Digital documentation of the Franciscan Observance architecture in Umbria. Preliminary surveys and analysis for conservation purposes

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Abstract
This contribution focuses on one of the identified case studies of the Franciscan Observance architecture in Umbria, the convent of San Bartolomeo near Foligno (PG). It addresses the issue of heritage documentation methodology through integrated 3D laser scanner digital survey techniques and SfM/IM photogrammetry close range and UAV. The investigations aim at developing a preliminary diagnostic framework of the San Bartolomeo complex after the damage suffered in the 2016 earthquake in Central Italy. The research is part of the broader context of the three-year European project F-ATLAS – Franciscan Landscapes: The Observance between Italy, Portugal, and Spain, funded by the JPICH 2019 call. The Project aims at the census of the Franciscan Observance's convents and their enhancement in a European dimension. The Project also tends to verify the state of conservation and the possibilities of a compatible development of reuse projects, trying to connect the building phenomenon within its territorial and cultural context..

Parole chiave
Digital survey, religious architecture, remote sensing, terrestrial laser scanning, structure from motion/image matching

Research framework (SB)

The research is part of the broader context of the three-year European project *F-ATLAS – Franciscan Landscapes: The Observance between Italy, Portugal, and Spain*, funded by the Joint Programming Initiative on Cultural Heritage and Global Change JPI Cultural Heritage and started on 1 July 2020[1]. The research group, led by the University of Florence, includes the Instituto Universitário de Lisboa, the Universitat de Barcelona and the Universidade Católica Portuguesa. The project aims to define multidisciplinary strategies for developing management protocols for enhancing cultural heritage and architecture of the Franciscan Observance (Bertocci et al., 2023). Through the involvement of associated partners such as the Umbria Region and the Curia Serafica di San Francesco d'Assisi of the Friars Minor of Umbria, the project has investigated, through survey campaigns and diagnostic investigations, some case studies selected based on

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Fig. 1
Sketch of the facade of the church of San Bartolomeo. Drawing by Stefano Bertocci

a census, carried out through data-sheet catalogue, which involved the three participating European countries. These investigations aimed at developing safeguard strategies for religious complexes at risk – such as abandoned Portuguese and Spanish monasteries and those subject to seismic risk in the Umbria Region – and strategies of connection and use of heritage to promote cultural and sustainable tourism. This contribution focuses on one of the identified case studies, the convent of San Bartolomeo near Foligno (PG). It addresses the issue of heritage documentation methodology through integrated 3D laser scanner digital survey techniques and SfM/IM photogrammetry close range and UAV. The investigations aim at developing a preliminary diagnostic framework of the San Bartolomeo complex after the damage suffered in the 2016 earthquake in Central Italy (Fig. 1).

Main characteristics of churches and convents of the Franciscan Observance in Central Italy (SB)

In order to define the main features of the Franciscan settlements, it is necessary to refer to the Franciscan Rule (Salvestrini et al., 2023). The friars preached among the people by going to squares and churches, then retiring to shelters on the edge of urban centres or in isolated places. These shelters – defined as 'loci' or 'locelli' – were huts in woods or caves close to cliffs that could be built and abandoned quickly (Pellegrini, Paciocco, 2000, pp. 126-127). The Minoritic Movement spread in Central Italy in the 13th century with extraordinary rapidity due to the fame of the figure of Francis of Assisi. Soon, it is emerged the need to overcome the hermitic phase to settle in stable locations, closer to the communities and urban centres particularly in central and northern Italy area, which, at this times were in a development phase. The term 'conventus' – from the original meaning of 'meeting', 'conference' – was coined by the first followers of Francis of Assisi to indicate the architectural structures made up of the church and the buildings of the individual communities. The settlement in the convents also marked the passage from the itinerant state of the initial period to the establishment in regular communities with the approval of the Regula (Amonaci, 1997, p. 15)[2].

The phase of building expansion took place between the fourth and fifth decades of the thirteenth century, documented – as well as by the number of foundations – by the numerous bulls of Innocent V (1243-1254) and Alexander IV (1254-1261) who established indulgences in favour of donors for the benefit of the construction of churches and convents. Innocent's bull of 1250, therefore, introduced the distinction between 'conventual' and 'non-conventual' churches. This fact is indicative of the great development achieved by the order. During the fifteenth century, the Observants acquired relative autonomy until the establishment in 1517 of definitive separation from the conventuals and the constitution of the second Franciscan family[3].

The characteristic that usually distinguishes newly founded convents from the previous ones is their location outside the urban centres. Observants and Reformed settle a short distance from the cities, often close to a hill that looks towards the town and reoccupying previously abandoned sites. The interest of the Observance community directs towards the urban population, without forgetting the more substantial rural communities, where the friars are religiously involved with charitable and welfare activities. Regarding the typological characteristics of the settlements, it emerges that the churches had a single nave structure with a square, often vaulted choir, with trussed roofs with or without a false wooden ceiling. Some buildings present a single-side nave

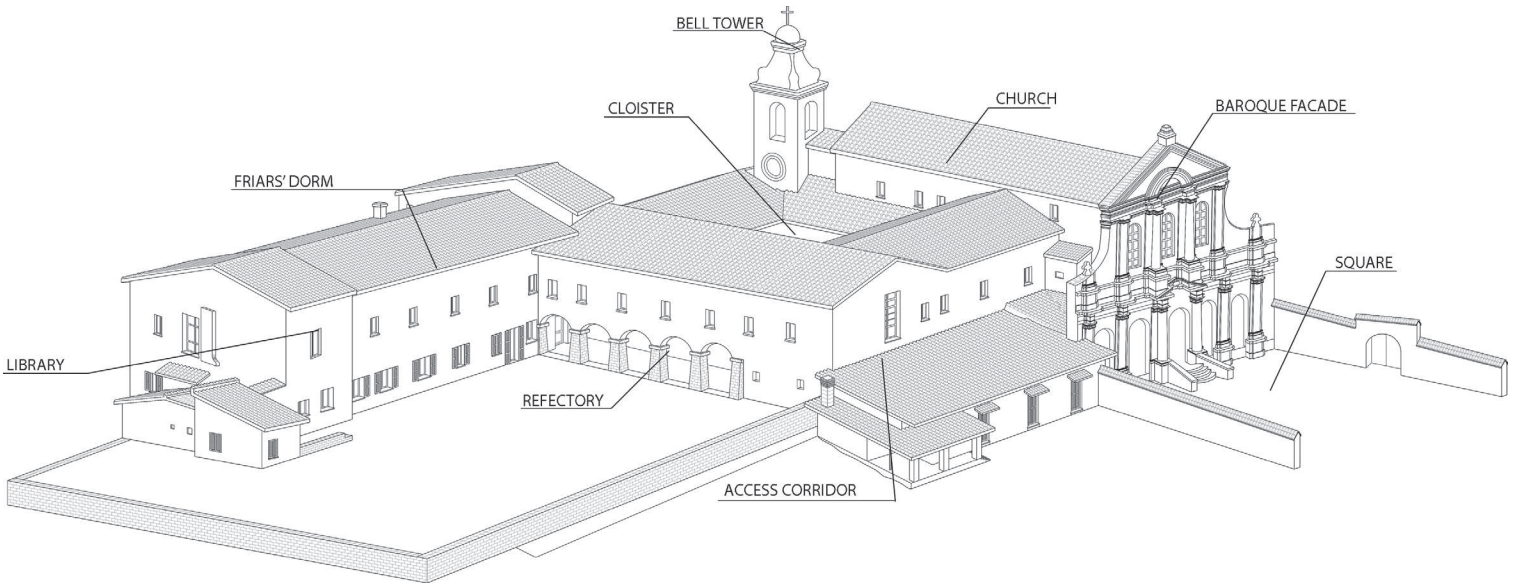


Fig. 2
Axonometric view of the convent of San Bartolomeo with indication of the main rooms.

with secondary altars dedicated to cults of local saints. The apse has the main chapel with a square structure flanked by side chapels. In all the convents, the layout of the building developed around a central cloister, with a portico on the four sides, according to the consolidated layout of the monastic architecture of the previous centuries. This distribution also allowed flexibility in the construction phases; the various bodies could be built independently according to the development needs of the local community of friars. On one side is the church, placed next to the cloister, preferably, but not exclusively, to the north. On the opposite side are the kitchens with accessory rooms. On the perpendicular side of the church, at the crosshead, lies the refectory and, when present, the chapter house with the dormitories on the first floor, which often had direct access to the church choir. The other service areas, with the guesthouse and workshops, are in the fourth block. In the farthest corner of the building are the community places, i.e., the washhouses and latrines. Inside the cloister is a well with a cistern, the primary water source for the community, and adjacent to the convent, a garden, a source of livelihood for the community. The dimensions of the cloister are usually about 15-20 meters per side, and the length of the church is proportionate to it, equal to the longest side of the cloister plus about a third for the choir's development (Pellegrini, Paciocco, 2000, pp. 147-150)(Fig. 2).
From a typological point of view, the convents of Observance do not differ substantially from those erected in previous centuries except for the smaller dimensions compared to the architecture of the conventuals, with constructive characteristics linked to the locally more widespread building technologies. In terms of composition, it was possible to identify recurring peculiarities among the various case studies analysed,

such as the presence of a second nave or side chapels for specific devotional aspects of the local communities. The functional distinction between the choir area, which occupies the eastern part of the church, separated by a partition from the presbytery and the nave, always assumes considerable importance. The partition is a decisive element of these architectures, often consisting of an elaborate structure which, between the seventeenth and eighteenth centuries, was enriched with decorative apparatuses aimed, in a 'didactic' way, towards the faithful present in the nave. At the centre of the partition is the church's main altar with the altarpiece; this is flanked by two lateral openings that allow the passage to the rear choir. The decorative apparatus – structured in several registers – are often lower than the triumphal arch to allow acoustic communication between the two environments during religious rites. Even the decorative elements help to optimise, through fretworked openings, the diffusion of the chant and prayer of the community emphasised by the roof vault.
We find these typological characteristics in the church of the Convent of San Bartolomeo in Foligno and the church of the Convent of the Santissima Annunziata in Amelia. In contrast, in the church of the Sanctuary of the Sacro Speco in Narni (Cioli, Lumini, 2021), part of the high altar was modified due to the prescriptions of the Second Vatican Council. In place of the eighteenth-century altar frontal, made with interesting wooden works, an arch was created to allow a view of the rear choir. Another characteristic element, also documented in the case of the Convent of the Sacro Speco by historical photographs from the beginning of the century, is the portico in front of the church, which served as a resting and meeting point. We still find the portico, as well as in San Bartolomeo, in the convent of the Santissima Annunziata in Gualdo Tadino and the sanctuary of the Blessed Antonio Vici in Stroncone (Bordini et al., 2021), where an L-shaped colonnade connects the entrance to the church with access to the convent. Finally, we find the recurring presence of the 'wood', a small forest with tall trees intended for meditation annexed to the convent structures and protected by a walled enclosure, a reminder of the hermitic phase of the settlements, where the friars can rediscover the ideal contact with the nature (Pellegrini, Paciocco, 2000, p. 149).

opposite page above
Fig. 3
Aerial views of the convent of San Bartolomeo showing its relationship with the environmental context.
below
Fig. 4
Pictures of the facade of the church of San Bartolomeo and the cloister with the bell tower and the well.

The Convent of San Bartolomeo near Foligno (SB)

The Monte Marano complex near Foligno was built in 1408 by Ugolino Trinci and completed in 1415 by his son Niccolò[4] to house the friars of the regular Franciscan Observance[5] (Bertocci et al., 2023). The position of the complex, now bordered by the urban periphery, combined with the consequences of the recent earthquake in Central Italy in 2016, which also affected this area, making this place of worship partly unusable, have put the complex at risk. The church, initially in sober Franciscan style with a single nave covered with wooden trusses, was equipped with a quadrangular vault covered with a cross vault with faceted ribs supported by polygonal corbels: "a vault of good Gothic architecture airs high in the choir" (Biondi, 1969, p. 50). The wooden choir of the friars, transferred here in the sixteenth century, has the curvilinear shape of the original apsidal structure and had late fifteenth-century stalls with panels decorated with wooden inlay (Figg. 3-4).
For the location of the choir, the rectangular space of the 'scarsella' was also readapted, enlarging the lower part of the original wall structure with arched structures. The nave has undergone numerous alterations and has an interesting Baroque decorative apparatus from the 18th century. The presbytery is divided from the choir by the

elaborate partition from the high altar, which has two symmetrical side doors for access to the rear choir. On the main altar is a panel depicting Veronica by Pomarancio, and along the nave are statues of four doctors of the church, made in 1705. The chapel on the left dedicated to San Bartolomeo presents a panel depicting the Martyrdom of San Bartolomeo, the last work by Niccolò Alunni, completed in 1503 by his son Lattanzio, and on the left is a fresco representing San Bernardino of Siena.
The chapel on the right, arranged symmetrically concerning the previous one, comprises two rooms and was built in 1676 to house a reproduction of the Holy Sepulcher in Jerusalem[6]. The chapel of San Bartolomeo is one of the most faithful copies of the original aedicule of the Holy Sepulcher of the Anastasis of Jerusalem in its

Fig. 5
Pictures of the chapel of the Holy Sepulchre and detail of the internal fresco.

16th-century version, built thanks to the indications provided in 1609 by Fra Bernardino Amico da Gallipoli[7], a Franciscan who held the position of Custos in the Holy Land starting from the end of 1560 (Minutoli et al., 2021). Above the aedicule stands an angel holding a scroll, while two showcases closed with glass affixed to the facade testify to the fidelity of the reproduction of the Holy Sepulchre: one walled up to the right and the other to the left of the access with a small wooden model of the sepulchre and some relics of the Holy Land with a brief inscription declaring their origin (Fig. 5).
The cloister, with an almost square plan with the cistern well in the centre, dates back in part to the primitive fifteenth-century structure with six arches on each side, with round arches on octagonal pillars. On the side bordering the church, traces of the ancient walls have recently been rediscovered, perhaps belonging to the primitive fortress donated by the Trinci to construct the convent. The reconstruction or renewal of the cloister is due to the master mason Antonio Ponti, as evidenced by the date '1712' engraved on one of the hexagonal columns that support the arches on the ground floor. Analysing the polygonal columns, we notice some differences in execution due to the construction phases: those built in the first construction of the convent have hand-sculpted brick ashlars to create the polygonal shape of the columns, while the columns built to complete the cloister have shaped bricks more finely, and a more regular shape (Miceli et al., 2020)(Fig. 6).
The twenty-four lunettes that decorate the cloister's walls and represent the stories from the life of Blessed Paolo Trinci, the work of Friar Ippolito da Orvieto, also date back

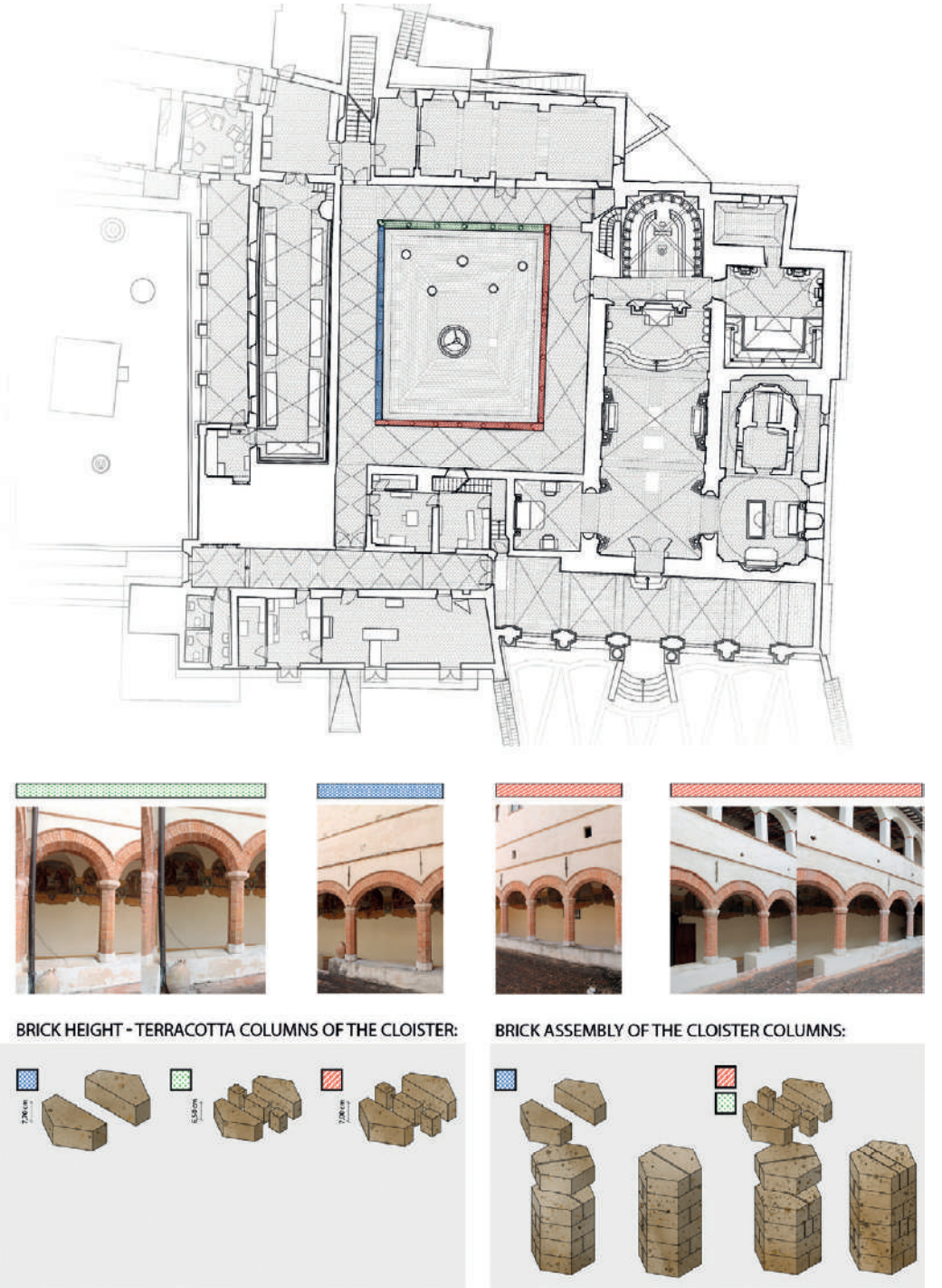


Fig. 6
Analysis of the columns of the cloister which helps the hypothesis of the construction phases of the buildings.

to the first half of the 18th century. The same author also owes the stories of the Blessed Angela of Foligno, which decorate the lunettes of the vault of the entrance corridor to the complex, which opens alongside the church facade (Biondi, 1969, pp. 51-52). The current facade of the church, built between 1731 and 1736, has a rich architectural layout on two levels with a portico with five arches in the basement and is considered one of the most interesting example of Umbrian religious architecture of the 18th century. The church's facade was erroneously attributed to the architect Giuseppe Piermarini but was probably built between 1731 and 1736 by the architect Filippo Neri of Foligno and executed by Bernasconi of Vescia. The facade underwent restoration interventions in

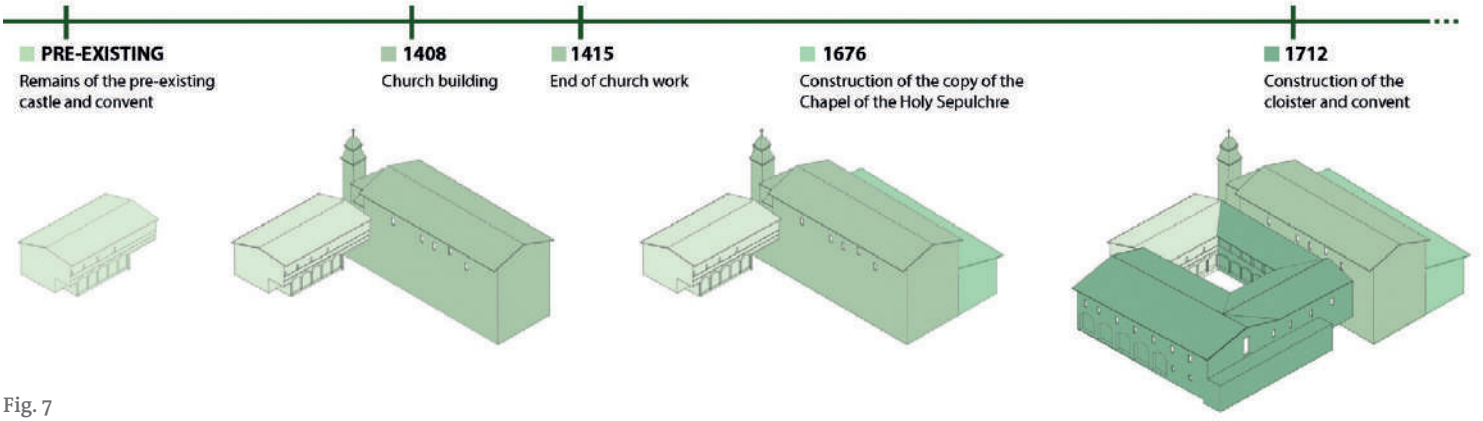
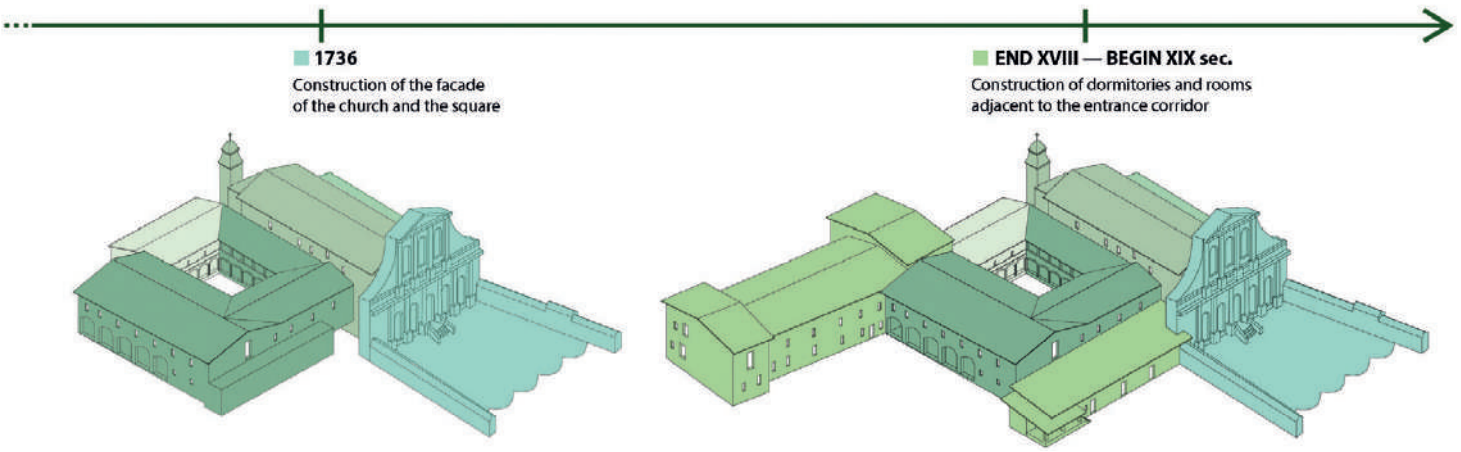


Fig. 7
Scheme of the evolutionary hypothesis of the complex based on the volumes of the current conformation.

1952 and 1991 due to a lightning strike in 1934. During the restoration interventions in 1896, the epigraph of Nicolò Trinci was discovered in the entrance hall, which testifies to the convent's construction starting from 1415 (Sensi, 1992)(Fig. 7).

The digital survey campaigns for the documentation of the Convent of San Bartolomeo (FC)

The convent of San Bartolomeo is an emblematic case study within the European project F-ATLAS, addressing the main issues affecting the architecture of the Franciscan Observance, identified during the analysis carried out by data-sheet census. The in-depth study through TLS digital survey campaigns and Structure from Motion/Image Matching (SfM/IM) photogrammetry is justified by its historical characteristics, see it as one of the first places of the Observance. Furthermore, its relationship with the territory and the current structural and conservation problems caused by the earthquake in Central Italy in 2016 and 2017 make the convent of San Bartolomeo a case study of strong interest. According to the chronicles preserved in the Library of the Curia Serafica of San Francesco di Assisi, the convent had also suffered significant damage during the 19th century following a devastating earthquake[8]. However, it maintains its original shape, expanding over the years by developing an important block for the guesthouse and the novitiate. Among the main potential of this monastic complex, one of the most important is the hospitality, counting 30 rooms equipped with bathrooms both in the perimeter around the cloister and in the dormitory block and ten rooms in the novitiate, located above the central nave of the church[9]. Located along the road that leads to the Benedictine Abbey of Sassovivo, the convent of San Bartolomeo rises in an isolated position to the historic centre of Foligno, in a marginal area identified by the plans of the Umbria Region as an industrial area, therefore difficult to protect from regulatory instruments. Moreover, it has a single connection to the city, an underpass of the Flaminia state road, which constitutes a barrier for the development of itineraries for cultural tourism. Although some spaces have been closed following the recent earthquake, including those of the church of San Bartolomeo, the convent still houses the members of the community but is not accessible to the public and has been deprived of the works of art which have been placed in safety, scattered in the museums of the area. The poor visibility of the complex from the main



thoroughfares and the recent closure to visitors have made the monastery, once an important pilgrimage destination, an almost forgotten place.

Starting from August 2020, two main digital survey campaigns investigated the complex, carried out through the collaboration between the University of Florence and the University of Ferrara. The first survey campaign, carried out using a Faro Focus 3D-X330 instrument, involved the exteriors and monumental rooms of the church, the library, and the cloister for 142 b/w scans. The laser-scanner survey has been integrated through the SfM/IM UAV photogrammetric survey, which involved the acquisition of about 750 aerial photographs using a DJI Mavic Mini 2 drone, processed using the Agisoft Metashape software. These acquisitions compensate for the missing information related to colour and materials, providing data regarding the conditions and morphology of the roofs and the state of conservation of the surfaces. The images acquired through the post-production processes allow the creation of three-dimensional mesh models, which, appropriately scaled thanks to the metric reference of the laser-scanner 3D point cloud, enable to export of reliable orthoimages that constitute the optimal support for the diagnostic and stratigraphic investigation (Figg. 8-9).

The second survey campaign, carried out using a Faro Focus M70 instrument for 158 b/w scans, mainly concerned the first floor through the documentation of the dormitories, the novitiate, and the refectory, integrating the missing data necessary to develop an investigation of the entire convent. The SfM/IM survey carried out with a Canon EOS 760D reflex camera instead concerned the decorative apparatus of the frescoes through the acquisition of data relating to the lunettes of the cloister and the corridor, affected by critical conservation problems. The 3D point cloud obtained from the registration of the individual scans using the Leica Cyclone software was suitably verified through error control, designed to guarantee the closure of a polygonal fundamental for verifying the reliability of the survey of the entire religious complex. The point cloud 3D model supported the creation of the 1:50 scale drawings representing plans, elevations, and sections (Figg. 10-11).

After carrying out the registering of each one single scan by visual alignment and cloud constraints, it was necessary to perform a roto-translation test phase on the final 3D model to ensure its reliability. To verify if the point-cloud model has an error lower than the allowable one in relation to the chosen restitution scale (i.e., 1 cm for the

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Fig. 8
Point cloud from laser-scanner survey in planimetric view with indication of acquired scans.

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Fig. 9
Textured 3D mesh model of the convent obtained by SfM/IM photogrammetric survey.

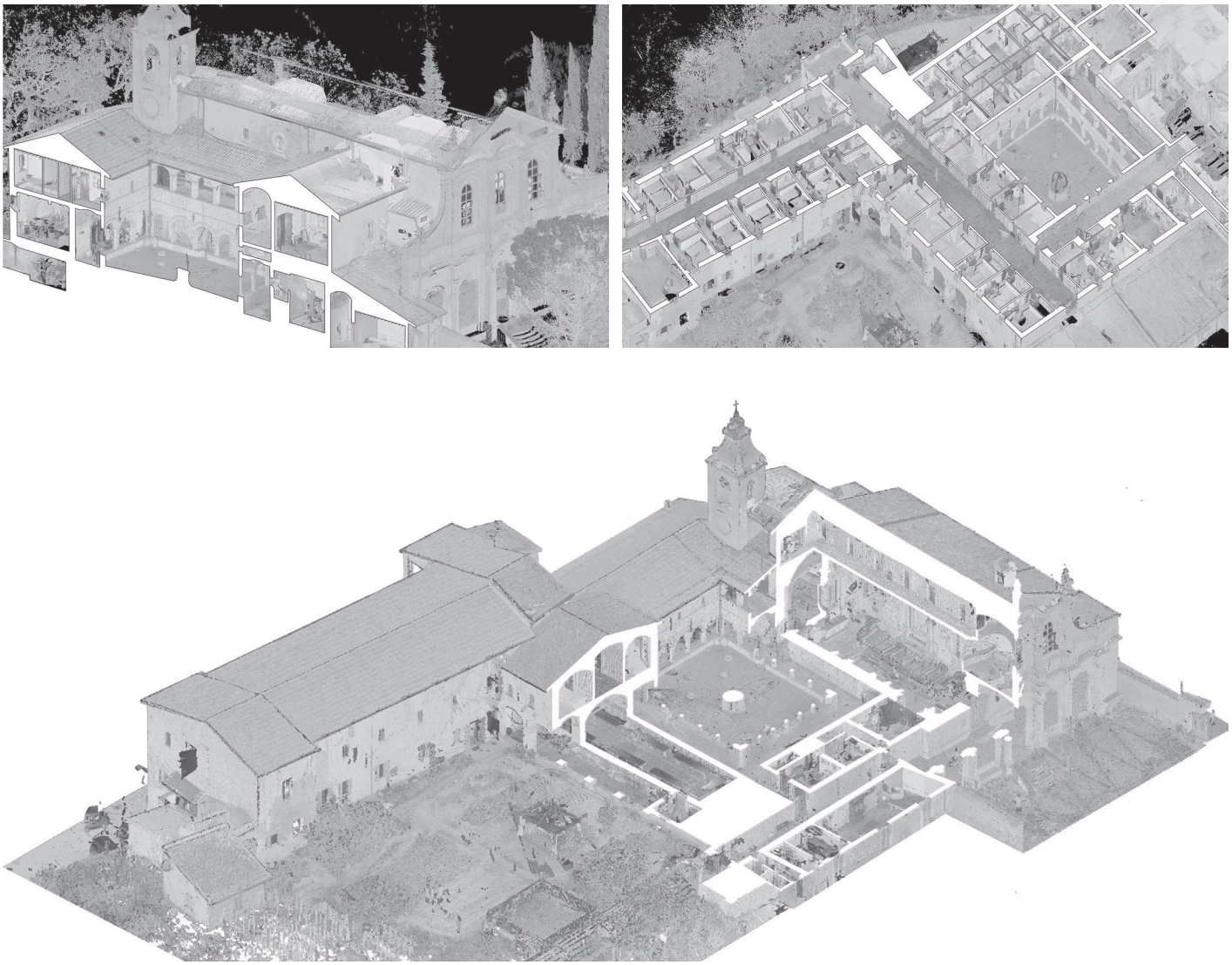

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Fig. 10
Axonometric cross-sections of the 3D point cloud model obtained from the laser-scanner survey.
below
Fig. 11
Axonometric cross-section of the convent of San Bartolomeo.

1:50 scale) the model was sectioned by horizontal and vertical section planes. This process aims at investigating whether the misalignment of the section lines of the point clouds is less than the desired centimetre (max. error found: 0.6 cm) . The documentation obtained constitutes valuable unreleased material for reconstructing the network of relationships that linked the monastic complex to the surrounding territory and the other religious settlements in the area, compromised by recent urban developments, helping to define a more complete and coherent reference framework with the purposes of the F-ATLAS project. The drawings, combined with the direct investigations on the 3D model relating to the axiality of the facades through the elevation map, contribute at defining an initial diagnostic framework to develop a recovery and consolidation project (Figg. 12-13).

Fig. 12
above
Ground floor plan. On the right the church of San Bartolomeo with the chapel of the Holy Sepulchre.
below
Plan of the first floor with the dormitories and the novitiate.

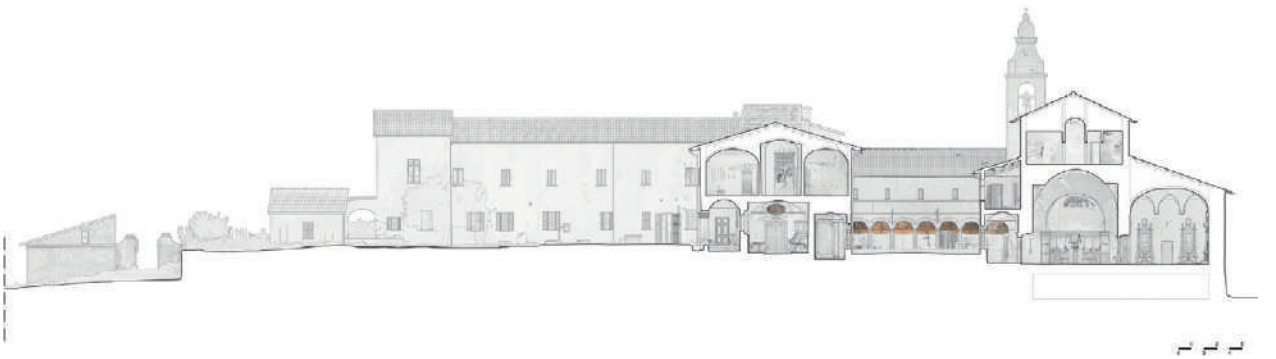

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Fig. 13
Convent of San Bartolomeo, Cross-section A-A' of the church and cloister with the textured lunettes frescoed with the life of Blessed Paolo Trinci. Section scheme in Fig. 14.

Preliminary investigations for the development of a recovery project for the convent of San Bartolomeo (FC)

The digital survey campaigns are aimed to a future development of a diagnostic framework for planning the subsequent intervention and restoration phases. Despite a recent restoration of the internal religious complex in 2006, the impact of the earthquake in Central Italy severely damaged the convent of San Bartolomeo, making the church and the rooms on the upper floor unusable. The distance from the epicentre in the municipality of Accumoli (RI) did not count the Foligno area within the area affected by the earthquake, thus excluding it from access to the first tranche of reconstruction funds.

The paper shows the outputs of the digital survey aimed at the general documentation of the entire complex. However, the database made up of the original sources of the 3D laser scanner and the photographic datasets can and must constitute a fundamental resource for in-depth diagnostics of the entire complex. The photographic dataset is a fundamental tool for documenting the state of conservation of the external and internal surfaces of the building and can be used in the future by competent professionals as data for further comparisons. The same value plays the point cloud created during the documentation project. The stored raw data allows for repeating the registration process of the overall 3D model or of single parts of the complex more affected by deterioration or damage such as the church, also aimed at optimizing the collimation of the individual scans to reduce the overall error coefficient.

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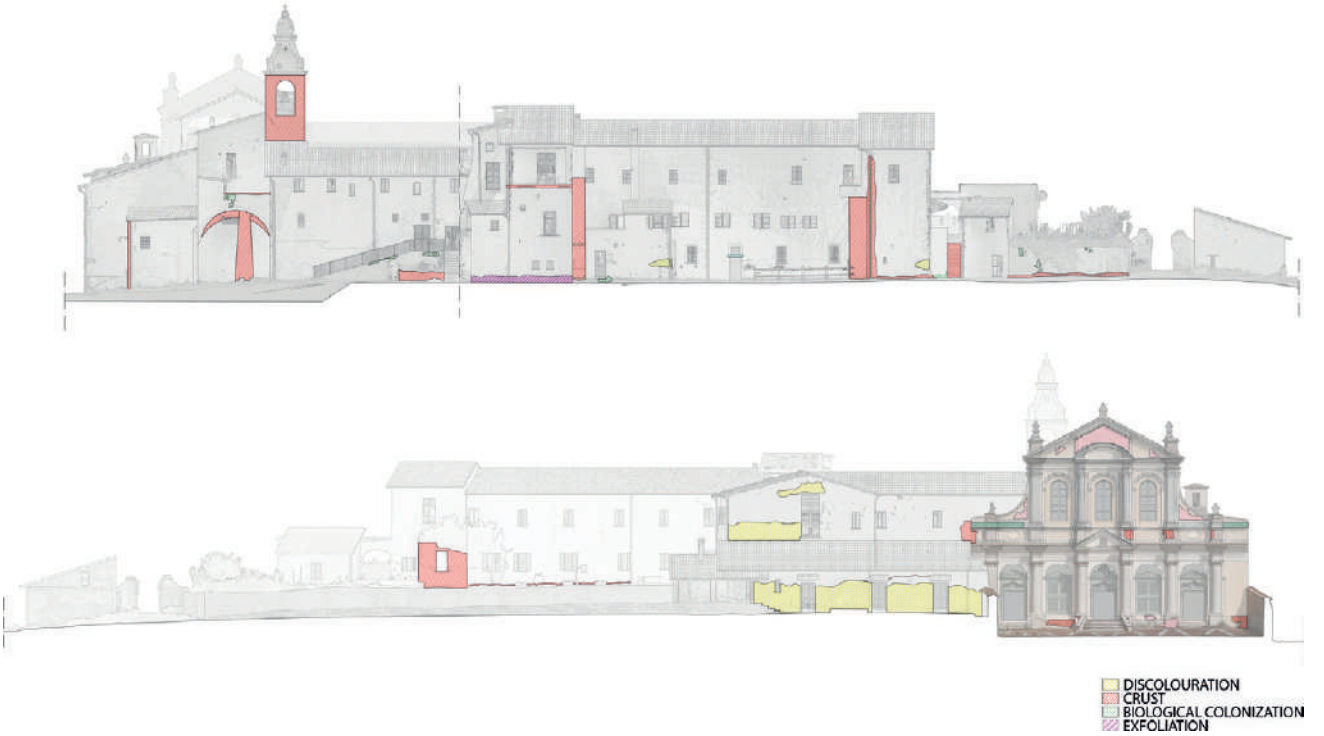
Fig. 14
From top to bottom: cross-sections B'-B, A'-A, and B-B' representing the church of San Bartolomeo, the cloister and the access corridor with the textured lunettes frescoed with the life of Blessed Paolo Trinci and the Blessed Angela of Foligno.

The preliminary analysis highlights that the spaces most damaged are those of the church and the adjacent volumes, with an important detachment of the facade block, built in 1736 without an effective connection system with the previous architectural structures. The analysis of the complex identified the main alterations and surface degradations. In particular, the external elevations are affected by discolouration, the presence of black crusts and biological colonization. On the other hand, the convent's interior does not present significant alterations or degradation as they have been subject to a recent intervention except for the church and the adjacent rooms, where numerous cracks and structural damages occurred due to the 2016 earthquake. Even the church's facade has superficial degradations such as crusts, detachments, and erosion due to atmospheric agents. Particularly damaged is the access corridor to the convent hosting the cycle of sixteen lunettes depicting the life of the Blessed Angela of Foligno. During the first restoration, these frescoes were detached, placed on unsuitable masonite panels, and subsequently placed on site, deformed due to humidity, and deteriorated again (Fig. 14). Along the perimeter of the copy of the Holy Sepulcher of Jerusalem are graffiti and engravings made by the faithful as evidence of pilgrimages. To restore the whole complex, these signs deserve particular attention and careful safeguard procedures, representing an important historical testimony of the use of the convent during the greatest pilgrimage activity. The analysis of the main types of surface degradation allows us to identify three macro-categories of problems affecting the complex, such as rising dampness from the ground and the rainwater disposal system, which have caused, for example, separations and discolouration of the plasters (Fig. 15). Almost the entire convent complex has plastered surfaces, except for the external elevation of the church and part of the northern elevation, which affects the rear entrance to the convent. While inside the church, the removal of the paintings above the altars of the central nave has exposed part of the masonry (Fig. 16).

The analysis also continued with cataloguing the types of masonry techniques of the convent's buildings through the classification, where visible, of the masonry facings, aimed at developing an initial hypothesis for identifying the most suitable and compatible intervention techniques. The stratigraphic reading of the elevations also allows us to identify some hypotheses on the chronology of the interventions. In the east elevation, the masonry made with stones and solid and inexpensive conglomerate is visible, generally formed with lime and mixed aggregates of various sizes: stones, tuff or flint flakes, and brick fragments to give the compound a certain hydraulicity. In correspondence with the current entrance to the convent, the masonry is like that previously described, with the addition of brick recourses to strengthen the structure; this typology is present inside the nave of the church and is visible in the voids left by the altarpieces removed after the earthquake. Moreover, the north elevation has masonry made with small and medium-sized rough-hewn stones installed with faces matching each other (Fig. 17).
Furthermore, the digital survey offers the opportunity to realise precise analysis of the deformation maps that verifies in more detail the conservation conditions of the geometric verticality of the load-bearing partitions of the architectural structure. Thanks to the help of the elevation map – exported directly from the point clouds using the Leica Cyclone software – it was possible to quantify the rotation concerning the axiality of the church's facade, apparently more affected by the deformations, and the external elevations. The software allows using specific measures to realise maps of the surfaces highlighting the displacement of the masonry portions concerning the neutral axis through highly reliable contour lines. The first step is to decide in a congruous manner the positioning of the reference plane for the creation of the elevation map, which depends on the actual situation of the surfaces to be analysed. The process of interpreting the maps requires specific skills of the operator and the highlighting of the phenomena can be generated through different graphic renderings. The use of colour gradient restitution requires to check in advance, even experimentally by a specific inspection, the size of the reference range previously chosen. Given the limited range, it is important that the colours will not be repeated because it creates interferences with the correct interpretations of the models. Easier to interpret is the rendering of the gradients with contour lines arranged in relation to the vertical zero plane which however require a greater graphic rendering effort.
In the case of the facades of San Bartolomeo, a 16-colour chromatic scale was used with a shift range between -0.05m and +0.05m. The chromatic variation highlights the points where the plane is perfectly vertical, coinciding with the green areas, where there is an inward shift in red and where the shift is outward in blue. The example facade block in the picture shows slight rotations concerning the neutral axis. It highlights how the evident cracks that detach it from the pre-existing walls are probably due to a downward vertical translation (Fig. 18).
These preliminary analyses constitute a fundamental prerequisite for further diagnostic, structural and stratigraphic investigations necessary to intervene appropriately in the San Bartolomeo complex, underlining the urgency linked to the conservation of an important site for the history of Franciscans and for the Umbria Region.



above
Fig. 15
Analysis of the superficial degradations of the convent following the 2006 restorations and the subsequent damages suffered with the 2016 earthquake.

below
Fig. 16
Details of the interior of the church of San Bartolomeo with the decorated partition and the altars without the works of art.

Fig. 17
Analysis of the visible masonry typologies.

Fig. 18
Elevation maps carried out on the external walls to verify the axiality with respect to the neutral axis.

Conclusions (FC)

The results of the digital survey are aimed – in addition to the complete documentation of the complex, consisting of plans, sections and elevations, and its state of conservation – at the understanding of the evolutionary phases and the critical interpretation which lays the reliable foundations for the future conservation activities. The development of guidelines for interventions aimed at the re-functionalisation and the enhancement of the complex, now partly abandoned. Through the integration between the study of historical and archival sources, the field investigations and the technical drawings obtained through the digital survey, it was possible to develop a more detailed hypothesis also on the architectural evolution of the San Bartolomeo complex.
The analyses focused on the actual problems of the site[10], highlighting the dangerous state of degradation and abandonment of the large convent church, which represents the most damaged part, as regards the structures of the portico and the facade, which despite the restoration interventions of 1952 and 1991, still presents problems of instability because of the recent earthquake. From the restitutions of the surveys, the structures of the primitive architectural layout of the church also appear evident, with a single nave covered with wooden trusses, and the second phase of expansion with the construction of interesting vaulted structures. We can, therefore, also understand the subsequent structures of the Baroque era, which, through the partition of the high altar, reduced the development in depth of the nave and, with the construction of the

vaults in the nave, also reduced the development of the hall in height. The surveys, therefore, show in adequate detail the structures of the grand facade, the last Baroque intervention. In particular, the convent of San Bartolomeo needs important and urgent recovery actions: the complete restoration of the complex and the relocation of the works of art aimed at defining a museum system that highlights the site's historical importance. The valorisation of the complex required the consolidation and reopening of the church to the public and the design of a connection system into a broader tourist itinerary. The complex can relate to the nearby and important site of the Benedictine Abbey of Sassovivo and other Franciscan settlements in the territory to develop a museum system that allows people to rediscover the history of the place and the link with the surrounding area. It could also be important to develop a hospitality system, re-functionalising the entire wing of the cells and the novitiate and adapting the driveways to the site and the parking, which is currently insufficient and poorly signposted. These links between the built and natural landscape, local history, and culture, so closely connected to the Franciscan Observance movement and its evolution, constitute the key element for understanding the place. By comparing the various settlements and their way of relating to the surrounding environment, the project aims to reconstruct the cultural network that has contributed to the development of the territory and to analyse the mutual influences between the convents, the urban settlements, and the natural landscape.

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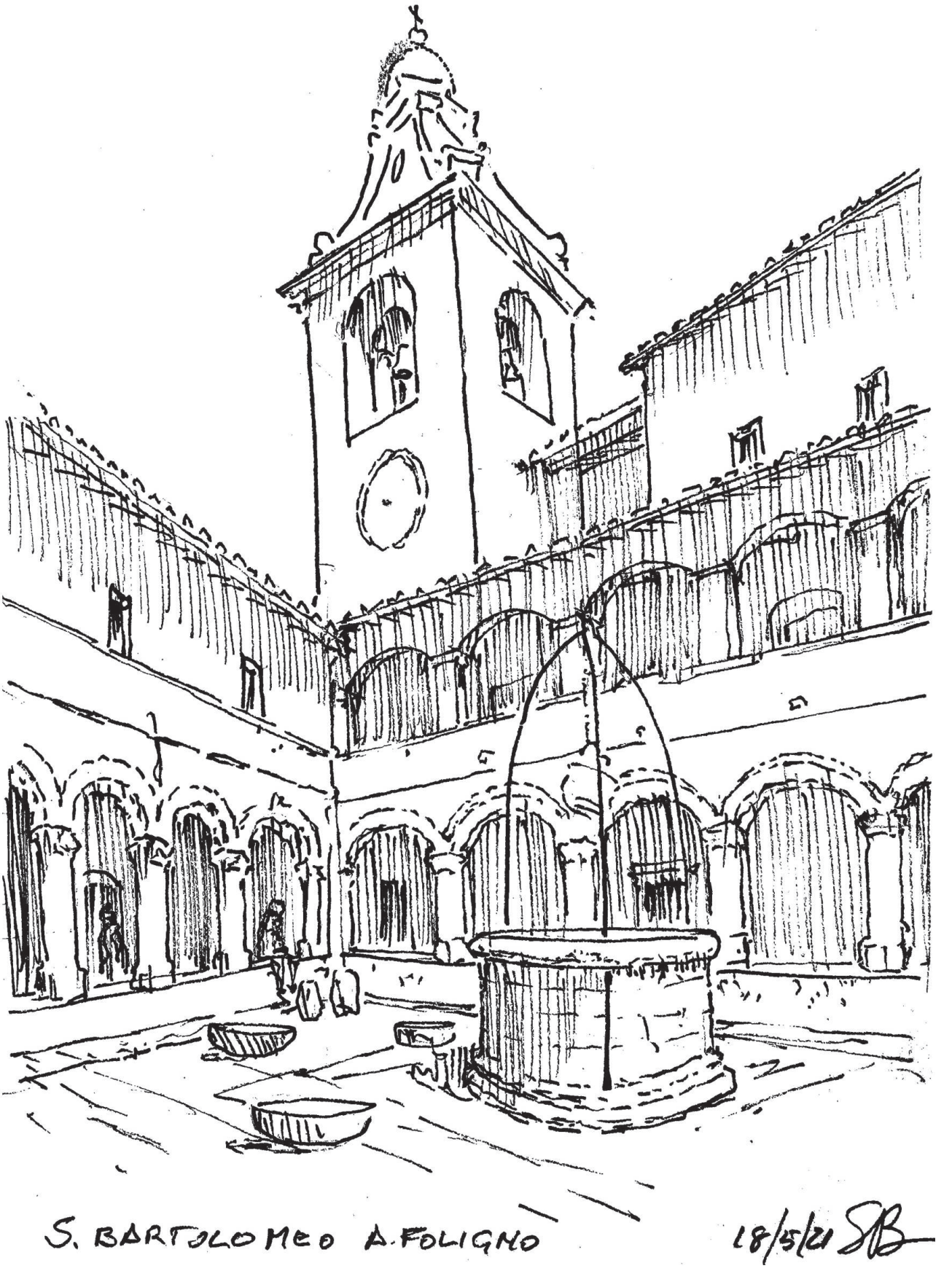
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Note

[1] The European project aims to study the legacy of the Italian-Portuguese-Spanish network of landscapes of the Franciscan Observance by attempting to complete the catalogue and study of the Order's settlements. The research has interdisciplinary characteristics and takes into consideration both the tangible and intangible aspects of this heritage, starting from a micro-scale of an investigation linked to the cultural and artistic aspects (artefacts, sacred objects, manuscripts) up to the macro-scale of the architectural and landscape context (architectures, sacred spaces, cultural landscapes).

[2] In 1223 Honorius III approved the Regula. In 1228, Gregory IX allowed them to own or build chapels or oratories to continue to say mass on the movable altars used until then. In 1240 the pope ordered the transfer of the mendicant friars' settlements within the urban centres.

[3] In 1368 the Observance movement was born, founded by Paolo Trinci from Foligno, who, with a small community, retired to the hermitage of Brogliano near Foligno. The rapid spread of the reform led Pope Gregory IX to grant the friars nine convents in Umbria and, in 1380, to appoint Paolo Trinci himself as commissioner for the reformed communities.

[4] A plaque located in the portico and, today, scarcely legible, shows in Gothic characters the dates of construction of the first convent "[...] in questo luogo fu stabilito primieramente l'ordine dei minori supplici circa l'osservanza della prima regola che qui rifiorì per opera del beato Paolo Trinci [...]"; "[...] in this place, the order of minor suppliants was first established regarding the observance of the first rule which flourished here through the work of Blessed Paolo Trinci [...]" (Translated by the author) (Biondi, 1969, p. 49).

[5] The convent stands on a hill at the foot of Uppello, a fraction of Foligno on the road that leads to Sassovivo; it is called Marano because, in the surroundings, there is a water source called Fonte Marana.

[6] As evidence of how close the faithful have come to the chapel of the Holy Sepulcher of San Bartolomeo, on the external perimeter, there are numerous inscriptions made with devotion by the visitors.

[7] The singular monument is a faithful reproduction based on the Trattato delle piante et immagini dei sacri edifici di Terrasanta (Treatise on Plants and images of the sacred buildings of the Holy Land) by Fra Bernardino Amico da Gallipoli, published in Florence in 1609.

[8] The earthquake in question is probably that of January 13, 1832, with a magnitude of 6.43 near Foligno, followed a few years later by the earthquake of February 12, 1854, with a magnitude of 5.57 near Bastia Umbra.

[9] These environments were restored and re-functionalized in 2006 and equipped with services and furnishings.

[10] The analyses and graphic restitutions were deepened with a master's degree thesis in architecture by Michela Cabiddu, entitled The Convent of San Bartolomeo in Foligno: survey and documentation for the conservation of the complex (Supervisor: Prof. Stefano Bertocci; co-supervisors: Proff. Giovanni Minutoli and Federico Cioli).

Sketch of the cloister of the convent of San Bartolomeo. Drawing by Stefano Bertocci