in Tehran and the analysis of the restorations carried out on monuments, DOMES will also narrate the **history of the transfer of preservation knowledge from Italy to Iran** and the long-standing effects of these theoretical and practical activities on contemporary restoration practices.



These two components of DOMES build upon my unique background as **both an architect and academic researcher.** While practicing as an architect in Italy, I developed a specific knowledge of architectural techniques and preservation practices. Additionally, I developed a cross-disciplinary approach to art historical problems during my doctoral research at Columbia University. In my dissertation, I successfully merged the archival research of medieval documents with on-site architectural analyses (comprehensive of analogic and digital surveys, material and structural investigations). Having also participated with Iranian and Italian universities on a project specifically focused on Iranian monuments (with visits to local buildings and archives), this project builds on my first-hand experience in a cross-cultural research context. I plan to utilize my professional research experience to overcome a narrative of separation and instead restore a rich cross-cultural dialogue initiated long ago along the Silk Road.

1.1.2 State-of-the-art: DOMES does not have specific precedents or an established framework in its redefinition of architectural history, but it responds to the need for a new global approach to the field. This new methodology, based on the investigation of modes of transmission of knowledge and especially the techniques of architectural production, has

Call: HORIZON-MSCA-2022-PF-01

DOMES Part B-1 – Lorenzo Vigotti

2.2 Suitability and quality of the measures to maximise expected outcomes and impacts, as set out in the dissemination and exploitation plan, including communication activities

One significant objective of DOMES is the dissemination of the results to the academic and non-academic communities in Italy and Iran. In order to accomplish this goal, I plan to publish **two academic journal articles** in peer-reviewed high impact journals in Months 16 and 24, and a co-authored book on Month 36. Furthermore, I plan to present the work at **two academic conferences**: the *European Architectural History Network (EAHN)* conference, and the *Historians of Islamic Art Association (HIAA)* conference. In addition to the journal articles and conferences, I plan to disseminate the work directly to the international institutions of interest. These include *The International Association for Mediterranean and Oriental Studies (ISMEO)*, which was and still is involved with restorations programs in Iran led by Italian institutions; and UNESCO's office in Iran, which manages the site of the Mausoleum of Soltaniyeh in Iran. Lastly, having established direct connections between UNIBO and the University of Tehran, I plan to create a joint research unit on Iranian architecture, with the future aim to organize a program offering courses on Iranian architecture to European students under the aegis of UNIBO/University of Tehran.

DOMES includes a robust communication plan in order to transfer knowledge to academic and non-academic public in both Italy and Iran and facilitate access to the research results:

PUBLIC ENGAGEMENT	PLANNED ACTIVITIES	TARGET GROUPS
Workshop at the University of Tehran	I will organise a workshop at the University of Tehran together with local scholars to start a fruitful exchange of ideas , where Italian and Iranian scholarship and approaches can be shared and compared, together with the definition of the best practices to be included in the project. (D4.1)	Students, Faculty, Year 1
UNIBO Media	The beginning and the objectives of the project will be advertised on UNIBO Magazine , the university magazine (https://magazine.unibo.it/). I will have the opportunity to communicate the main aspects and progress of DOMES and EU funding strategies. (D4.9)	Scholars, Students, General Public, Years 1-3
Marie Skłodowska-Curie Project Open Day	Run a workshop/activity day related to the raising of scientific awareness and promote social science research among high school and undergraduate students. The workshop will focus on the cross-cultural interactions between Iran and Italy . (D4.2)	High School Students and Undergraduate Students, Year 3
Publication of peer-reviewed article 1	Publication focused on the use of bricks in the construction of domes in medieval Iran and Italy, aimed to a scientific and architectural academic audience. (M1)	Students, Architectural Scholars, Year 2
Publication of peer-reviewed article 2	Publication on the definition of a new methodological approach to the history of medieval architectural history, aimed to scholars in different fields interested in a global approach. (M2)	Students, Scholars, Year 2
Teaching at UNIFI	I will be invited to hold a lecture about the role of Sanpaulesi in establishing the Preservation and Conservation Institute in Tehran for the students and faculty at the School of Architecture at the University of Florence, the institution where Sanpaulesi taught and was the dean. (D4.6)	Students, Scholars, Year 3
Researchers Night	Every year, UNIBO participates in the "European Researchers Night" (event associated with MCSA-NIGHT). I will have the opportunity to demonstrate the results of my research to an estimated general audience of approximately 500 people. (D4.3)	General Public, Year 3
GAHTC Architecture Talk Podcast	I will upload an Architectural Talk Podcast on GAHTC website (https://gahtc.org/architecture-talk) to disseminate the results and the new methodology to be used by students and faculty. (D4.10)	Students, Scholars, General Public, Year 3
Conference at UNIBO	I will organize a conference day at UNIBO together with my supervisors from Italy and Iran to present the results of the project. (D4.7) A workshop with Italian students will be organized to compare methodologies between Italian and Iranian scholars. (D4.3)	Students, Scholars, General Public, Year 3
Publication of book	Submission to UNIBO Press of a co-authored book on the work of Sanpaulesi and his team on the restoration of the Mausoleum of Soltaniyeh and the establishment of the first Preservation and Conservation Institute in Iran. (M3)	Scholars, General Public, Year 3

In order to realize the objectives of DOMES, the following workplan is divided into 4 work-packages (WPs), tasks (T), deliverables (D), and milestones (M). The duration of the project will be 36 months:

- T1.1 – Month 1. Coordination of activities with supervisors for months 1-12.
- T1.2 – Month 13. Coordination of activities with supervisors for months 13-24.
- T1.3 – Month 25. Coordination of activities with supervisors for months 25-36.
- D1.1 – Month 2. Career Development Plan.
- D1.2 – Month 12. Report to be presented to supervisors for months 1-12.
- D1.3 – Month 24. Report to be presented to supervisors for months 12-24.
- D1.4 – Month 36. Final project report to be presented to supervisors and sent to

T2.1 – Months 1-9. Certificate of Farsi language course at elementary level at Dehkhoda Institute.

T2.2 – Months 2-5. Taking a class and participating in a research group on Islamic traditional architecture, before the on-site visits start; learn the use of technical survey tools such as laser scanning, photogrammetry, 3D model generation (T3.3).

D2.2 – Month 5. Selection of the monuments to investigate with on-site visits (T3.3).

T2.4 – Months 14-17. Participating in a research group on comparative methodologies on architectural histories.

D2.3 – Month 17. Report on different methodologies to be used for second article (M2).

T2.3 – Months 13-22. Certificate of Farsi language course at intermediate level at Dehkhoda Institute.

T2.5 – Months 25-29. Acquiring transferable skills to disseminate my research through virtual media, communication, and outreach activities.

T3.1 – Month 1. Identification of the archival material at Shahid Beheshti University.
T3.2 – Months 2-11. Studying archival material at Shahid Beheshti University.
T3.3 – Month 6-11. On-site analysis of the Mausoleum of Soltaniyeh and other relevant domes.
D3.1 – Month 11. Early summary of the architectural analysis for article 1 (M1).
D3.2 – Month 12. Selection of documents relevant for the project.
T3.4 – Months 13-21. Transcription and translation of archival material at Shahid Beheshti University.
T3.5 – Month 14. Selection of domed monuments to be studied to complete the project.
T3.6 – Month 14-23. On-site analysis of other relevant domes.
D3.3 – Month 22. Completed list of documents (already transcribed) to be used in the book (M3).
D3.4 – Month 23. Full report on the architectural analysis.
D3.5 – Months 25-28. Research on Italian medieval architecture to be used in the book (M3).

D4.1 to D4.4 – Months 4, 26, 27, 33. Two workshops with students, Marie Curie Open Day, Researchers Night.
D4.5 to D4.8 – Months 7, 19, 29, 33. Participation in two international academic conferences, the lecture at University of Florence, and the final 1-day conference organized at UNIBO.
D4.9 to D4.10 – Months 5, 34. Online presence on UNIBO Magazine and on GAHTC Architecture Talk Podcast.
T4.1 to T4.2 – Months 14, 21. Drafted articles to be discussed with supervisors.
T4.9 to T4.10 – Month 23, 31. Drafted book manuscript to be discussed with supervisors.

M1 – Month 18. Peer reviewed article submitted on the use of bricks in medieval Iranian and Italian buildings.
M2 – Month 24. Peer reviewed article submitted on the definition of a new methodological approach to the history of Medieval architectural history.
M3 – Month 36. Co-authored book manuscript ready to be submitted to publisher.

Project deliverables

In order to acknowledge SBU's intellectual contribution to the project and to facilitate Vigotti's access to the university's archives, he submitted a request to be affiliated as a postdoctoral scholar at SBU under the supervision of Prof. Safaeipour. On 6 May 2024, the university's executive board approved the request, and the administrative procedures for formalizing the affiliation were initiated.

According to this agreement, the scholar is expected to deliver the outcomes of his research in the following formats: A book titled *Documents of the Soltaniyeh Dome Restoration Project*; An international peer-reviewed research article on the construction techniques and structural systems of the Soltaniyeh Dome and comparable examples; An exhibition showcasing the findings of both archival and field research, to be held at SBU, the Soltaniyeh Dome World Heritage Site, and the Embassy of Italy in Iran; A project website introducing the research; An international workshop organized in collaboration with SBU and the University of Bologna; A national workshop organized in collaboration with SBU and affiliated Iranian heritage organizations.

تاریخ: ۱۴۰۳/۰۲/۱۷	شماره: ۰۳۷۶	شماره: ۰۳۷۶	شماره: ۰۳۷۶
پیوست: ندارد			

بسمه تعالی


تهران ۱۳۸۳۹۹۴۱
اولین: ۲۹۹۰۱
شماره ملی: ۱۲۰۰۲۹۱۷۵۲۸

جناب آقای دکتر محمدرضا حافظی
رئیس محترم دانشکده معماری و شهرسازی

موضوع: بازگشت بنا به درخواست پذیرش آقای دکتر لورنسنو ویگوتی به عنوان دانشجوی پسادکتری و صدور مجوزهای حضور ایشان در دانشگاه- دکتر هادی صفایی پور

با سلام و احترام

بازگشت به نامه پذیرش پژوهشگر پسادکتری با نام لورنسنو ویگوتی زیر نظر جناب آقای دکتر هادی صفایی پور، به استحضار می‌رساند در هیئت محترم رئیسه دانشگاه مورخ ۱۴۰۲/۱۲/۰۱ با پذیرش ایشان مطابق با مصوبه زیر موافقت شده است.

"هیئت رئیسه با توجه به نظر مساعد مدیر محترم امور حقوقی دانشگاه (پیوست) و با توجه به فواید طرح پیشنهادی دوره پسادکتری، مصوب نمود استثنائاً پذیرش آقای لورنسنو ویگوتی از ایتالیا به عنوان پژوهشگر و تحت نظر آقای دکتر هادی صفایی پور، عضو محترم هیئت علمی دانشکده معماری و شهرسازی بدون بار مالی پلامانع است. سایر موارد مربوط به حضور محققان اتباع خارجی در کشور تابع مقررات جمهوری اسلامی ایران است."

لذا خواهشمند است پس از مراحل زیر به متقاضی اعلام فرمایید: پژوهشگر با کارت شناسایی معتبر، روادید جمهوری اسلامی ایران و با هماهنگی قبلی با کارشناس مربوط در معاونت پژوهشی و فناوری دانشگاه، جهت انعقاد قرارداد به این حوزه مراجعه نمایند. (در صورتیکه نیاز به مترجم دارند به همراه مترجم معتمد دانشگاه).

۱- توافق کتبی فی مابین استاد محترم و محقق در خصوص شرایط و امکانات دانشکده و دانشگاه با ذکر عنوان طرح.

۲- اعلام پرونداد طرح. ضمناً شرط صدور گواهینامه پسادکتری از سوی این حوزه انجام یک سال تمام دوره پسادکتری و حصول دستاورد طرح می‌باشد.

۳- ارسال طرح پیشنهادی به صورت کامل به همراه رزومه پژوهشگر.

۴- اعلام تاریخ شروع به کار محقق و زمان تقریبی انجام طرح از سوی دانشکده.

۵- انجام مراحل اداری دعوت از پژوهشگران مطابق با مقررات دفتر همکاری‌های علمی بین المللی دانشگاه.

۶- انجام مقررات مربوط به اداره کل حراست دانشگاه.

سیده‌مهری حمیدی سنگدهی
معاون پژوهشی و فناوری دانشگاه



Postdoctoral Affiliation Confirmation Letter

7. "From Soltaniyeh to Florence III: The Architectural History through the Lens of Construction History" Event



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



وزارت کشور
استاداری زنجان



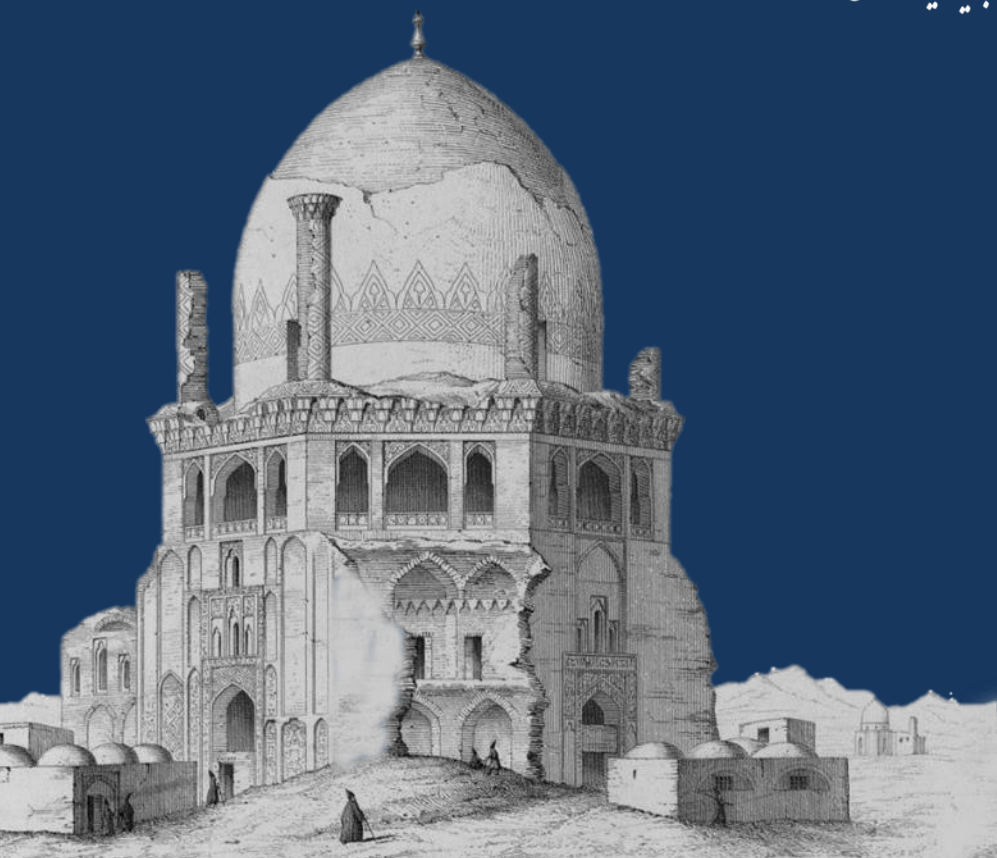
اداره ی کل امور باستان‌های میراث ملی و جهانی



بنیاد ایرانشناسی



وزارت کشور
استاداری زنجان
فرمانداری شهرستان سلطانیه



From the 9th to the 11th of June 2024, the "Faculty of Architecture and Urban Planning of SBU," "Iranology Foundation of Zanjan Province," and the "Soltaniyeh Dome World Heritage Site" held an event titled "From Soltaniyeh to Florence III: The Architectural History through the Lens of Construction History." This event was supported by the Zanjan Governor's Office, Soltaniyeh County Governor's Office, the Zanjan Provincial Directorate of Cultural Heritage, Tourism, and Handicrafts, Soltaniyeh Municipality, and University of Bolonga. The event took place at the Soltaniyeh Dome World Heritage Site and SBU which included four main programs.

از سلطانیه تا فلورانس (۳)
تاریخ معماری از پنجره تاریخ ساخت

برنامه روز دوم
سه شنبه، ۲۲ خرداد ۱۴۰۴، ساعت ۱۰ تا ۱۲/ تهران، دانشگاه شهید بهشتی، دانشکده معماری و شهرسازی دانشگاه شهید بهشتی، سالن دفاع دکتری
آیین معرفی «مرکز مطالعات تاریخ ساخت معماری ایرانی»، دانشکده معماری و شهرسازی دانشگاه شهید بهشتی
سخنرانی: «معماری مسکونی در فلورانس»
پهن، ۱۳۰۰ تا ۱۵۰۰م: سازما، دوآوریها، سبک زندگی
لورنتسو ویگوتی

برنامه روز نخست
دوشنبه، ۲۱ خرداد ۱۴۰۴، ساعت ۱۴
زنجان، سلطانیه، پایگاه میراث جهانی گنبد سلطانیه
سخنرانی اول: «باز شناسی ساختار سازه ای و فنون ساخت گنبد سلطانیه»
هادی صفایی پور؛ عضو هیئت علمی دانشکده معماری و شهرسازی دانشگاه شهید بهشتی
سخنرانی دوم: «مبادلات دیپلماتیک، فرهنگی و هنری در راه ابریشم بین ایران ایلخانی و ایتالیای»
لورنتسو ویگوتی؛ دکتری تاریخ معماری دانشگاه کلدیبا و دانشجوی پسادکتری دانشگاه شهید بهشتی

معاونت فرهنگی و ارتباطات
معاونت برنامه ریزی و توسعه
معاونت پژوهش و فناوری
معاونت مالی و اداری
معاونت حقوقی و امور مجلس
معاونت بین المللی
معاونت ورزش و تفریح
معاونت سلامت و رفاه
معاونت ارتباطات و اطلاع رسانی
معاونت مدیریت و برنامه ریزی
معاونت توسعه مدیریت و منابع
معاونت توسعه تعاون
معاونت توسعه معیشت
معاونت توسعه عدالت قضایی
معاونت توسعه عدالت اداری
معاونت توسعه عدالت اجتماعی
معاونت توسعه عدالت اقتصادی
معاونت توسعه عدالت فرهنگی
معاونت توسعه عدالت زیست محیطی
معاونت توسعه عدالت اجتماعی
معاونت توسعه عدالت اقتصادی
معاونت توسعه عدالت فرهنگی
معاونت توسعه عدالت زیست محیطی

10th to 12th of June 2024
Zanjan, Soltaniyeh, the Soltaniyeh Dome World Heritage Site
Tehran, SBU, Faculty of Architecture and Urban Planning

Table 1. Field Visit on the 9th of June, Soltaniyeh

Time	Program Content
11 - 14	Field visit to the interior space of the dome chamber
15:30 - 18	Field visit to the interior and exterior space of the dome chamber

Table 2. Workshop schedule for the 10th of June, Soltaniyeh

Time	Program Content	Speaker	Affiliation
10 – 13	Introducing the event to the officials and obtaining feedback	Hadi Safaeipour	Faculty member of SBU
15:20 -15:40	Opening talks	Abolfazl Aali	The Director of the Soltaniyeh Dome World Heritage Site
		Mohammad Reza Barati	Mayer of Soltaniyeh
		Mostafa Kalantari	Governor of Soltaniyeh
		Leila Mohammadi	The Head of the Iranology Zanzan branch
15:40 - 16	Soltaniyeh: Summer capital of Fath-Ali Shah	Hossein-Ali	
16 – 16:30	Recognition of the structural features and construction techniques of the dome of Soltaniyeh - Part One	Hadi Safaeipour	
16:30 - 17	Diplomatic, cultural, and artistic exchanges on the Silk Road between Ilkhanate Iran and Italy	Lorenzo Vigotti	Postdoctoral scholar at University of Bologna & SBU
17 – 17:30	Recognition of the structural features and construction techniques of the dome of Soltaniyeh - Part Two	Hadi Safaeipour	
17:30 - 18	Discussion		
18 – 18:30	Studying and identification of underground structures of the building	Hojjat Haqshenas	Zanzan Uni Faculty Member

Table 3. Workshop schedule for the 11th of June, Tehran

Time	Program Content	Speaker
10 - 11	Reviewing the "From Soltaniyeh to Florence III" event	Hadi Safaeipour
11 - 12	Residential architecture in Florence between 1300 and 1500: Structures, innovations, lifestyle	Lorenzo Vigotti
12 – 12:30	Discussion	

1. Initial Field Study: Examination of Methods and Technics

The first program involved a field study and detailed examination of the existing condition of the Soltaniye Dome, which took place on June 9th. On this day, Eng. Farshad Salehi, a specialist in photogrammetry and laser scanning of historical buildings, along with the research team, Abolfazl Aali, director of the Soltaniye Dome World Heritage Site, and Mohammad Moradi, a restoration expert at the Site, examined the issues and challenges of surveying and documenting this monument. They reviewed the problem of the dense scaffolding and wooden planks inside the dome chamber, which posed difficulties for photogrammetry operations inside the dome chamber, and proposed strategies to address it. They also refined the photogrammetry methods for the outer galleries, roof, and exterior shell of the dome. It was decided that Salehi would prepare and submit an executive proposal for conducting the studies based on the discussions held.



Examination of the spaces of the monument



Visiting the existing condition of the structure and the scaffolding

2. Meeting with Provincial Officials

The second session involved a meeting and discussion between Safaeipour and Lorenzo Vigotti with officials from Soltaniyeh city and Zanjan province. This meeting took place on the morning of the 10th of June. Attendees included Mohammad Reza Barati, governor of Soltaniyeh, Mostafa Kalantari, Mayor of Soltaniyeh city, Leila Mohammadi, Director of the Iranology Foundation Zanjan Branch, Abolfazl Aali, director of the Soltaniyeh Dome World Heritage Site, Seyyed Mehdi Aghamiri, Director of Education in Soltaniyeh city, Parvaneh Asgari, Head of the Cultural Heritage, Tourism, and Handicrafts Department of Soltaniyeh city and the Head of Dashkasen National Heritage Site, along with the Soltaniyeh Dome World Heritage Site's experts.

Safaeipour briefed the officials on the background and research objectives, and he discussed their concerns. Among the concerns raised were the history of damage inflicted on the monument, the vital role of the local community in its preservation, the importance of educating school students to appreciate the site's values, the revival of 14 hectares of the surrounding area that has been destroyed over the past decades, and the potential for collaboration with Zanjan Province universities in re-evaluating the heritage of Soltaniyeh. issues, and needs. He eventually sought their guidance and support during the meeting.



Research team meeting with Soltaniyeh city's officials at the Torbat- khane of Soltaniyeh Dome

3. Seminar at the Soltaniyeh Dome World Heritage Site

The third program was a workshop held in the evening of June 10th at the Soltaniyeh Dome World Heritage Site. The program included four opening talks and three technical lectures. First, Hossein-Ali presented the historical landscape of Soltaniyeh as a summer capital during the reign of Fath-Ali Shah. Then, Safaeipour addressed the topic "Recognition of the Structural Features and Construction Techniques of Soltaniyeh Dome" in the first part of the workshop. Following this, Vigotti examined "Diplomatic, Cultural, and Artistic Exchanges on the Silk Road between Ilkhanate Iran and Italy," exploring the historical relations between Iran and Italy. Finally, Safaeipour and Vigotti responded to participants' questions.

After the session concluded, Safaeipour and Hojjat Haqqshenas, a member of the faculty at Zanjan University of Advanced Sciences in Basic Sciences, discussed the application of Geotechnic technology for Identifying the foundation features and structural form of the double-shell dome.



Opening talks



Workshop at the Soltaniyeh Dome World Heritage Site

4. Seminar at the Faculty of Architecture and Urban Planning, SBU

The fourth program was a presentation of two seminars held on the morning of June 11th at the Faculty of Architecture and Urban Planning, SBU. This program included a seminar focusing on the study project of the structural construction of the monument, demonstrating the necessity of exploring architectural history through the lens of construction history. During this seminar, Safaeipour explained the flow of architectural historiography in Iran, its various methods and approaches. He also elaborated on the study project and the forthcoming questions in this project, emphasizing the importance of delving into architectural history through the lens of construction history. Following this, Vigotti by reviewing his PhD scholarship titled "Residential Architecture in Florence between 1300-1500: Structures, Innovations, Lifestyle," illustrating how attention to construction history aids in understanding architectural history. Subsequently, attendees raised questions.



Workshop at the Faculty of Architecture and Urban Planning, SBU

8. Fieldwork; Phase One



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Preliminary Geotechnic Survey for Foundation Identification

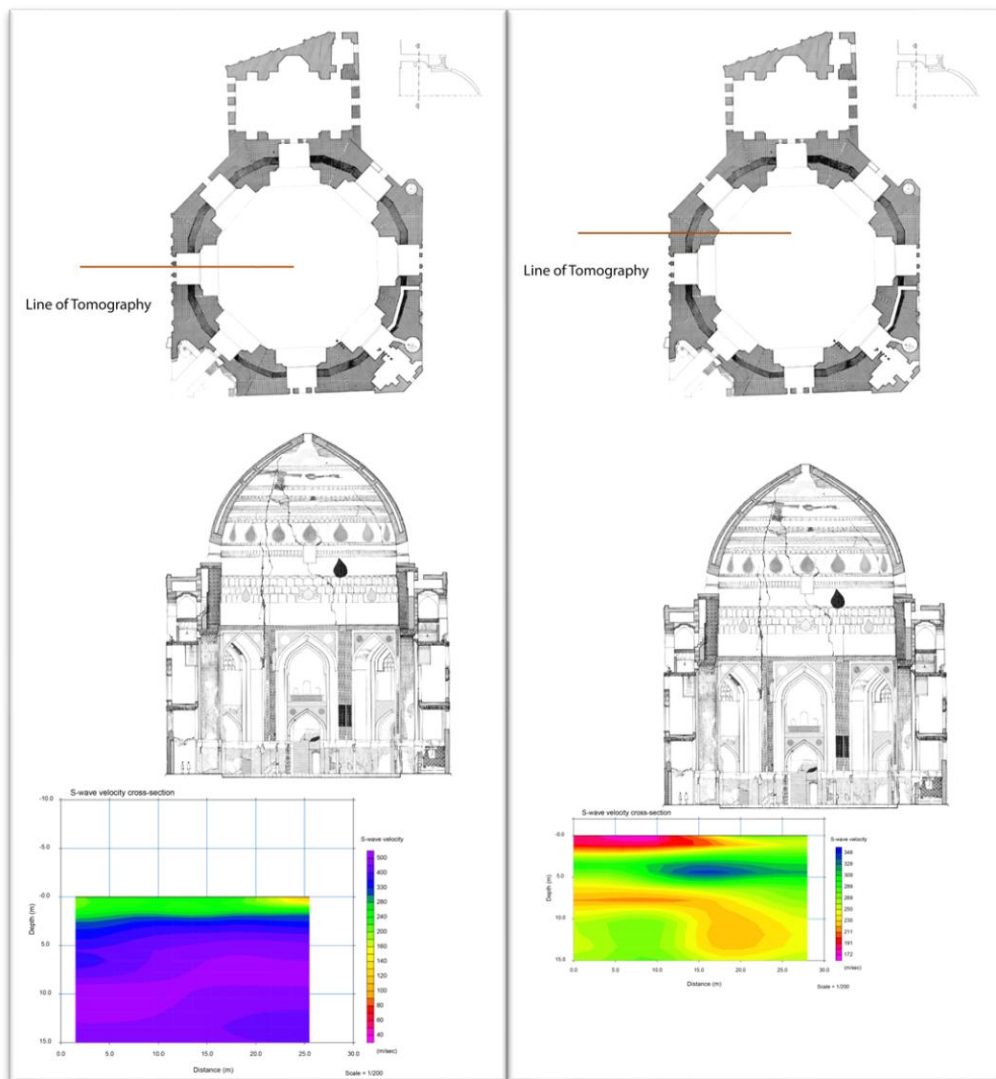
In order to achieve a better understanding and more accurate documentation of the monument, a series of field operations were scheduled within the project program. These studies included identifying the building's foundation using tomography tests, conducted on July 10–11, 2025, by Hojjat Haghshenas, a faculty member of the Zanzan University of Advanced Sciences in Basic Sciences, together with his research team and Safaeipour.

This operation, employing the method of tomography and transmitting sound waves into the ground, was an initial experimental attempt to document and identifying the dome's foundation.



Use of tomography in the dome chamber

Preliminary studies indicated that the results obtained from this method were not sufficiently interpretable and did not clearly distinguish the foundation structures and soil layers. Hagnashnas conducted this survey along two axes on the floor of the dome chamber. Unfortunately, the data obtained from these two axes were inconsistent with each other, making interpretation difficult. It also became clear that the information gathered from this survey was too general. The research team aimed to determine the depth of the foundation and had hoped this survey would help achieve that goal. However, it turned out that the data produced by this method could not fulfill such an objective. Furthermore, due to recent interventions in the building, the soil structure beneath the dome chamber had been altered, creating voids in certain areas. These changes had an ambiguous impact on the survey data, reducing its accuracy. For these reasons, and in consultation with Hagnashnas, research team decided to abandon this approach and instead pursue more reliable methods, such as an excavation of the foundation



Results obtained from the analysis of the transmitted waves

9. Fieldwork; Phase Two



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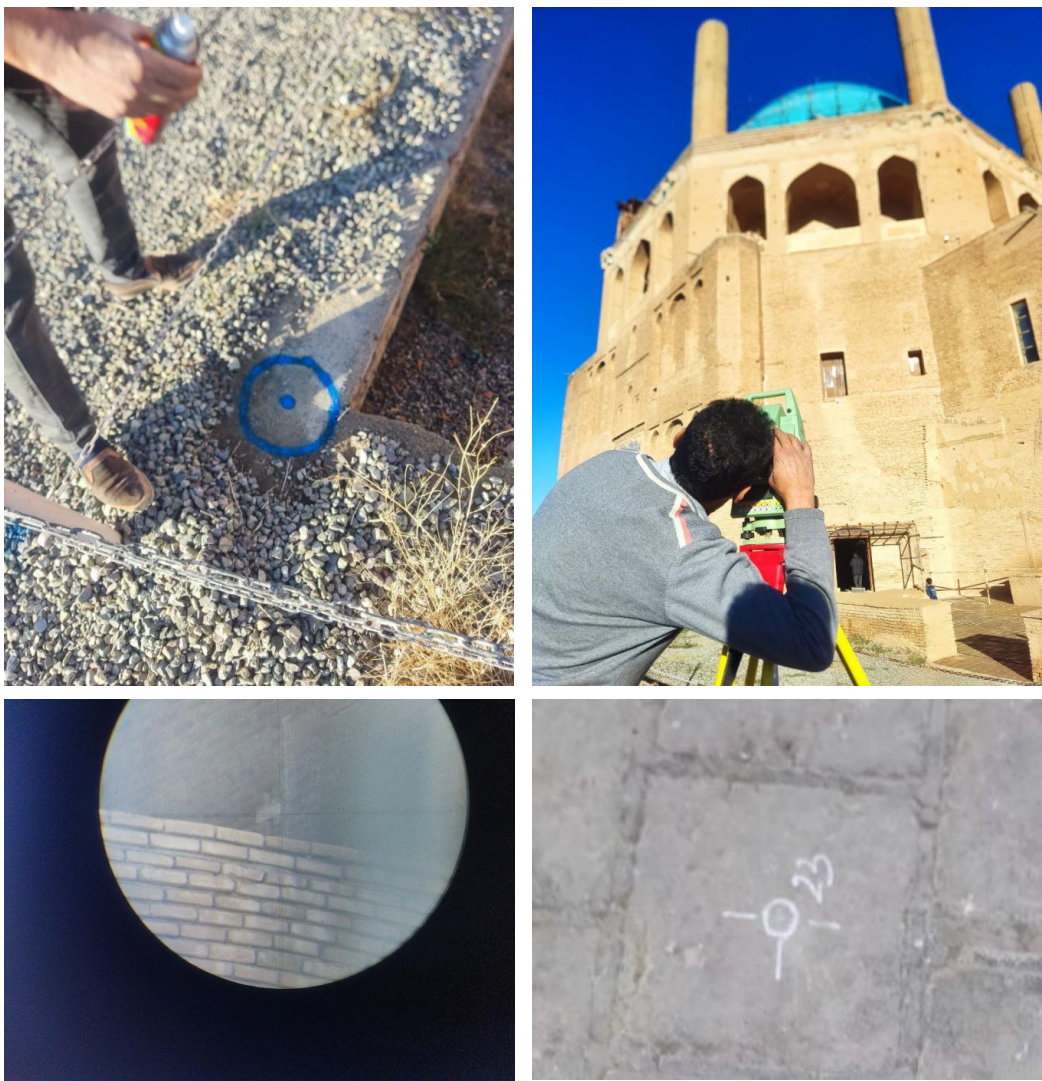
In the second phase of fieldwork, the following tasks were undertaken: total station surveying, dismantling of the scaffolding on the western facade of the gallery, photogrammetry of the monument, endoscopy between the double shells of the dome, and collection of documents from the archives at Soltaniyeh Dome World Heritage Site and the Zanjan Cultural Heritage Department. These activities were carried out between the November 21 to December 7, 2024. Following the Initial filedwork and the proposal drafted by Farshad Salehi, he conducted photogrammetric recording of the exterior surfaces of the dome. Khademi and Zerehdaran, the graduate assistants of the project, were responsible for supervising all activities undertaken during this fieldwork and for accompanying the surveying operations. They were also tasked with performing the endoscopy of the cavities between the two shells of the monument and collecting documents and archival records from the Soltaniyeh Dome World Heritage Site and the Zanjan Provincial Cultural Heritage Department.



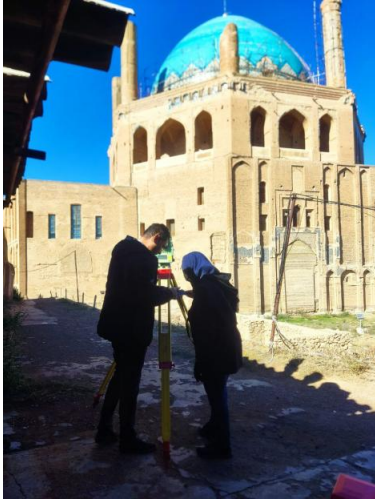
Archival and field studies in second phase fieldwork

1- Total Station Surveying

From November 21 to November 24, 2024, the surveying of the structure was initiated. During this operation, using a Leica total station from the 1100 series—with an accuracy of approximately 3 arc-seconds—around 250 points and its surrounding area were identified and recorded.



Marking target points on the floor



Identification of target points on the southeastern facade



Identification and surveying of target points on the southeastern facade



Identification and surveying of target points on the rooftop parapet and gallery

2- Dismantling of the Gallery Scaffold

Months before the start of the fieldwork, the Soltaniyeh Dome World Heritage Site had established a workshop for the restoration of the roof of the gallery on the western side and had set up scaffolding. However, this workshop was halted for various reasons. The presence of the scaffolding obstructed the movement of the drone and disrupted the photogrammetric operations of the structure. After coordination with the director of the Soltaniyeh Dome World Heritage Site, it was decided that the scaffolding in this section would be dismantled, and after the completion of the third phase of the field studies, the scaffolding would be reinstalled in its original form.



The existing scaffolding on the western side of the gallery



Dismantling of the scaffolding

3- Photogrammetry of Exterior Surfaces

After the completion of the building surveying, from December 4 to December 7, 2024, the photogrammetric operation of the structure was carried out. This operation took place in two stages. In the first stage, the walls of the building, the gallery, the minarets, the roof, and the dome were photographed using a drone (Phantom 4 Pro Version 2 model). In the second stage, images were captured from different angles of the structure using two DSLR cameras (Nikon D850 with 24-50mm lenses and Fuji 50s2 camera with 35-70mm lenses) to ensure maximum overlap between the captured images and obtain an accurate point cloud model from them.



Drone photography

4- Endoscopy of Dome Cavities

Due to the narrow gap between the two shells of the monument, averaging around 60 centimeters, conventional access to this space is not possible. However, the decay of the wooden elements in the inner shell have created empty cavities in the inner shell, allowing endoscopy of the between-two-shells spaces. The documentation method and the endoscopy of the cavities were refined by Safaeipour, after which the graduate assistants expanded this method to complete the operation.

At this stage, the cavities were labeled with English alphabet letters and cataloged. Then, using a small rechargeable projector (LED light source DBK SLA004R model with a color temperature setting of 5500 Kelvin and a brightness range of 90-100%) and smartphones (Samsung A54 and iPhone 20 Pro) mounted on a monopod, the space between the two shells was documented by sending the equipment into the cavities.



The space between the two shells endoscopy operation



Details from between the two shells of the dome & Drawing the plan for cavity coding

5- Collection of Zanjan Archival Materials

The collection of materials, related to the monument, of the archives in Zanjan was another step in the field studies of the research project, which was carried out in two phases. On November 1, the graduate assistants, in collaboration with Mr. Kordalivand, the head of the library and archive of the Soltaniyeh Dome World Heritage Site, reviewed and cataloged the available documents. From December 5 to December 17, they conducted a similar process at the library and archive of the Zanjan Cultural Heritage Department, in collaboration with Ms. Vafa, the head of the archive, and Mr. Dariush Naderi, the director of the Zanjan Cultural Heritage Department. This resulted in the collection of approximately 8,300 pages of different materials including books, printed reports, drawings and CDs related to the research project.



Reviewing of the documents available at Zanjan archives

10. Fieldwork; Phase Three



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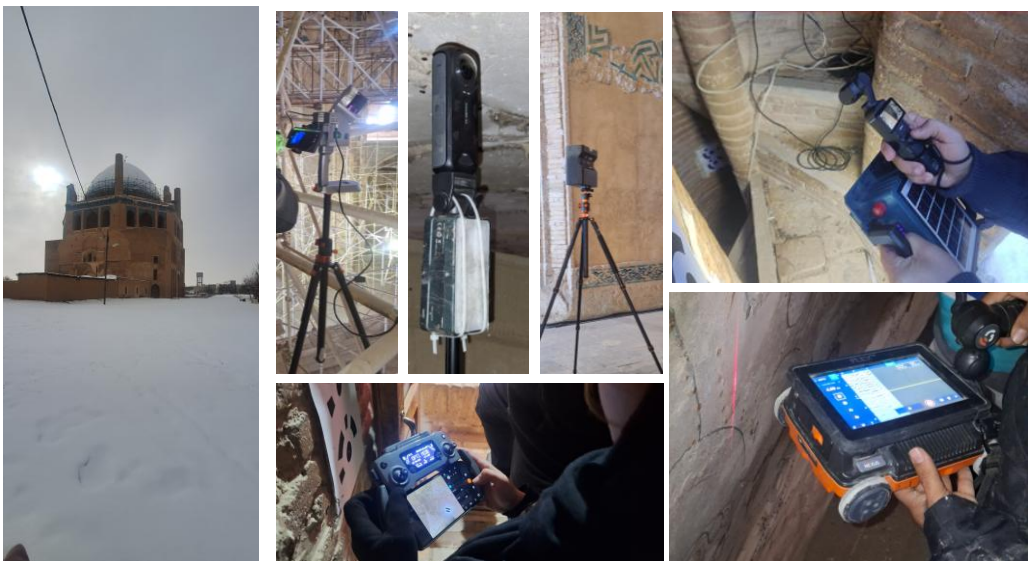
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To further enhance the understanding of the architectural structure established during the previous phase and to document the interior spaces of the monument, a new set of field studies was launched. These studies were structured in 10 steps and conducted during two periods: from December 27, 2024, to January 22, 2025, and from January 28 to January 30, 2025. The operations included the following stages:

- Interviews with individuals involved in the restoration of the monument during the 1970s;
- Laser scanning of the Monument;
- Photogrammetry of selected interior spaces;
- Total station surveying and connecting the point grid inside and outside the building;
- Ground Penetrating Radar (GPR) survey of the dome;
- Photography for the creation of a virtual tour model;
- Installation of scaffolding and protective structures;
- Endoscopy of dome cavities;
- Collection of the Soltaniyeh Dome World Heritage Site Archival Materials;
- Documentation of brick kiln and stone carving workshops.

Arch. Mahmoud Panahi, an expert in photogrammetric and laser scan documentation of architectural structures and a restoration specialist, was responsible for the surveying and documentation of all interior spaces of the monument, including photogrammetry, laser scanning, and GPR surveying. Survey Engineers Amir Heydari and Hojjat Alimohammadi assisted Panahi in surveying the building and in photogrammetry and laser scanning of the interior spaces. The graduate assistants of the project, Khademi and Zerehdaran, were responsible for overseeing all activities conducted during this fieldwork and collaborated with the survey contractor in photogrammetry of selected interior spaces and the GPR survey of the dome. They were also in charge of photographing the entire structure of the monument for the creation of a virtual tour model, conducting endoscopic studies of the cavities between the two shells, collecting archival documents from the Soltaniyeh Dome World Heritage Site, and documenting the brick kiln and stone carving workshops. Vigotti, during this phase of fieldwork, conducted interviews with those involved in the restoration of the monument in the 1970s.



Archival and field studies in third phase fieldwork

1- Interviews with the Leading Figures in the 1970s Restoration Campaign of the Soltaniyeh Dome

The existing restoration reports from the 1970s restoration project of monument, including quarterly and semi-annual reports, provide valuable information on the overall interventions; however, they lack many details regarding the interventions, the rationale behind the decisions made, and the decision-making and implementation processes. In order to refine the fieldwork methodology and gain deeper insight into the restoration process of the 1970s, a series of interviews were conducted in Italy over a ten-day period, from December 27, 2024, to January 5, 2025, with Dr. Marco G. Brambilla, the supervising professor of the monument restoration workshop, and Arch. Enrico d'Errico, the director of the restoration workshop. The interviews focused on questions developed based on the gaps identified in the restoration reports from the 1970s.



Enrico d'Errico



Marco G. Brambilla

2- Laser Scanning of the Monument

Due to various obstacles within the interior spaces of the monument—such as scaffolding and wooden planks—photogrammetry of the interior spaces using drones was not feasible. Moreover, the significant variation in the proportions of these spaces made it impossible to document all of them using a single method. Considering these limitations, most of the interior spaces of the monument were documented using several laser scanning devices (Matterport Pro2 model MC250 and Geosunlidar model GS-100G) and different surveying techniques from December 26, 2024, to January 2, 2025.



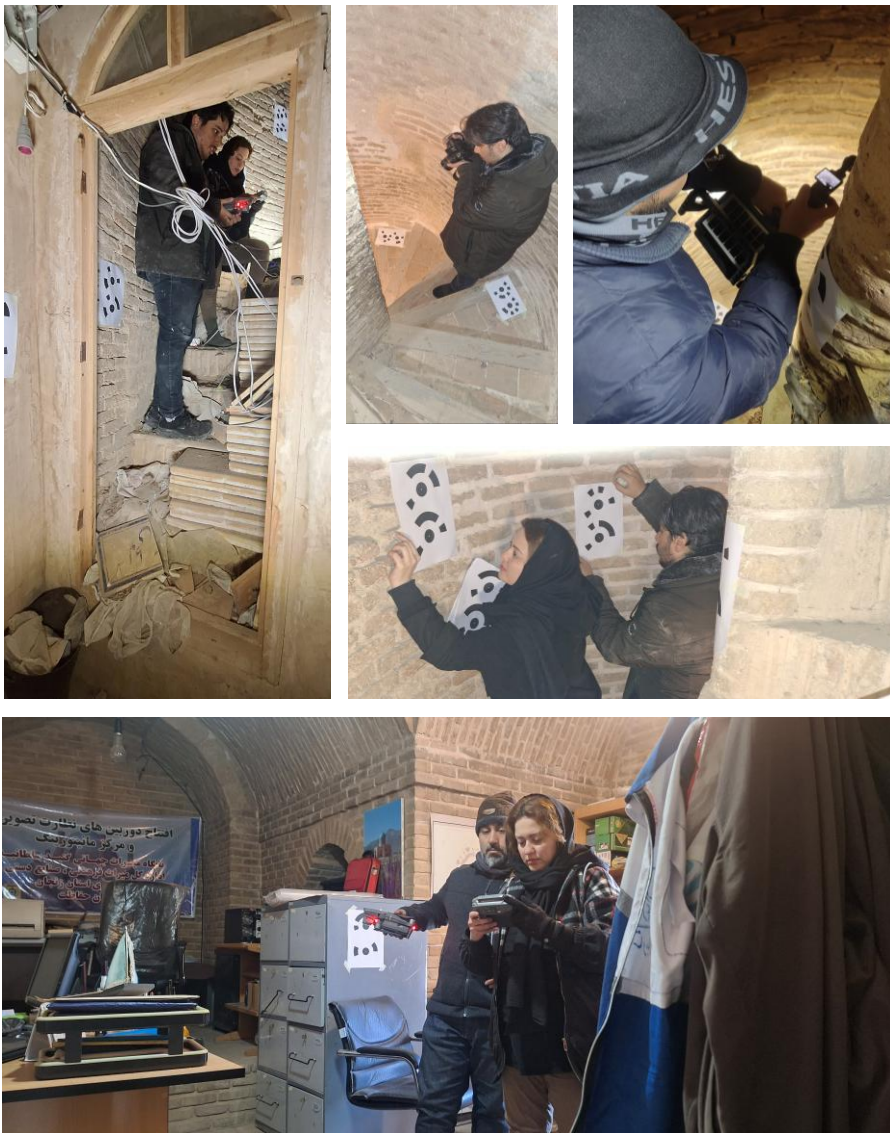
Laser scanning operation



Laser scanning of the interior spaces

3- Photogrammetry of Interior Spaces

In some interior spaces of the monument, such as staircases and the interiors of minarets, the narrowness and darkness on the one hand, and the uniformity of form and materials on the other, made it impossible for laser scanning devices to accurately calculate the Time of Flight (ToF) and determine the exact location of previous stations. Therefore, the use of these devices was not feasible, and a strategy had to be developed to overcome these limitations using manual methods, marking the walls, and casting artificial light into these spaces. After several rounds of trial and error, it was decided that these spaces would be documented using photogrammetry with DSLR cameras (Nikon D7100 with 18–200mm lens), a DJI Osmo Pocket 3 camera, and a DJI Mavic 2 Pro drone camera. Before photographing, the structure of these spaces was marked with special targets, and a method for lighting the dark areas using portable projectors was adopted. This operation was carried out in two time periods: from the December 26–29, 2024 and from the January 28–30, 2025.



Photogrammetry of spaces

4- Total Station Surveying and Connecting the Interior and Exterior Point Clouds

The point cloud model obtained from different spaces is disjointed and fragmented. In order to correctly connect the point cloud obtained from the interior spaces, some points within these spaces need to have coordinates in the "Universal Transverse Mercator (UTM)" coordinate system. However, since the use of Global Positioning Systems (GPS) is not feasible inside the building, points with UTM coordinates must be identified outside the building. Then, with the help of a total station (TCR1201 Plus Reflectorless with an accuracy of approximately one second), the exterior point network was connected to the interior points. To achieve this, the surveying team worked on integrating the interior and exterior point networks on the December 30th and 31st, 2024, as well as on January 29th and 30th, 2025. They first identified a network of points outside the building, then connected this network to the points in the gallery, roof, and the floor network of the dome chamber and interior arcade.



Total station surveying

5- GeoRadar Surveying of the Dome

A precise understanding of the structural systems of the double-shell dome of the monument is one of the primary goals of this project. To achieve this objective, a Ground Penetrating Radar (GPR) survey of the dome was essential. In this operation, conducted on January 7th, 11th, and 17th, the GPR device (GSSI Flex NX) was used to send waves into the internal and external shells of the dome. By receiving the reflected waves, anomalies were recorded. Interpretation of these anomalies revealed the location of the ribs between the two shells and other structural elements.



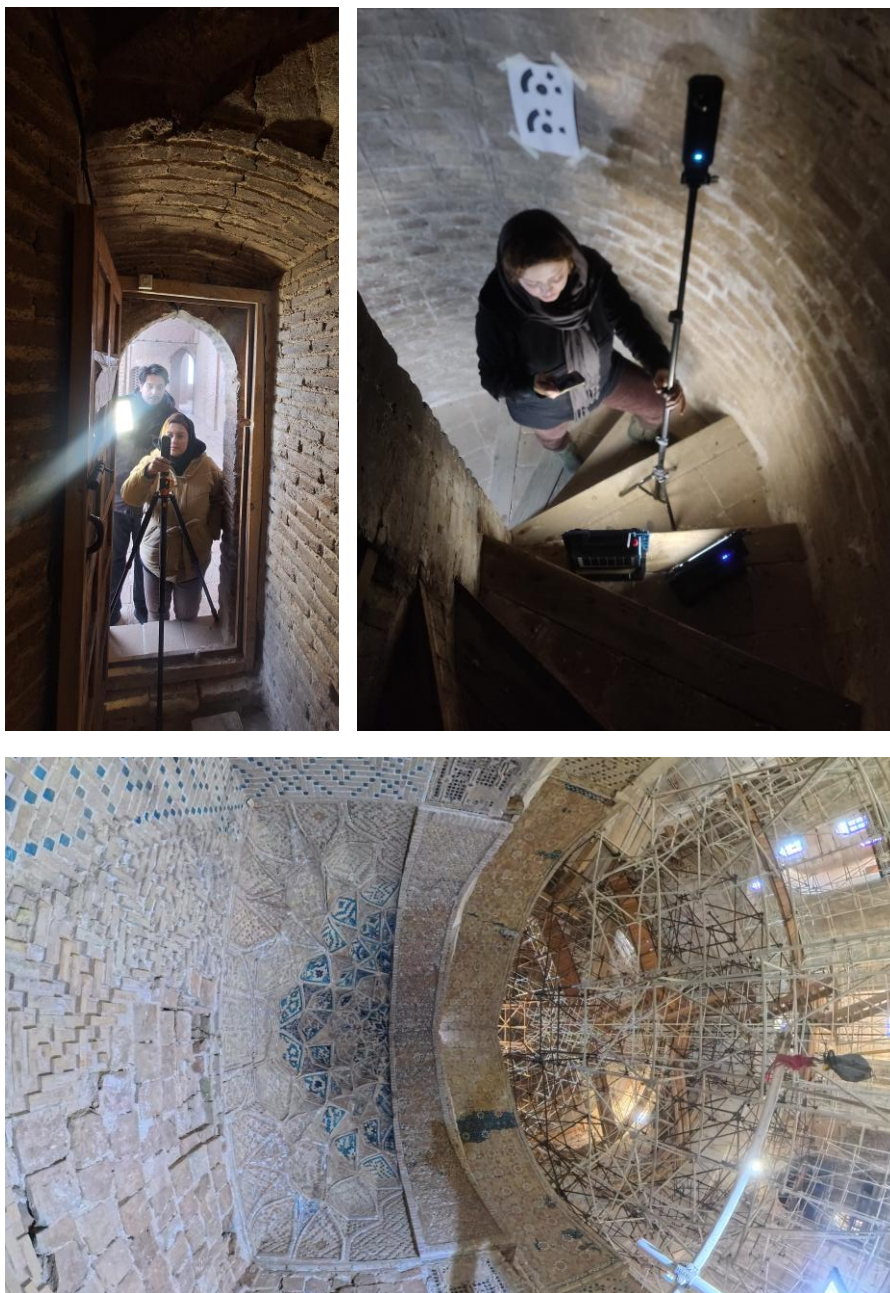
Ground penetrating radar survey of the dome



Ground penetrating radar survey of the dome

6- Photography for the Creation of a Virtual Tour Model

To study the monument and capture its complex spatial relationships, it was essential to create an accurate and comprehensive virtual model of the monument. To prepare such a model, 360-degree images had to be taken from stations with minimal distances throughout all spaces of the monument. The graduate assistants used the Insta360 X4 camera to photograph all areas of the dome. This operation, which lasted from December 29 to January 20, resulted in approximately 1500 images, leading to the creation of a complete virtual model.



Selected images from the virtual tour



Selected images from the virtual tour operations

7- Erection of Scaffolding and Installation of Protective Coverings

After surveying the interior spaces of the monument using photogrammetry and laser scanning methods and creating a virtual tour, according to a previous commitment, the scaffolding that had been removed from the western side of the gallery had to be set up again. To this end, the scaffolding was re-erected, and within two days, it was returned to its previous state before being dismantled. Additionally, to complete the endoscopy operation of the dome's cavities, which was carried out in the second phase of the field studies, it was necessary to ensure access to these cavities and the safety of movement on the scaffolding planks. Therefore, the scaffolding contractor was asked to inspect the planks and safety barriers at the specified locations. It was determined that the scaffolding planks were sturdy and secure, but to ensure the safety of work on them, it was decided that they would wrap ropes around the scaffolding to create a safety barrier along the access path to the cavities, allowing the endoscopic operation to be carried out.



Re-erection of the scaffolding on the western side of the gallery



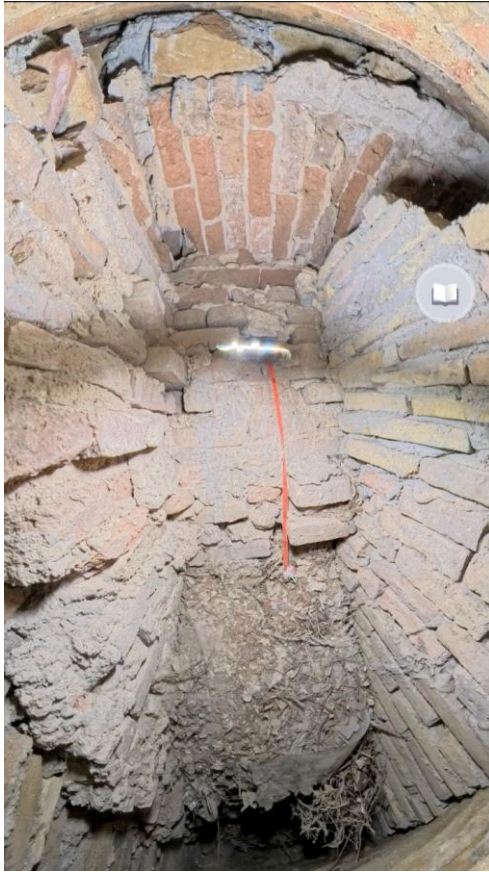
Securing the required levels

8- Endoscopy of Dome Cavities

After studying the information collected from the endoscopy of the dome cavities in the second phase of the field studies, first, the significance of this operation and the information gathered from it became clear to the researchers, highlighting the necessity of studying other open cavities at different levels of the dome. Second, the need for integrated documentation of the cavities using new tools and methods was confirmed, so that the overall space, the way elements are connected, the material and texture of each construction, and to some extent, its geometry could be identified. To this end, after securing access to the cavities, in the third phase of the field studies, the documentation of all open cavities at various levels of the dome and the recording of all their specifications, such as depth, diameter, height of each cavity, and the distance between the cavities, became part of the plan. Additionally, in this phase, the documentation of the cavities was not done with a mobile phone camera but using a 360-degree imaging camera (Insta360 X4), which allowed for integrated documentation of each cavity. This operation was carried out at four different height levels by the graduate assistants.



Selected images from the endoscopy operation and cavity documentation



Images of the space between the two shells of the dome

9- Collection of the Soltaniyeh Dome Heritage Site Archival Materials

In order to document all the interior spaces of the monument, permission was granted to access all rooms, including the library and the archive of the Soltaniyeh Dome World Heritage Site, during both office and non-office hours. Given the large volume of unclassified documents on one hand, and the ample opportunity for a thorough review of available documents and sources on the other hand, and with the coordination of the director of the Soltaniyeh Dome World Heritage Site, it was decided to review all available documents and gather those related to the subject of the current research. After this search, which lasted about a week, approximately 3,500 pages of documents containing valuable historical information, including drawings of the monument, images of the restoration workshop in the 1970s and 1980s, and secondary reports, were collected.



Review of the documents available in the library and archive of the Soltaniyeh Dome World Heritage Site



Examples of documents at the library and archive of the Soltaniyeh Dome World Heritage Site

10- Documentation of Brick-Kiln and Stone-Carving Workshops

Brick and stone are the two main materials in the construction of the monument and its citadel. Since the start of the restoration project in the 1970s and the need to produce these two materials, brick-making and stone-carving workshops were established. In these workshops, efforts were made to fire and process the brick and stone using traditional methods. Due to the rich experience of these workshops in brick firing and stone carving, as well as the specific methods employed, documenting them was necessary for a better understanding of the Monument. The graduate assistants, accompanied by Ahmad Rahmani, the executive manager of the Soltaniyeh Dome World Heritage Site, visited these workshops on several occasions, specifically on January 14th, 16th, and 20th 2025. During these visits, they met with Mustafa Dadashi (Clay washer), Rahman Fathollahi (Clay kneader), Nasser Ayaseh (Molder), Mohammadreza Asadi (Brick Kiln Supervisor), and Amir Zamani (Brickmaker) in the brick workshop, as well as Nosrat Shahgholi (Master Stonecarver), Ruhollah Najafi (Stonecarver), and Faramarz Najafi (Stonecarver) in the stone-carving workshop. After these discussions and observing the tools and work processes, the methods of firing and processing the brick and stone were documented.



Preparation of clay for brick molding



Brick molding and examples of molds



The brick kiln workshop



The stone workshop



The stone workshop

Upcoming actions

In the fourth phase of the fieldwork, the trenches previously made in the dome chamber for the purpose of understanding the foundation characteristics will be widened and deepened to obtain more accurate information. Based on the information obtained from the field studies of the monument, modeling will be carried out, and the results of this research will be published in articles within a book titled *Documentation of the Soltaniyeh Dome and the Study of Its Restoration Documents*.



The Book's Table of Contents (Draft Version)

"Documentation of the Soltaniyeh Dome and Study of its Restoration Documents"

Preface (10 pages)

Preface by the representative of the Italian Embassy (2 pages)

Preface by the representative of the ISMEO Institute (2 pages)

Preface by the representative of the Directorate of World Heritage Sites; Dr. Pourali (2 pages)

Preface by the representative of the University of Bologna (2 pages)

Preface by the representatives of Shahid Beheshti University and the University of Tehran (2 pages)

Body (150 pages and 115 Images)

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Medieval dome construction in Italy; Dr. Lorenzo Vigotti (20 pages and 20 Images)

Piero Sanpaulesi's restorations in Iran; Dr. Lorenzo Vigotti (10 pages and 10 Images)

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