

a cura di

STEFANO BERTOCCI
FEDERICO CIOLI

Franciscan Landscapes

*Conservation, Protection and Use
of Religious Cultural Heritage
in the Digital Era*

vol. 2



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This volume collects the papers presented at the concluding conference of the European project 'F-ATLAS: Franciscan Landscapes: The Observance between Italy, Portugal and Spain' that took place in Assisi, May 11-13, 2023.

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Façade of the Basilica di Santa Maria degli Angeli, Assisi (Italy). Drawing by Stefano Bertocci.

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**DOCUMENTATION AS A TOOL FOR ANALYSIS AND
DISSEMINATION OF THE CULTURAL HERITAGE.**
THE CASE OF THE FRANCISCAN OBSERVANCE IN PORTUGAL,
ITALY AND SPAIN

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Abstract

The importance of mendicant orders in shaping urban and rural landscapes is recognized worldwide. However, several sites are degraded and abandoned, instead of being valued and reused in a sustainable way. This is often related to their ignorance.

This study aims to fill in this gap, through the documentation of the Franciscan Observance convents. It is presented the multidisciplinary methodology developed in three work packages coordinated by ISCTE, in the scope of the F-ATLAS project, for the documentation of the Italian, Portuguese and Spanish convents: census and case studies mapping (i), architectural and environmental analysis (ii), 3D digital prototyping (iii). The results obtained in the preliminary analysis reached 901 convents. 14 cases were selected for a detailed analysis in each country: 9 in Italy, 3 in Portugal, 2 in Spain. This represents the first step for the knowledge of these religious heritage sites and the starting point for their dissemination and valorization.

Keywords: Franciscan Observance, documentation, dissemination.

opposite page
Fig.1
Datasheet
template (Soraya
Genin) and
selected case
studies (Rolando
Volzone).

1. Introduction

This research refers to three different Work Packages (WPs) of the F-ATLAS Project¹: WP1 – Preliminary Census and Case Studies Mapping; WP4 – Architectural, structural and environmental analysis; WP7 – 3D Printing.

The aim of the first WP is the inventory of the Franciscan convents, through online and offline surveys, to identify the existent convents and a preliminary evaluation of the state of conservation, their main data, and characteristics, in particular the case studies and the area of further analysis.

The second one aims to analyze the selected cases in detail, the architecture, the structure, and landscape, principally regarding the state of conservation and the relationship with the territory, to define their potential and risks.

The goal of the third WP is to produce 3D surface models of the select case-studies for exhibitions, studies, and dissemination.

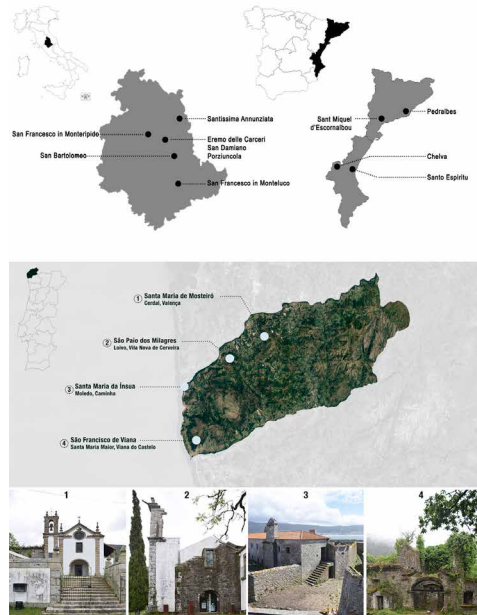
Firstly, we introduce the historical evolution of the Franciscan Observance movement in Portugal.

2. Historical Framework

Franciscan Observance is a reformed branch of the mendicant order of St. Francis of Assisi, proposing the return to the strict Observance of his Rule and Testament (14th century). This movement reached Portugal in 1392 through the Galician group led by Gonçalo Mariño (Teixeira, 2010; Fontes et al., 2020), who founded the first observant hermitages south of the Minho river. These first foundations settled in isolated places propitious to a solitary and penitent life: Santa Maria de Mosteiró in Valença, Santa Maria da Ínsua in Caminha, São Francisco de Viana in Viana do Castelo, and São Paio dos Milagres in Vila Nova de Cerveira (Fig. 1). In the same year, São Clemente das Penhas was founded on the coast of Matosinhos, less than 100 km to the south. The Franciscan Observance gained an increasing visibility in the second part of the 15th century; several works took place in the hermitages and convents founded in the previous phase. At the same time, some of these were abandoned.

In 1517, Pope Leo X issued the bull *Ite vos*, decreeing the division of the order into two. In Portugal, two branches were created: *Província de Portugal da Regular Ob-*

¹ The European project 'F-ATLAS. Franciscan Landscapes: Observance between Italy, Portugal and Spain' is funded, within the JPI Cultural Heritage programme, by the European Union's Horizon 2020 research and innovation programme under grant agreement n° 6995237. The project is led by the Università degli Studi di Firenze, in partnership with the ISCTE-Instituto Universitário de Lisboa, Universitat de Barcelona and Universidade Católica Portuguesa. Additional information at: <https://www.f-atlas.eu/>.



servância, which integrated the settlements of the island of Madeira, and *Província de Portugal dos Conventuais* (or *Claustrais*), integrating five settlements from Azores islands. However, in 1584, the Conventual Franciscans were definitively suppressed by Pope Pius V through a brief dated 1567, being integrated into the Observants.

At this time the Franciscan order was divided into two groups: the Regular Observance, which included the Province of Portugal and the Province of Algarves; and the Strict Observance, more rigorous than the first one, which included five provinces: Piedade (1517), Arrábida (1560), Santo António (1568), Soledade (1668), and Conceição (1705). The gradual abandonment of convents, culminating with the Portuguese dissolution of religious orders in 1834, led to the loss of their original function and values. Unfortunately, a large percentage of the former convents is, currently, underused, unused, or even endangered and with redundant churches. Significant studies on Franciscan Observance in Portugal have been carried out (García Oro 2006; Teixeira 2010a; Fontes et al., 2020). However, knowledge of their architecture is rarely deepened (Medinas 1994; Figueiredo 2008). The documentation and analysis of the current physical evidence is, for this reason, timely and urgent.

3. Census and Mapping

To identify the cases studies in the three countries, the methodology starts from the consultation and analysis of primary sources in municipal, district and national archives. Moreover, an exhaustive analysis of the literature review, comprehensive of national publications, result of previous scientific research on the foundation and evolution of religious orders in Italy, Spain and Portugal². Altogether, the following masculine case studies, belonging to the Franciscan Observance, have been identified: 209 in the Portuguese territory (related to the whole ancient Franciscan provinces), 640 in the Spanish territory (related to the whole ancient Franciscan provinces); 52 in the area of the former ‘*Provincia S. Francisci*’, including the Italian Umbria region and the surrounding area.

A datasheet census was created, to inventory the Franciscan Observance convents. It is based on international recommendations (English Heritage, 2006) and the Portuguese inventory form and manual developed by the former Portuguese entity for the management of cultural heritage³. The template is structured in 19 different fields and produced in Excel format, useful for scholars and others, applicable to different built structures. In Portugal, more than 400 convents, male and female were identified and inventoried, thanks to an exhaustive work carried out within the framework of the program “Summer with Science 2021” funded by the Portuguese Foundation for Science and Technology. The datasheets have been filled in by scholarship students, firstly, through the literature review, regarding the historical evolution of the convents in terms of religious community and construction. The geographical coordinates were found. Online sources have been very useful, principally Google Earth, Google Maps, and national platforms. Moreover, interviews (via email or phone calls) with public administrations, at national, regional, and local level, have been essential to identify property contacts and functions. The Information System for the Architectural Heritage (SIPA)⁴ was a powerful tool. In some cases, data were missing or not updated, so they were confirmed. A preliminary information on the state of conservation was also possible. The template of the inventory sheet was studied and designed, considering the future publication of all inventoried data⁵.

² In Italy: Di Giampaolo F. (2013). *Pietre che parlano. Conventi chiusi e Conventi aperti della Provincia Serafica di San Francesco. Assisi: Provincia Serafica di San Francesco dei Frati minori dell’Umbria*. In Portugal: Campos, Fernanda Maria Guedes de (2017) *A ordem das ordens religiosas. Roteiro identitário de Portugal (séculos XII-XVIII)*. Casal de Cambra: Caleidoscópio; Sousa, Bernardo Vasconcelos (dir.) (2016) *Ordens Religiosas em Portugal – Das Origens a Trento. Guia Histórico*, 3.^a ed. Lisboa: Livros Horizonte.

³ Two manuals developed by the Instituto da Habitação e Reabilitação Urbana (IRHU) and the Instituto de Gestão do Património Arquitectónico e Arqueológico (IGESPAR) were consulted: the KIT01.Património

⁴ http://www.monumentos.gov.pt/Site/APP_PagesUser/Default.aspx

⁵ More than 400 Portuguese Datasheets were filled. The template is structured in 19 different fields: 0. Pictures;

After the inventory the GIS was implemented by the University of Barcelona. This allowed an overview of the whole case studies and a comparison among Italy, Portugal and Spain⁶. The preliminary analysis of the 901 case studies, by crossing the literature review on the Franciscan Observance in terms of diachronic evolution of the built structures and the surrounding landscape, and the national prescriptions in the cataloguing of cultural heritage, allowed the definition of common features. Indeed, the convents are mostly formed by three different parts: the church, the dependencies, and the enclosure. These have a common layout but the whole structure is adapted to the landscape. The exact location of the convents enables planning on-site visits in selected cases of the Franciscan Observance movement in Italy, Portugal and Spain.

4. Architectural analysis

The architectural analysis of major case studies has been carried out. In Portugal, 3 case studies have been selected: Nossa Senhora da Ínsua, Santa Maria de Mosteiró, São Francisco do Monte, São Paio do Monte; in Italy, 9 case studies have been delved deeper: Sacro Speco di San Francesco, Porziuncola in Santa Maria degli Angeli, Santissima Annunziata, San Bartolomeo, San Damiano, San Francesco del Monte o Monteripido, San Francesco di Monteluco, Eremo delle Carceri, La Romita di Cesi,. In Spain, 2 case studies have been studied in-depth: Castell Monestir de Sant Miquel d'Escornalbou, San Francisco⁷.

On-site surveys took place. An in-depth photographic survey has been developed. Elevation maps, obtained from the 3D survey with laser scanning, have been elaborated by the University of Florence⁸, which served as a basis for the analysis of the architecture, structure, and surroundings. To identify the material and degradation analysis, multiple methods were combined: literature review, to understand the historical evolution of the

1. Identification (an ad hoc sheet code is defined); 2. Designation; 3. Category (religious built structures and building); 4. Typology (Religious orders, Specific branch, Gender); 5. Protection (cultural heritage protected and classified, the type of classification, the legislation for the protection approval); 6. Location (State, Region, District, Municipality, Civil Parish, Coordinate System, Geographical coordinates); 7. Access (Typology of access, Name, Number); 8. Historical frameworks (Dates of foundation, reformation and dissolution); 9. Period(s) of construction (the first one, and the additional ones); 10. Property (separately for the church and the conventual dependencies); 11. Owner (separately for the church and the conventual dependencies); 12. Owner's contact (separately for the church and the conventual dependencies); 13. Occupation (separately for the church and the conventual dependencies); 14. Current functions (separately for the church and the conventual dependencies); 15. Conservation state (separately for the church and the conventual dependencies); 16. Sources (Bibliography, Webgraphy); 17. Author; 18. Data; 19. Observations.

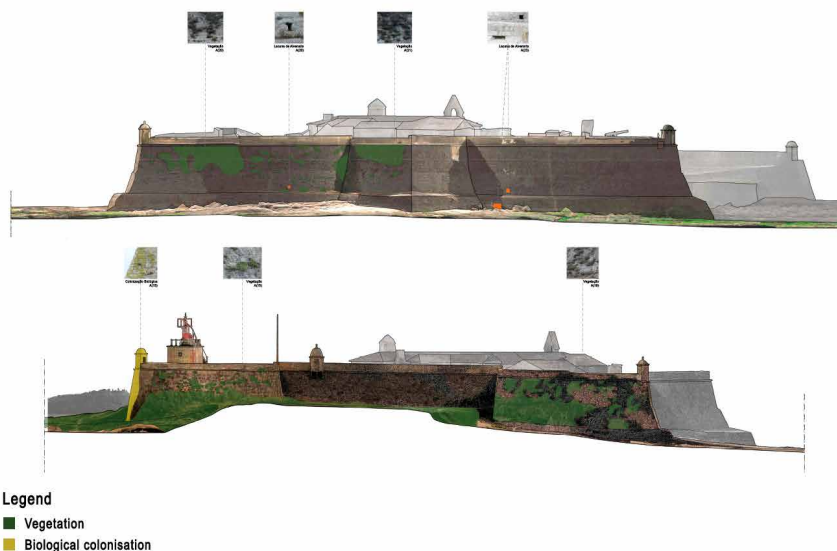
⁶ Moreover, these data have been introduced in the online F-ATLAS Webmap available at: <https://www.f-atlas.eu/case-studies-map>.

⁷ These cases have been targeted of on-site surveys with traditional and digital techniques. The last ones included Terrestrial Laser Scanner (TLS) and Terrestrial and Aerial Digital Photogrammetry (Structure from Motion – SfM).

⁸ This operation was integrated in the third Work Package of the project F-ATLAS. Santa Maria de Mosteiró (Valença), Santa Maria da Ínsua (Caminha), São Francisco de Viana (Viana do Castelo), the first convents of the Franciscan Observance, were the targets of this activity, which took place in April and June 2021.



Fig. 2
Anomalies
mapping. Nossa
Senhora da Ínsua
in Portugal.
Drawing by
Margarida Correia
based on digital
survey from the
University of
Florence.



construction and interventions (i), 3D visualization of the photogrammetric surveys that took place along the WP4 (ii); Direct observations in situ (iii); Analysis of high-resolution pictures captured during the on-site surveys. Materials and anomalies were mapped with specific hatches in the plans, based on international norms (Normal 1/88, 1990). Different decays have been identified: chromatic alteration, crust, cracks and fissures, exfoliation, disaggregation, detachment, erosion, lacuna, biological colonization and presence of vegetation. Different materials were identified: stonework and masonries (vertical elements and vaults), structures in wood, concrete, and metal (floors and roofs); covering with mortar and stucco (walls and ceilings); coverings with ceramic tiles or plaques of other materials (roofs). A simple graphical representation of the materials, constructive techniques, and anomalies was used to allow for reading by specialists and non-specialists in the field.

Finally, the landscape analysis has been developed through a four-step process, joining online (GIS platform) and offline (cartography) tools. Firstly, the analysis of the convent at a macroscale: data about altitude and specific point on the hillside, orientation and solar exposure, water system (rivers, streams), vegetation (with the typology), surrounding circulation system, accessibility, among others, have been collected.

Moreover, data about the cultural heritage in the analyzed areas (either religious heritage or not) has been collected. Secondly, a more detailed analysis, zooming into the enclosure area of the convents, has been carried out. A final map was designed with the exact geographical coordinates.

5. 3D Printing

Eight case-studies here selected for producing 3D printable mesh models at the 1:200 scale. The input data for this work were the point-clouds produced in the surveys which were conducted in the WP4. Initially, only the aerial photogrammetry (PHG) models were to be used to produce the surface models. Yet, issues with vegetation coverage in some buildings led to the inclusion of point-clouds collected in Terrestrial Laser Scanner (TLS) survey campaigns of those case-studies. A workflow was developed to process each of the case-studies, considering the possibility of different sources of the input data, to obtain watertight meshes for 3D printing. Care was taken to maximize the number of processing steps strictly using open-source software, and to minimize the variety software involved.

The workflow to process the available input data was composed of 4 major steps which were applied depending on the type of survey data and the missing information to fully reconstruct the building model: 1) Pre-Processing; 2) Alignment; 3) Surface Reconstruction; and 4) Subdivision. The pre-processing step involves clipping, subsampling, and filtering the point clouds. Depending on the type of point-cloud, adequate normal orientation and noise removal processes are applied. Step 2 involves aligning the clouds with the world axis and then between themselves with the ICP algorithm. In Surface Reconstruction missing data is filled either by automatic or manual processes and the implicit surface is constructed with Screen Poisson Reconstruction. A specific subprocess is used to construct auxiliary surfaces to close the mesh. Lastly, hole-filling, mesh decimation and smoothing algorithms are used, and the mesh is scaled and subdivided as needed for 3d printing (Fig. 3).

6. Results and conclusions

The research develop by ISCTE within the framework of the European project F-ATLAS, displays different methodologies, traditional and innovative techniques, resulting an unprecedented inventory and preliminary assessment of the state of conservation of more than 400 Portuguese Franciscan mendicant convents. The present project contemplates only male convents, a total of 901 Italian-Portuguese-Spanish convents, documented by all the partners. 14 cases were analyzed in detail and 8 were produced in 3d printing. The works followed a

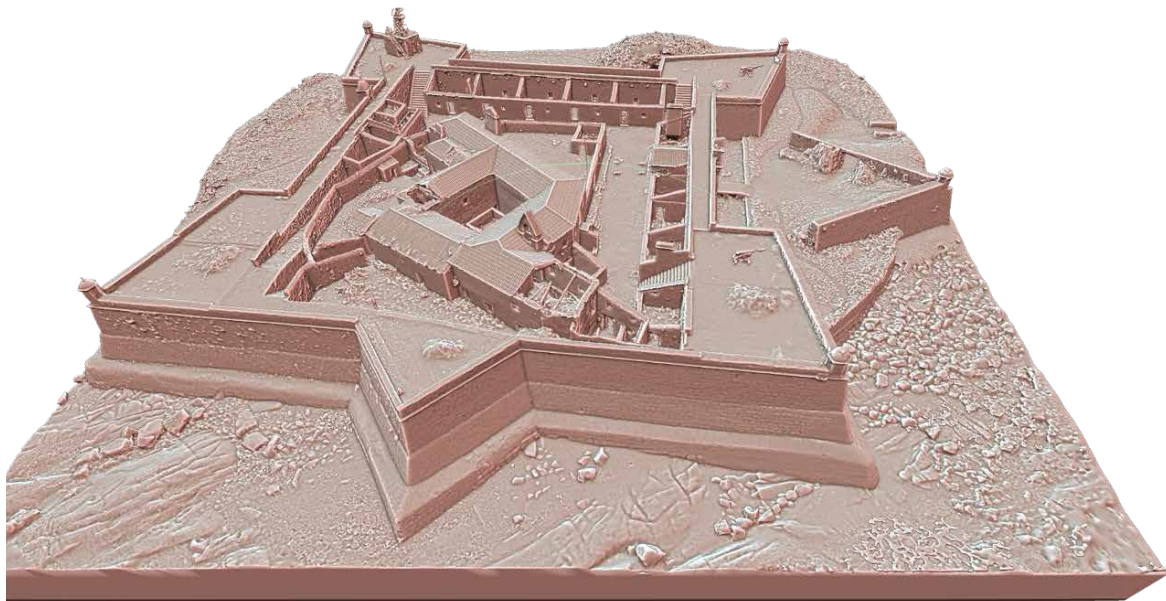


Fig.3
The closed watertight mesh model of Santa Maria de Insua monastery and the surrounding fortification prepared for 3D printing.

pre-defined structure relating different tasks of the global project. A protocol was developed for the documentation of the Franciscan convents, which served as the basis for the digital survey and GIS mapping, tasks carried out by the project partners. The digital survey was used for the architectural, structural and landscape analysis, as well as to produce models for 3D printing.

The results obtained are an important tool for the establishment of an interactive digital database of the Observance Franciscan Architecture and for the management and monitoring of this cultural heritage at regional, national, and European level. Expected outcomes of the whole project will facilitate awareness of European citizenship based on the sharing of common values and achievements and will promote an understanding of Europe's history combining cultural and natural heritage.

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The volumes present contributions from the International F-ATLAS Conference, promoted within the European project “F-ATLAS – Franciscan Landscapes: The Observance between Italy, Portugal and Spain”, funded in 2020 by the JPIC 2019 Conservation, Protection and Use Call. The Conference brought together experts from various disciplines, including history, architecture, geography, digital humanities, and computer science, creating a rich and comprehensive interdisciplinary dialogue. Participants from renowned international universities offered unique insights into the Franciscan Observance and its impact on European Cultural Heritage. The contributions examined the past and sparked discussions on the future of documenting and safeguarding religious heritage.

Integrating historical research with technological progress opens exciting possibilities to create comprehensive digital archives, virtual reconstructions, and immersive experiences that can bridge the gap between the past and the present.

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