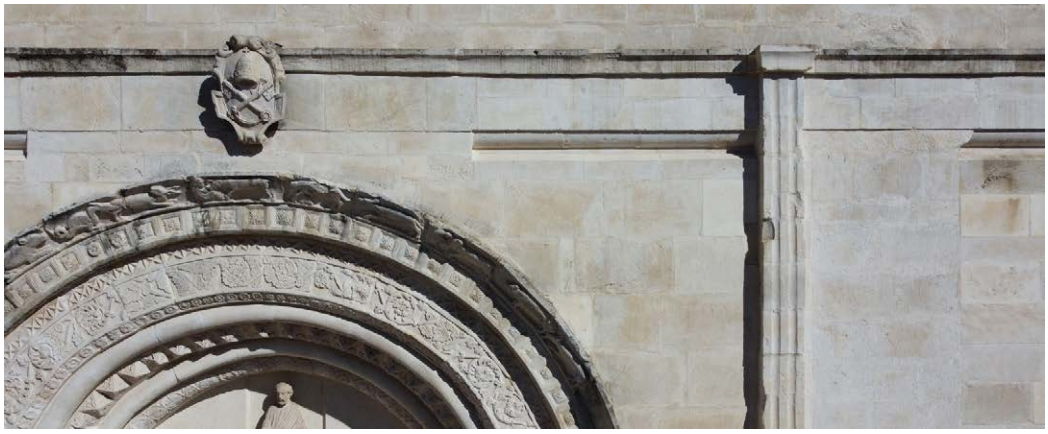
Survey and critical analysis of the church of S. Pietro a Coppito in L'Aquila

Stefano Brusaporci
Luca Vespasiano
Pamela Maiezza

Abstract

Starting from an integrated architectural survey, which uses synergistically multiple integrated digital technologies, the study proposes a reading of the church of S. Pietro a Coppito in the city center of L'Aquila. The image offered by the church nowadays is the result of a heavy restoration of the 20th century, that uncritically destroyed the pre-existing Baroque church, in an attempt to rediscover the medieval one largely destroyed by earthquakes and transformations in historical continuity. For this purpose, it was first necessary to determine which spatial elements were part of the authentic building and which were added in the restoration. In this sense, were fundamental the survey carried out and the subsequent analyses conducted on it, in particular the metrological analysis, which opens up new hypotheses on the chronology and the process of transformation of the ancient building.

Keywords
digital survey, restoration, metrological analysis, architectural heritage



Detail of the facade of the church of San Pietro a Coppito. Elaboration by the authors.

doi.org/10.3280/oa-1180-c520

Introduction

The current configuration of the church of S. Pietro a Coppito (St. Peter's Church) in L'Aquila (fig. 1) is the result of a complete redesign of the building – both of the interior spaces and façades – carried out by the Superintendent Mario Moretti in 1969-71, as part of a restoration campaign that involved various churches in the city and the L'Aquila area [Moretti 1972, pp. 168-172; Moretti 1971, pp. 682-689]. In particular, the Baroque church built after the 1703 earthquake, which had a unity of layout and image, was demolished in order to propose a medieval configuration, according to an interpretation based on the study of architectural features, on comparative parallels with other churches in L'Aquila and above all on the basis of the fragmentary remains that gradually were discovered during the demolition work. The analysis of the current monument, together with the historical study of the events that make up the history of the building, aid to understanding the historical and aesthetic values of the architectural signifier, on the basis of a historical-critical method in which all historical events, both distant and recent, participate in the image of the monument in its present instance.

Fig. 1. Areal view of the church and the square of San Pietro a Coppito. Elaboration by the authors.

The current church

The layout of the church presents a main nave followed by an articulated system, consisting of two parallel transverse spaces, composed by a kind of transept that expands with wide arches into a presbytery. Three polygonal apses open onto the end wall (fig. 2, 3, 4).
The main nave, covered with trusses, is not in axis with the rear part of the church [1]. The nave is flanked on the right by a small aisle, also with a wooden roof. There isn't a symmetrical aisle on the left side. This secondary nave, which has a significantly lower roof height than the nave – excessive compared to the traditional height ratios between the naves of churches – does not continue into the transept, and has a start set back from the façade. Based solely on the observation of the characteristics of the quadrangular ashlar stone pillars separating the main nave from the side aisle, Moretti judged this space to be pre-existing with respect to the presbytery area [Moretti 1972, p. 682].

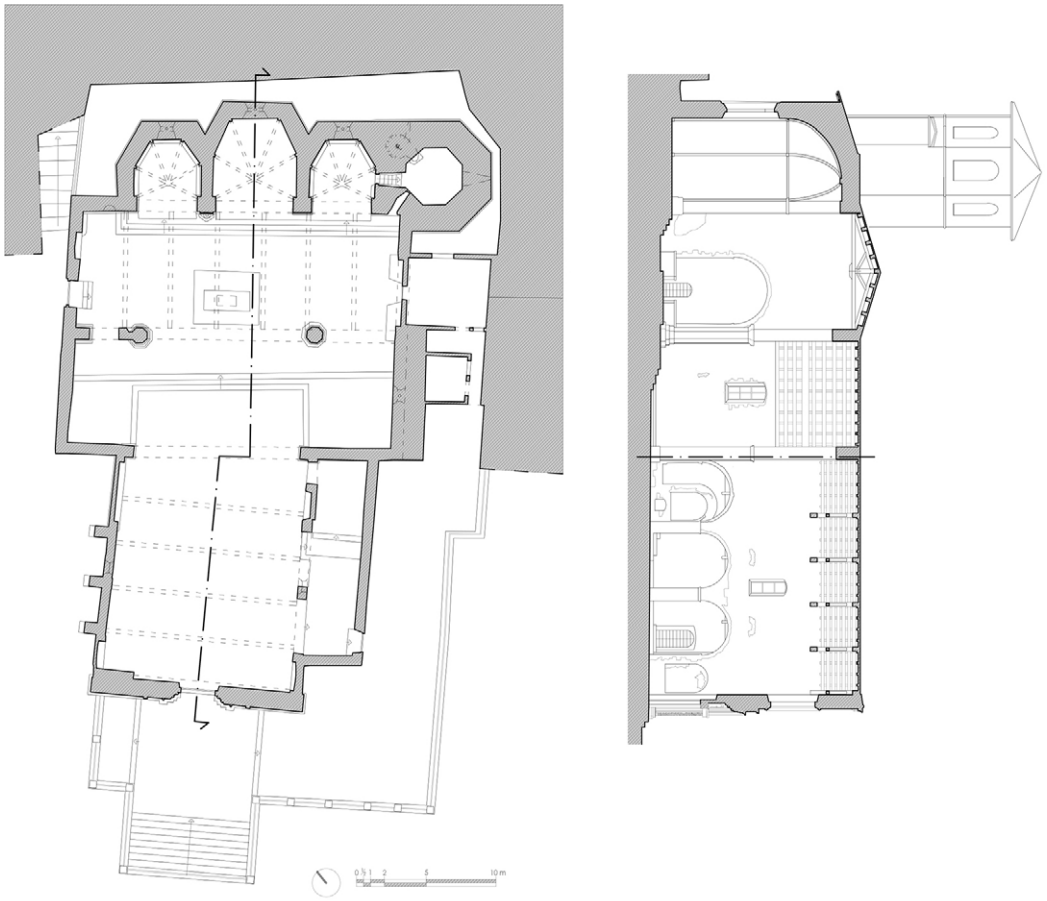


Fig. 2. Plan and longitudinal section of the church. Elaboration by the authors.

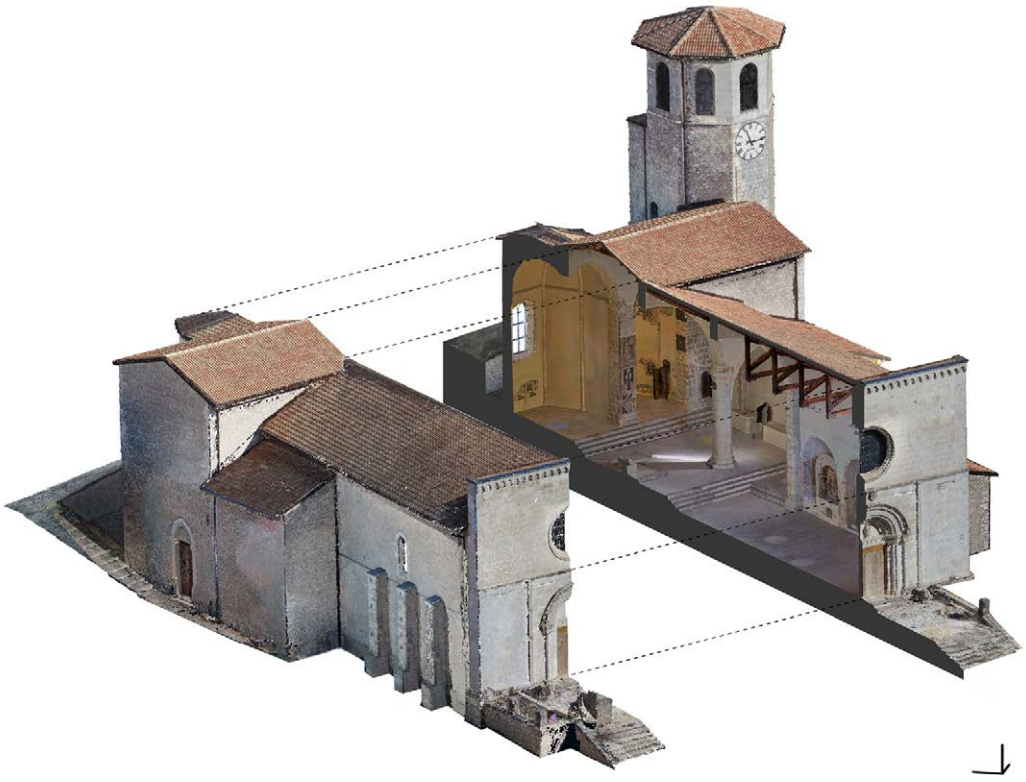


Fig. 3. Axonometric cross-section of the church. Elaboration by the authors.

Fig. 4. Orthomosaic of the main facade. Elaboration by the authors.

A wide arch connects the main nave to an articulated space, which could be perceived as a kind of double transept. This, in fact, consists of two parallel bodies, orthogonal to the main nave, divided by arches on octagonal pillars: specifically, a central round arch, a pointed arch on the right, while on the left a half-arch with a key resting on the pillar. The two transversal spaces also differ in floor level, the second being raised on steps above the first, so that, also due to the presence of the altar, to all intents and purposes it offers itself as a presbytery. Antonini describes the first space as a sort of "antitransept", thus interpreting the second as a transept [Antonini 1999, pp.30-51]; the articulation of the roofs challenges this reading of the spaces: in fact, the first area is covered in continuity with the nave, with pitches sloping down towards the lateral façades. In this way the roofs emphasise the axiality of the main

entrance and suggest a perception of this "antitransept" as a partial extension, evoking an articulation of the church with three naves, just as Moretti intended. The second transversal body, which could be the actual transept, has roofs at a higher level than the rest of the church, with trusses and tympanum facing the lateral fronts and thus roughly orthogonal to the previous ones, rising on the 'antitransept' by 2 m at the ridge, but more than 5.5 m at the eaves. There is also an entrance, on the left front of the church, with a pointed arch portal attributable to the 13th century, referred to the Burgundian manner by Gavini [Gavini 1980, v.3, p.207]. Three polygonal extrados apses are on the back wall, similar to those in the churches of S. Giusta and S. Domenico. This presbytery space clearly offers different and contradictory architectural readings.
Finally, the octagonal, four-storey, stone ashlar bell tower with belfry is of particular interest.

The architectural survey

The integrated digital survey utilized various tools, including TLS (Faro Focus 70), drone-based Structure from Motion (SfM) with a DJI Mini 2, and Simultaneous Localization and Mapping (SLAM) employing a Leica BLK2GO. The combined use of these technologies was planned according to the different spatial areas of the building. Specifically, the drone photogrammetric survey was employed for the exterior to effectively capture the roofs and immediate context, such as the square and adjacent buildings, as well as the alleys delineating the other sides of the church area. TLS was used to capture the extensive hall spaces, creating a total of 15 stations, including 2 outside the hall to connect the point cloud obtained with that processed through drone-based SfM.
SLAM was used for narrower spaces, including the bell tower accessible from the right side apse, the sacristy rooms on the eastern side accessible from the transept, and the lower portion of the external side of the apses, which, being below street level, had poor visibility from aerial drone points. In all this cases, acquisitions were made to ensure sufficient overlaps between the point clouds resulting from SLAM and those obtained with other techniques.
Overall, ten point clouds were created: one from TLS related to the hall interior, three from SLAM related respectively to the bell tower, sacristy, and external part of the apses, and six

Fig. 5. The facade before the restoration of the years 1969-71.

from the drone. The latter included a less defined point cloud covering the entire building and immediate surroundings, and five more detailed point clouds: one for each of the four sides, one for the bell tower, and one for the roof. These last five point clouds, besides their specific object, are partially extended to adjacent areas to create the necessary overlaps. All obtained point clouds were linked and aligned using CloudCompare software. Also, a photographic survey has been carried out using a 360° camera and a traditional one [Docci, Maestri 2009; Bertocci, Bini 2017; Gil-Piqueras, Rodríguez-Navarro 2023].

The 18th-century church

As mentioned above, the just described configuration is the result of a transformation of the pre-existing 18th-century church, itself a modification of stratified pre-existing structures, built after the 1703 earthquake that struck the city of L'Aquila. The reconstructed church (fig. 5), which was similar to the church of S. Marco in L'Aquila both in layout and late Baroque Corinthian decoration, had a single nave, consisting of a first body with side chapels, followed by a slightly wider space evoking a transept (fig. 6), which in turn led into the presbytery, consisting of a large semicircular apse. This spatial sequence was covered by barrel vaults, lunettes with large windows, with a dome on the cross vault. The plan is documented to us by Spagnesi, who publishes the internal profile [Spagnesi 1980, pp.495-518] (fig. 7). The

Fig. 6. Internal view of the church from the presbytery to the nave before the intervention of the years 1969-71.

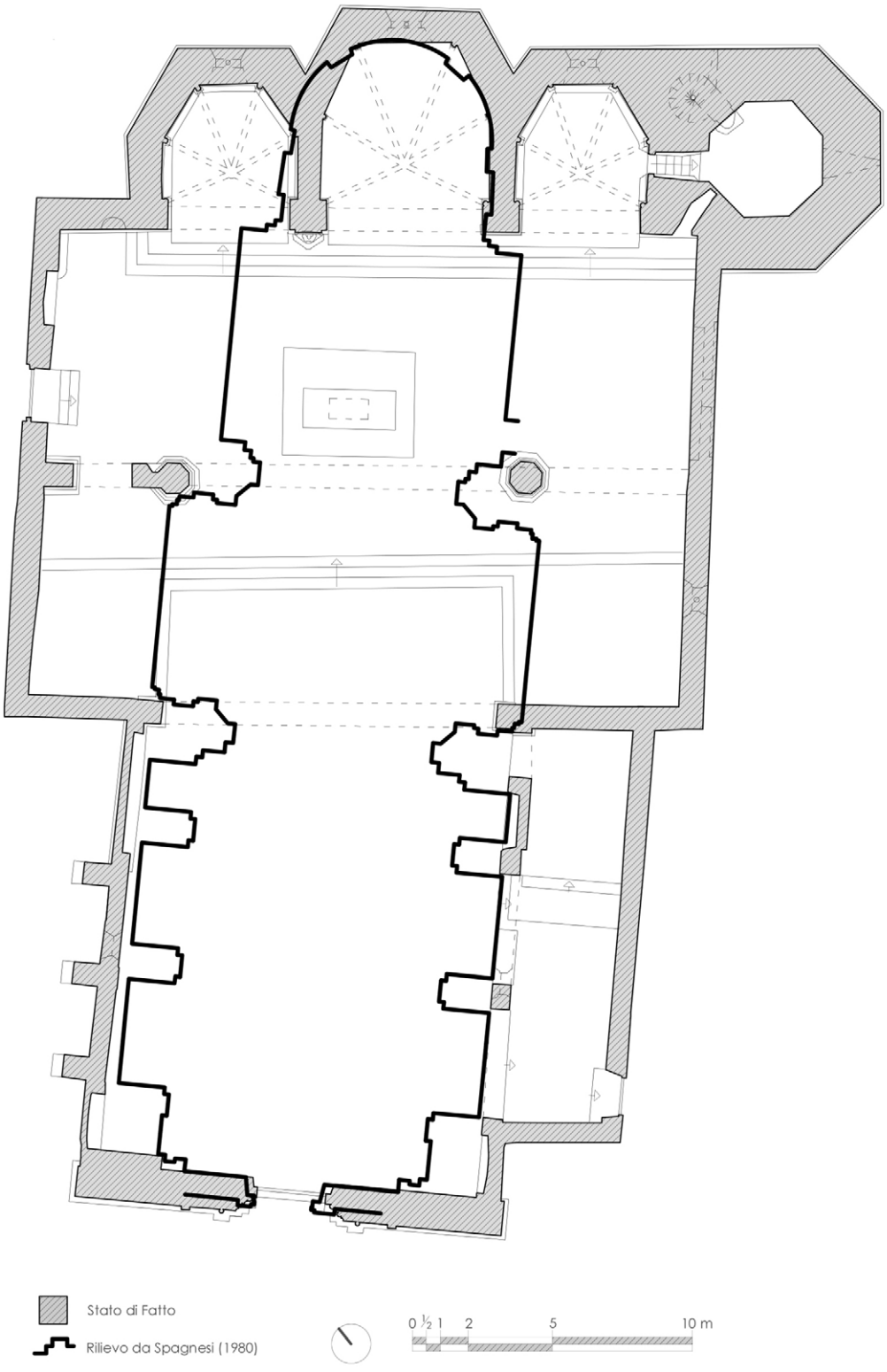


Fig. 7. Overlap in plan between the current survey and the profile published by Spagnesi (1980). Elaboration by the authors.

external volumes were also different, with a single central apse with a semicircular body, a square drum on the cross vault and buildings leaning against each other on the right and left fronts. The façade, of 19th-century character, was on two levels with a design of cornices and pilasters, and a crowning tympanum. The reconstruction process of the church can be

ascribed to a period from the 18th century, to which the baroque layout of the church can be attributed, to the 19th century, especially for the main façade. Spagnesi traces the design of the Baroque S. Pietro back to neighbouring cultural areas, and in particular to the late Roman Mannerism and the classical language of Fuga and Vanvitelli, in their Roman and Neapolitan experiences. In this context, the reconstruction after the 1703 earthquake should not be referred to the theme of the "restoration" of medieval churches, but rather to the construction ex-novo of structures with a longitudinal plan - albeit in this case on the ruins of a previous church - and which finds in S. Filippo the L'Aquila forerunner, a line to which S. Maria del Suffragio and S. Marco can also be traced [Spagnesi 1980].

The 20th century restoration

Moretti's restoration erased the eighteenth-nineteenth-century church, characterised by a coherent finished figuration, on the assumption that the Baroque intervention was a superfetation superimposed on the pre-existing medieval church, and that by removing it, it was possible to bring the previous church back to light. This critical attitude, hostile to the Baroque and aimed at recovering "medieval authenticity", whatever it might mean, had a certain diffusion at that time [Miarelli, Mariani 1979, pp. 120-121: Spagnesi, Properzi 1972, pp. 212-215; Pezzi 2005], and was supported by a significant part of the local community [Miarelli, Mariani 1979, p. 71]. The lacunose theoretical-methodological reasons behind Moretti's action are explicitly defined in his essay dedicated to the work carried out on the Basilica of Collemaggio, where he speaks of "the reacquisition of an ancient medieval structure of pre-eminent value, not only for 'stylistic authenticity', but for 'high historical-religious reasons'" [Moretti 1972, p. 9]. With reference to S. Pietro church, he denigrates the 19th-century church according to a criterion of value based on age, and where, in order to support the reasons for the restoration, he alternates between questions of static appropriateness and aesthetic considerations [Moretti 1972, p. 172]. But perhaps even more significant is Moretti's enunciation of the "right to authentically cultural, rather than artistic, restorations" in the case of the restoration of Collemaggio [Moretti 1972, p. 10]. Therefore, the motivation behind the restorations appears to be essentially cultural.

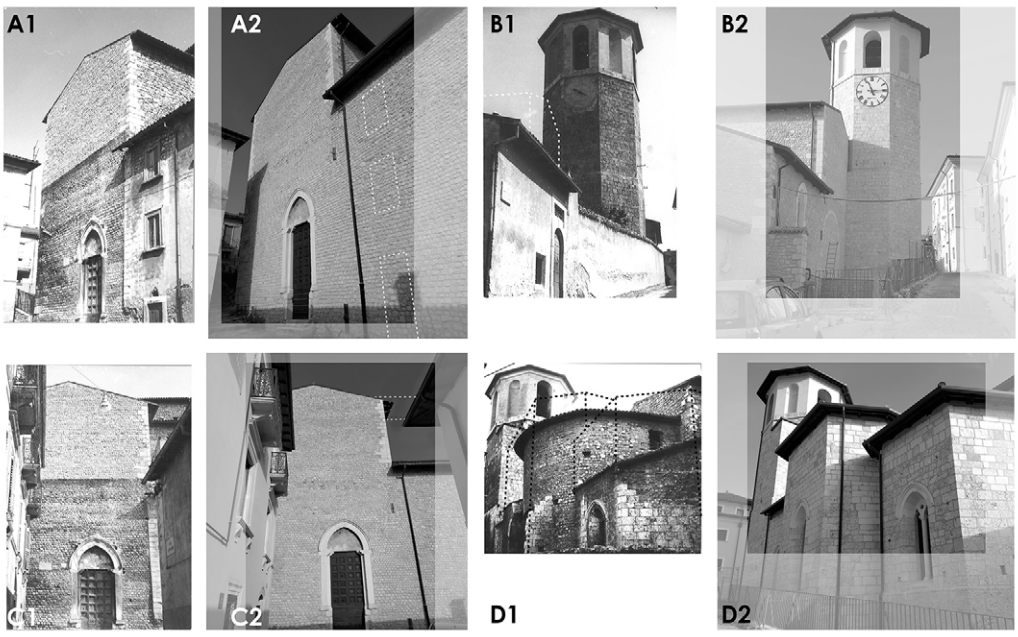


Fig. 8. Comparison before (1) and after (2) the restoration of the years 1969-71, with outlined changes in shape and volume: the western façade (A); the eastern façade (B); the transept cover (C); the apses (D).

Moretti demolished the decorative apparatus of S. Pietro, the vaults and roofs, the façade and the 18th-century masonry, in search of traces of the pre-existing structures, and on the basis of these, he reconstructed an interpretation of what might have been a medieval configuration of the church - hypothetically referable to the 14th century, given the numerous transformations undergone over time - and on the whole disdaining the ex-novo design of 18th-century S. Pietro. Moretti intended his work as a sort of "anastylosis", but in fact based on rare clues and on a stylistic design approach, empirically conducted on site. (fig. 8).

Critical analysis of the building

The façade, redefined by Moretti on the basis of the recovered elements, may be reminiscent of the front of S. Maria Paganica, dated 1308, but here numerous elements are the result of re-interpretation by Moretti.
The octagonal pillars of the presbytery recall those of S. Giusta and Collemaggio, and the similar ones incorporated in the masonry at S. Giuseppe Artigiano, formerly S. Biagio di Amiterno, which can be traced back to the second half of the 13th century [Antonini 1999, p. 100]. The 13th century side portal of the transept has already been mentioned. Extradosed polygonal apses - also with reference to the wall equipment - can be linked to those of S. Silvestro and the ancient S. Marciano, but also to S. Giusta and S. Domenico, the latter, however, with corner pilasters. A further parallel with S. Domenico is the presence of internal ribs. In general, this is a theme that may also include churches with non-extradosed apses such as S. Flaviano and the aforementioned S. Giuseppe Artigiano. Therefore, the apses could be ascribed to a period after the earthquakes of 1315 or 1349.
A further element of analogy with S. Silvetro can be traced between the octagonal bases of the towers. Another similar tower is that of Collemaggio, the latter ascribed to the first layout of the basilica and therefore referable to the second half of the 13th century [Redi, 2006]. It should be noted how a continuous base runs unified between the apses and the tower of S. Pietro, denouncing the unity of the intervention. With reference to the masonry equipment, the upper parts of the walls have been rebuilt, and therefore almost nothing can be said about the level of the medieval roofs. The so called 'apparecchio aquilano' of the transept and anti-transept is similar to that present in Collemaggio, and therefore can be dated to the end of the 13th century [Brusaporci 2006]. However, historical photos certify the accurate mimetic reconstruction of the wall textures carried out by Moretti. The wall structure of the side nave is irregular in drafts and therefore the elevation of this building, as it stands today, could have been built after the 14th century [Brusaporci 2007].
Those who have attempted to study the church, even when it still presented a baroque facies, have not been able to avoid hypothesizing what the medieval configuration might have been. A particular topic of discussion is whether this body had three naves, but the question does not appear to have been resolved. Gavini's opinion is that the church had three naves [Gavini 1980, v.2, p.206], therefore similar to S. Giusta. Moretti also appears to be of the same opinion, in particular focusing attention on the characteristics of the pillars that separate the main nave from the nave [Moretti 1971, p. 682].
Without prejudice to the fact that speaking of a 'medieval church' tout court appears incorrect, as the numerous irregularities reveal a complex history of the building, the architectural survey, conducted on the occasion of this study, can provide elements for reflection.
In the first instance, from the analysis of the thicknesses and wall alignments, a strong lack of homogeneity emerges in the architectural organism, which reveals the heavy alterations undergone by the factory over the centuries, the reconstructions and finally the restoration. On the contrary, the metrological analysis suggests elements of particular interest (fig. 9). As regards the double transept, as a whole, it is possible to find the use of the so-called Lombard foot of 0.2850 cm: the room measures 60x80 feet, the width of the door on the left front is 6 feet, the access compartment closed on the tower 2.5 ft. The Lombard foot is widespread in central-southern Italy, and persists in the Frederick era, certainly already found in the nearby Duchy of Spoleto [Salvatori 2006, pp. 18-19].

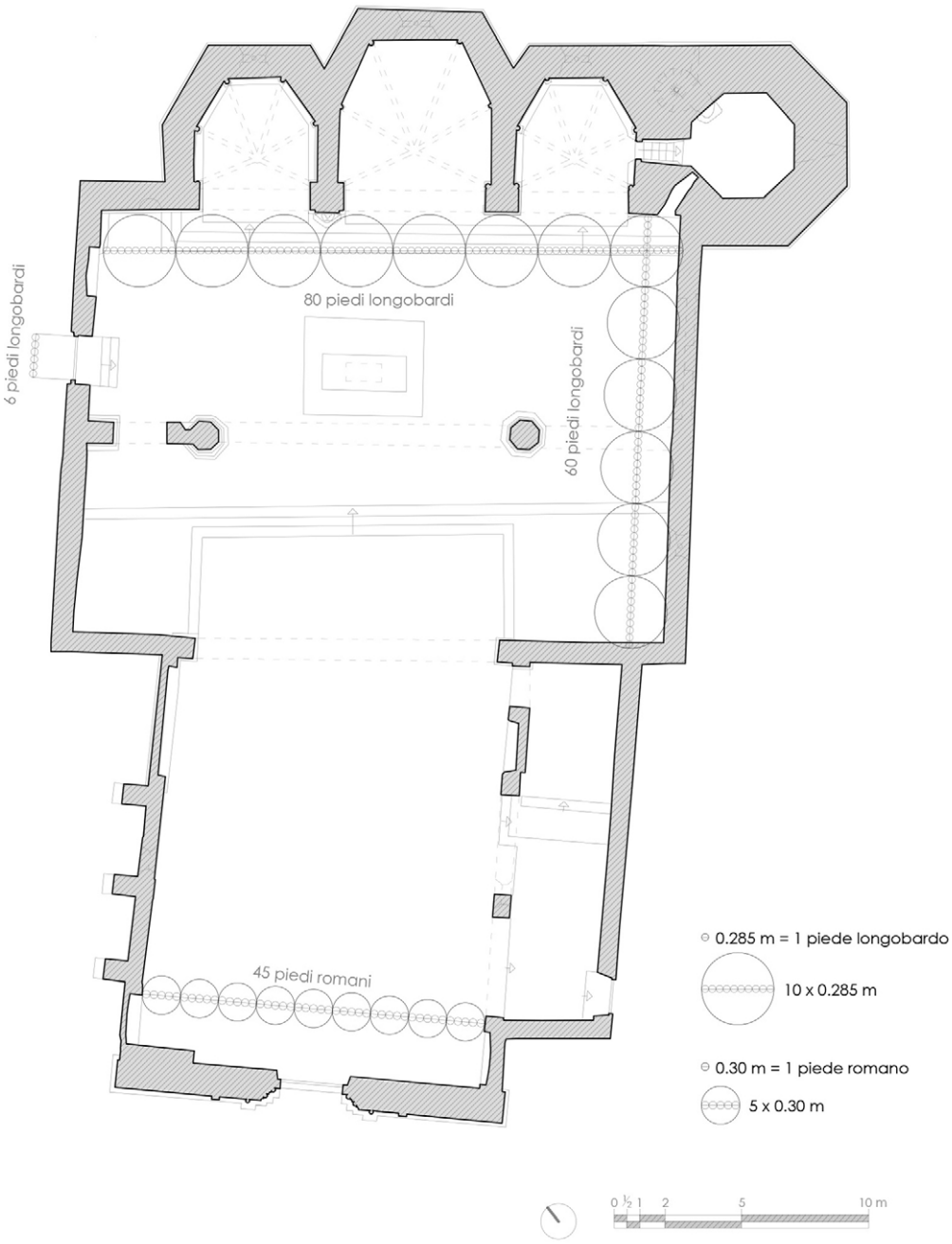


Fig. 9. Metrological analysis. Elaboration by the authors.

In the main nave, however, it is 45 Roman feet wide, a measurement also widely used in the post-classical era, especially in Benedictine systems, up until the 13th century [Brusaporci 2007]. In particular, it is a 0.30 m foot, slightly longer than the traditional 0.2948 m.
As regards the apse area, the 0.30 m foot appears to occur again, also accompanied by slightly larger units of measurement, tending towards 0.315 and 0.333 m, units referable to the Cistercian culture [Brusaporci 2011].
In light of these considerations, and on the basis of the considerations on the architectural characteristics previously expressed, it can be hypothesized that the transept layout can be referred to a first phase, prior to the foundation of the city. This was followed by the expansion of the church, with a probable rotation of the axis by 90 degrees, with the construction of the part facing Via Roma (mid-13th century) and, almost simultaneously, or in a slightly later phase, the construction of the apses (14th century) (fig. 10).

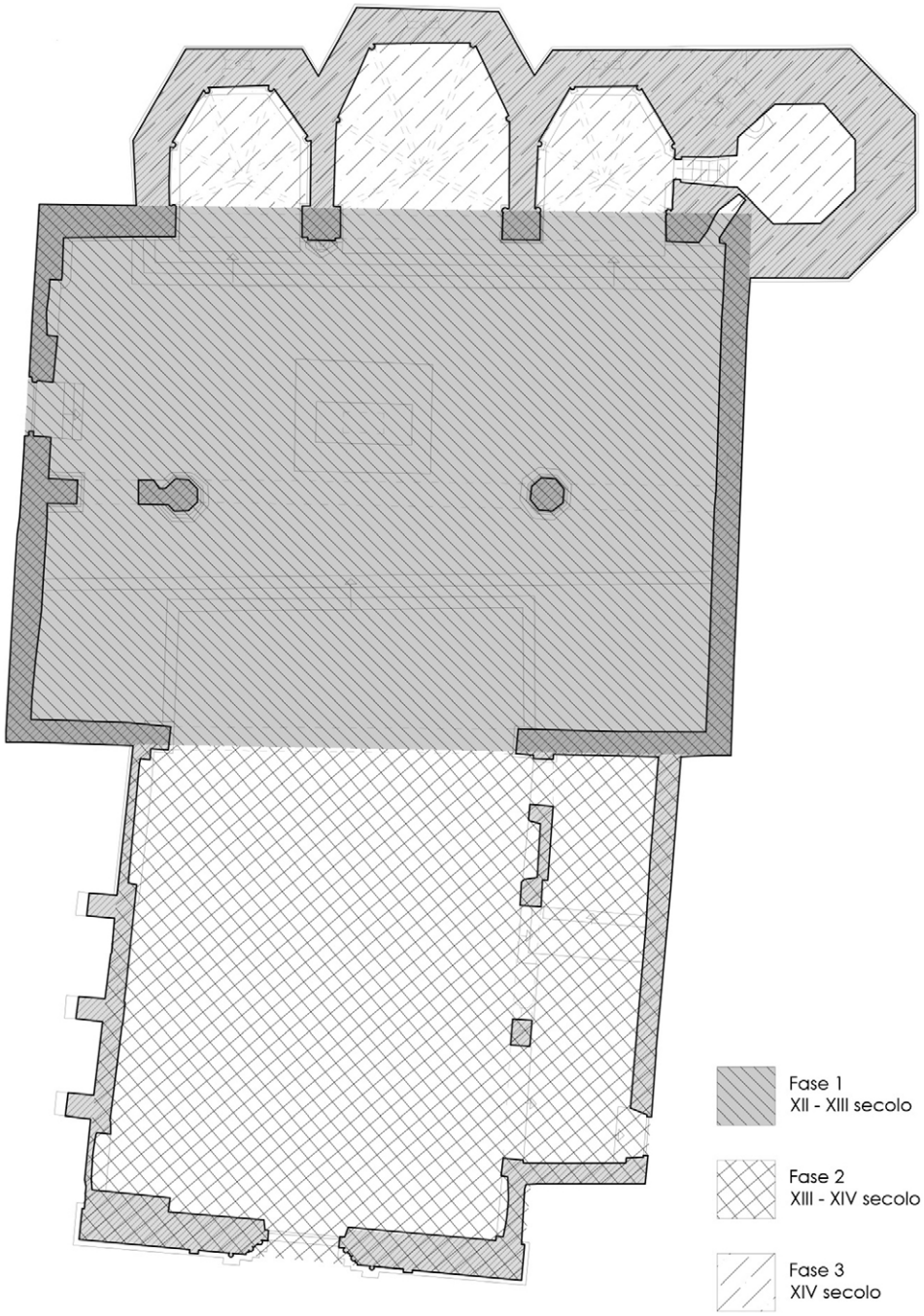


Fig. 10. Main construction phases of the ancient building. Elaboration by the authors.

Conclusions

The church of S. Pietro has always maintained a leading role in the urban context, both in terms of size and characteristics, and for its location on the large square that opens onto the main historical axis. Of particular interest are the important transformations over the centuries, starting from configurations attributable to before the foundation of the city, up to the medieval ones, then to the Baroque one, and to the twentieth-century redesign. Through the architectural survey, as a critical historical process of knowledge of the artefact, the present study aims to delve into the processes of modification and stratification, therefore offering a key to understanding the building, which has its main conformational characteristic

in its transformations, so as to offer a key to understanding the historical and architectural values of the architectural signifier (fig. 11).

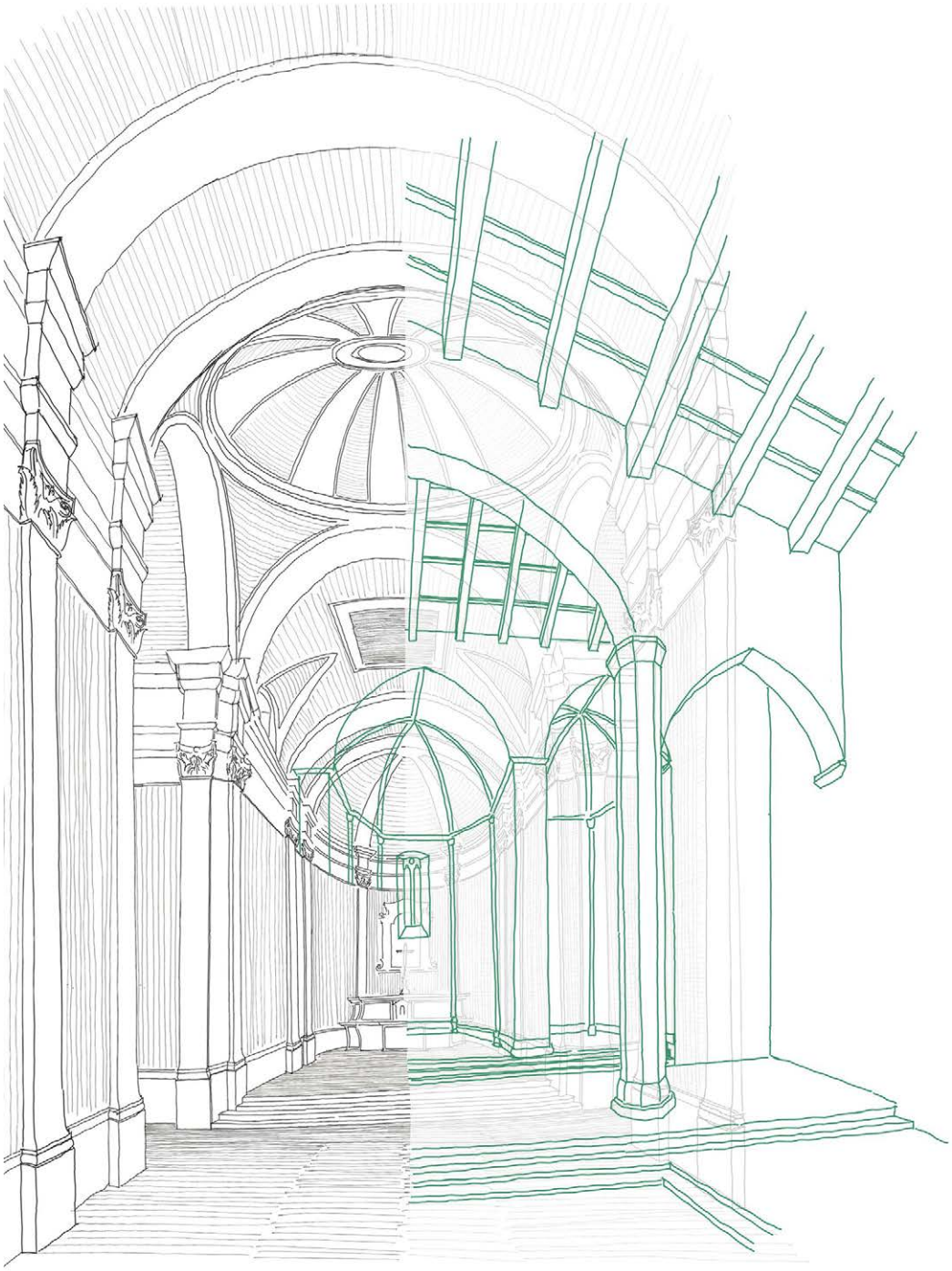


Fig. 11. Perspective view from the nave towards the presbytery of the baroque configuration of the church; overlapped (in green) the current state; note in particular the rotation of the main axis and the variation in the height of the transept. Elaboration by the authors.

Acknowledgements

Although the paper was conceived as unit, Stefano Brusaporci is the author of the sections 'Introduction' and 'Conclusions'; Pamela Maiezza of the sections 'The current church' and 'the architectural survey'; Luca Vespasiano is the author of the sections 'The 18th-century church', 'The 20th-century restoration' and 'critical analysis of the building.

Credits

We acknowledge the support of the PNRR ICSC National Research Centre for High Performance Computing, Big Data and Quantum Computing (CN00000013), under the NRRP MUR program funded by the NextGenerationEU and the Project "SICURA – CASA INTELLIGENTE DELLE TECNOLOGIE PER LA SICUREZZA CUP C19C20000520004 – Piano di investimenti per la diffusione della banda ultra larga FSC 2014-2020".

Notes

[1] Some authors have focused on the hypothetical symbolic meaning on the off-axis between the main nave and the apse spaces, in particular Antonini [Antonini 1999, p.34]

References

Antonini, O. (1999). *Architettura religiosa aquilana*. L'Aquila: Gallo Cedrone.

Bertocci S., Bini M. (Eds.) (2017). DISEGNARECON. The Survey for the Restoration of Historical Heritage, Vol. 10, No. 18.

Brusaporci, S. (2006). *Il disegno dell'apparechio aquilano nell'architettura religiosa dal XII al XIV secolo*, in R. M. Strollo (Ed.) *Disegno e conoscenza*. Roma: Aracne, pp. 75-92.

Brusaporci, S. (2007). *Modelli interpretativi dell'architettura medievale*. L'Aquila: Arkhé.

Docci, M., Maestri, M. (2009). Manuale di rilevamento architettonico urbano, Roma-Bari: Laterza.

Gil-Piqueras, T., Rodríguez-Navarro, P. (Eds.) (2023). DISEGNARE CON. Architectural and Arcaeological Heritage. Workflow and Standards for the Survey, Vol. 16, No. 30.

Gavini, I. C. (1980). *Storia dell'architettura in Abruzzo.* Pescara: Costantini.

Miarelli Mariani, G. (1979). *Monumenti nel tempo.* Roma: Carucci.

Moretti, M. (1972). *Restauri d'Abruzzo (1966-1972)*. Roma: De Luca.

Moretti, M. (1971). *Architettura medievale in Abruzzo (dal VI Al XVI secolo).* Roma: De Luca.

Redi, F. (2006). *Santa Maria di Collemaggio. Archeologia di un monumento*. In L. Giardini, M. Pezzuti & F. Redi (Eds.) *Celestino V e la sua Basilica.* Cinisello Balsamo: Silvana Editoriale, pp. 71-133.
Salvatori, M. (2006). *Manuale di metrologia.* Napoli: Liguori.

Spagnesi, G. (1980). *L'Architettura barocca all'Aquila,* in *Atti del XIX congresso di storia dell'architettura*, L'Aquila: Marcello Ferri Editore, pp. 495-518.

Authors
Stefano Brusaporci, Università degli Studi dell'Aquila, stefano.brusaporci@univaq.it
Luca Vespasiano, Università degli Studi dell'Aquila, luca.vespasiano@univaq.it
Pamela Maiezza, Università degli Studi dell'Aquila, pamela.maiezza@univaq.it

To cite this chapter: Stefano Brusaporci, Luca Vespasiano, Pamela Maiezza (2024). Survey and critical analysis of the church of S. Pietro a Coppito in L'Aquila. In Bergamo F., Calandriello A., Ciammaichella M., Friso I., Gay F., Liva G., Monteleone C. (Eds.). *Misura / Dismisura. Atti del 45° Convegno Internazionale dei Docenti delle Discipline della Rappresentazione/Measure / Out of Measure. Transitions. Proceedings of the 45th International Conference of Representation Disciplines Teachers*. Milano: FrancoAngeli, pp. 973-986.

Isbn 9788835166948