

SURVEYING OF A CULTURAL LANDSCAPE THROUGH DOCUMENTATION OF ITS TANGIBLE AND INTANGIBLE COMPONENT: THE SANCTUARY OF LAS LAJAS

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Abstract

Every cultural landscape requires documentation that satisfies the need to recognize and identify it, seeking to understand the multiple aspects that have shaped its conformation and persistence over time.

The Sanctuary of Las Lajas in Colombia brings together various aspects related to potential exceptional universal values, which require a methodological approach that includes strategies to document both the tangible architectural and landscape heritage, as well as its intangible aspects.

Keywords

UNESCO, Colombia, architectural survey, visual research, architecture tangible and intangible

1. Introduction to documentation

Documentation, conceived as a scientific narration form, becomes an integral and essential component of reality. Each landscape requires a narrative to satisfy the need to be recognized and identified that aims to understand the multiple aspects that have determined its formation and persistence over time. In this case, graphic narration has the same power as storytelling, which also allows to isolate a topic and easily make it an object of in-depth study (Baricco, 2021). It is important to reflect on the fact that any event or reality truly exists only when it is represented, otherwise it would risk being ignored or considered non-existent (Rossi, 2022). This knowledge path, developed with several methods and instruments, is transformed into representation the moment it is separated from the subject, and manifests itself as an event that others can observe in accordance with the documentation and representation principles.

The need to distinguish data to establish appropriate forms and methods to acquire it, outlines workflows, expected objectives and documentary results, theoretically incomplete but integrable, according to a model that aims to create an open, verifiable, and implementable

system at any time. Hereby, the documentation process is configured as a scientific, continuous, and dynamic path of acquisition and knowledge, contributing to a deeper and more significant comprehension of the analyzed subject.

When faced with the documentation of a cultural landscape, it could be useful to adopt an inclusive approach that allows establishing direct contact with the heritage, aware of the changing meaning that it can gradually assume. On the other hand, the purpose of heritage is to provide an action/opportunity to 'disconnect from the present' (Panofsky, 1955), 'have a reprieve, an abeyance' (Brandi, 1963), or 'create an element of selflessness that puts one in relation to contemplation' (Eliot, 1919).

Although the personal connection with cultural heritage, as a direct experience, is difficult to replace with other forms of knowledge, representation is entrusted with the role of transforming documentation from a simple act of registration to a means to promote understanding and a continuous dialogue with our collective past. The achieved result allows the research reality to appear in our present, as an extraordinary ambassador and representative of a time already lost.

2. The case study - literature review

The selection of a representative case to address the creation of an inclusive and integrated documentation implies to prefer a multifaceted cultural landscape that aspires to a candidacy before UNESCO. Las Lajas Sanctuary, located in Colombian territory on the border with Ecuador, represents a site characterized by a diocesan management, very interested in receiving proposals and expressions of interest from the academic field that suggest the need for a

created to house the families of the workers involved in the construction of the last Sanctuary. Under the direction of the Regional Autonomous Corporation of Nariño Corponariño, the political-administrative limits have been overstepped to unify the environmental landscape section. This natural aspect resides in the orographic system, characterized by the canyon dissecting slopes, made in this case by the Guátara River, and formed by volcanic material such as ash, sand and pyroclasts, and sculpted in andesite-dacite type rocks. Morphologically, these shores represent the

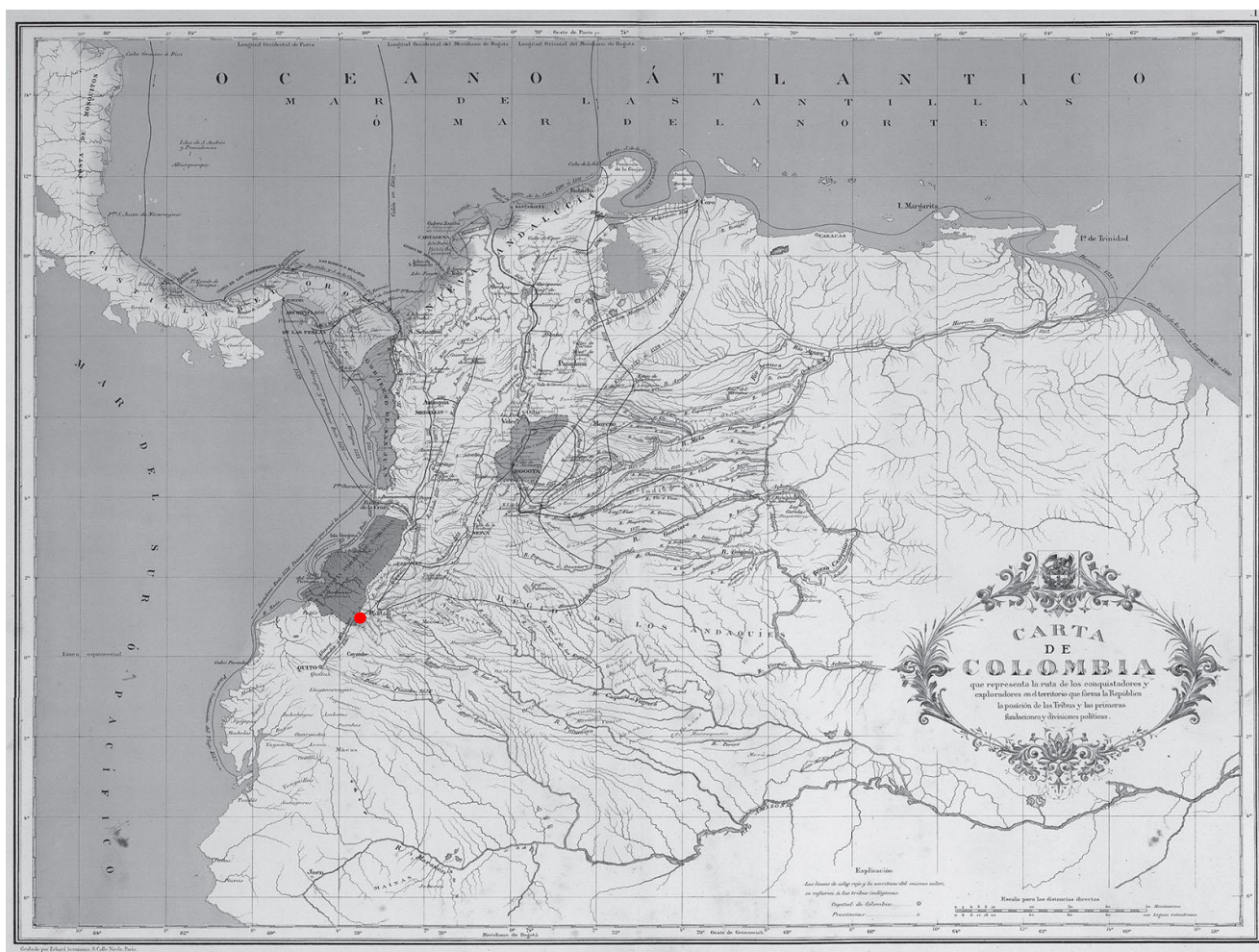


Fig. 1: "The Routes of Spanish Conquistadors and Explorers in Colombia" by A. Codazzi, 1889

knowledge base of the material and immaterial components, useful to determine necessary actions (Colombia Travel, s.d).

The *Santuario de Nuestra Señora de Las Lajas* is in a small area of the municipality of Ipiales, approximately seven kilometers south, in the Nariño department. The limits correspond to the township’s political-administrative delimitation,

most unstable area due to the steep slope, a criticism no less important given the current reality of climate change. In this context, the active processes of mass removal, landslides, and collapses, influenced by the decrease in the base level of the river are evident (Fig. 1).

A documentary collection to be proposed to UNESCO must consider a bibliographic review

aimed at identifying the landscape within the geographical/cultural region to which it belongs, establishing connections with both the Colombian and Ecuadorian contexts, given its historical-

cultural proximity to Ecuador (Barbosa Ascanio & López Barrientos, 2012); (Ferro Medina, 2004). Therefore, this research study requires a categorization and description of the most

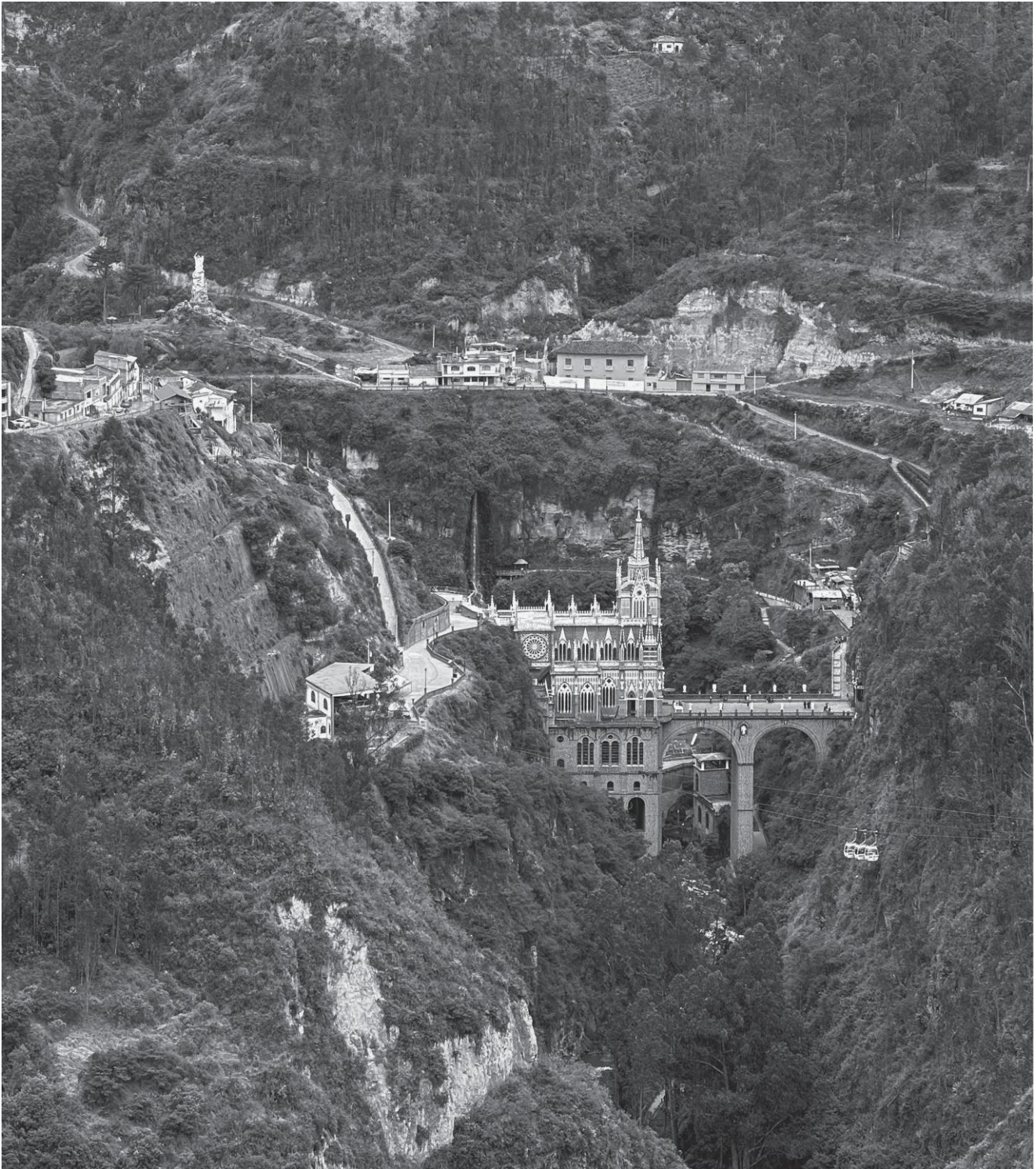


Fig. 2: Santuario de Las Lajas. (Photo by R. Lembo, 2023)

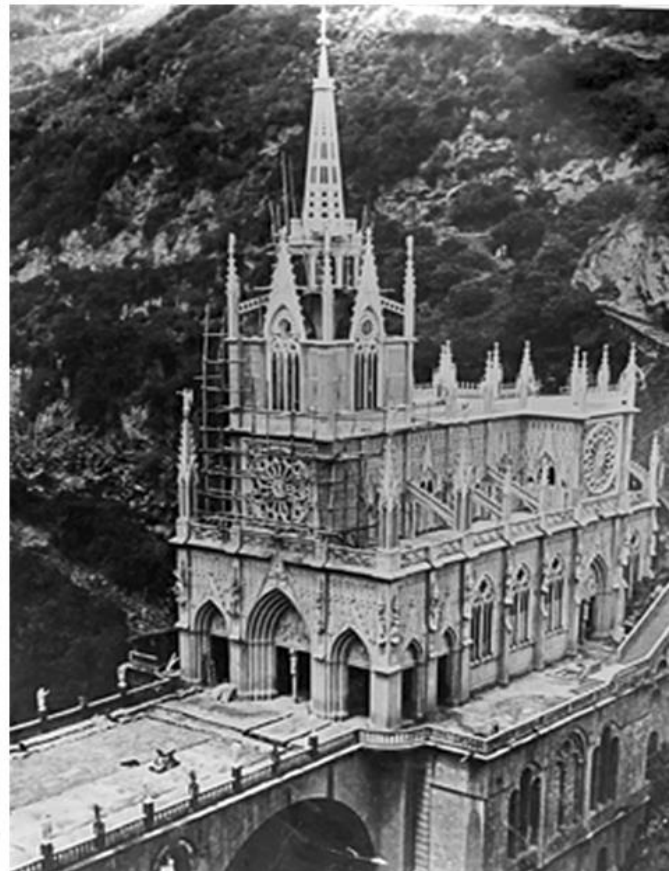


Fig. 3: Watercolor by Manuel María Paz, 1853 and historical photos, preserved in the Las Lajas's Museum

significant peculiarities, addressing topographic, hydrographic, naturalistic, and historical-cultural aspects, coming from a type of historiographic periodization beginning in the colonial era and ending with the political dualism of the 20th century between conservatives and liberals (Saldarriaga Roa, 1997).

The current state of the art mainly reveals a complex evolution of places influenced both, by the European architectural styles brought by the religious orders involved in evangelization, and by the various religious and functional needs over time (Fig. 2) (Barbosa & López, 2012); (Caballero, 2014); (Delgadillo, 2018).

The Sanctuary arises because of the legendary historical story of the appearance of the Virgin on a slab. The first phase (1581-1620) corresponds to the so-called *Gruta del Encuentro* (Chamorro Guerrero, 1996). The need to protect the site of the apparition then lead to new constructions that modified the initial configuration until reaching a progressively higher monumentality level. The hermit of 1754 was followed by the construction of a first chapel between 1795 and 1802. Subsequently, the construction of a royal temple between 1859 and 1862 paved the way for the definitive creation of the current basilica, erected between 1916 and 1949 (Fig. 3, 11, 12) (Gutierrez, 2016).

3. Objectives

The objective of this article is to create a new and unpublished graphic documentation that allows us to comprehend the different changes over time and reconstruct the life phases of the Sanctuary, until reaching its latest and current configuration, characterized by this peculiar and identifying landscape insertion (Colonnese, 2023).

More precisely, to create a documentation that expands the investigative approach to the intangible dimension of the Sanctuary, often neglected in the traditional approach, but strongly present and determined by the multifaceted contemporary use of its visitors and inhabitants (Khromova et al., 2016). We aim to explore and understand the practices, traditions and cultural elements that characterize the current experience and turn this landscape into a mystical place, contributing to delineate its relevance and meaning through the uninterrupted presence of witnesses of pilgrims in search of healing.

Another objective is to contextualize the compositional models used by the latest designers

within the stylistic influences related to the neo-Gothic style in Colombia (Checa-Artasu & Niglio, 2016), dedicating a specific focus to the Italian architect Giovanni Buscaglione, who seems to be a true precursor of a series of religious constructions in the Colombian territory (Roza, 2000); (Chamorro Guerrero, 1996).

4. Methodology

The case study year of construction is February 2023. The approach used to document the cultural landscape foresaw, on the one hand, the use of strategies to document the architectural and landscape heritage tangible, and on the other hand, methodologies to document the intangible aspects.

Errore punto massimo	45,0 mm
Errore punto medio	6,6 mm
sovrapposizione minima	20,70%

Fig. 4: Final report on collimation errors and point cloud overlaps (authors' elaboration, 2023)

Therefore, on the one hand, architectural survey methodologies were used for geometric/morphological and metric/constructive analysis, complemented by historical, iconographic, and archival research to obtain a complete and exhaustive knowledge of its transformations throughout time.



Fig. 5: Points cloud of Sanctuary (authors' elaboration, 2023)

On the other hand, the used methodological approach also considers the anthropological and sociological components of the cultural asset using digital filming techniques to capture the semantic and symbolic complexity of the cultural landscape.

The innovative integration of both approaches would allow the tangible components to be combined with the intangible perceptual and visual, mystical, and devotional, anthropological, and sociological aspects; recognizing the cultural landscape as a unique and emblematic value that goes beyond its material value.

4.1 Methodological approach to the physical-tangible component

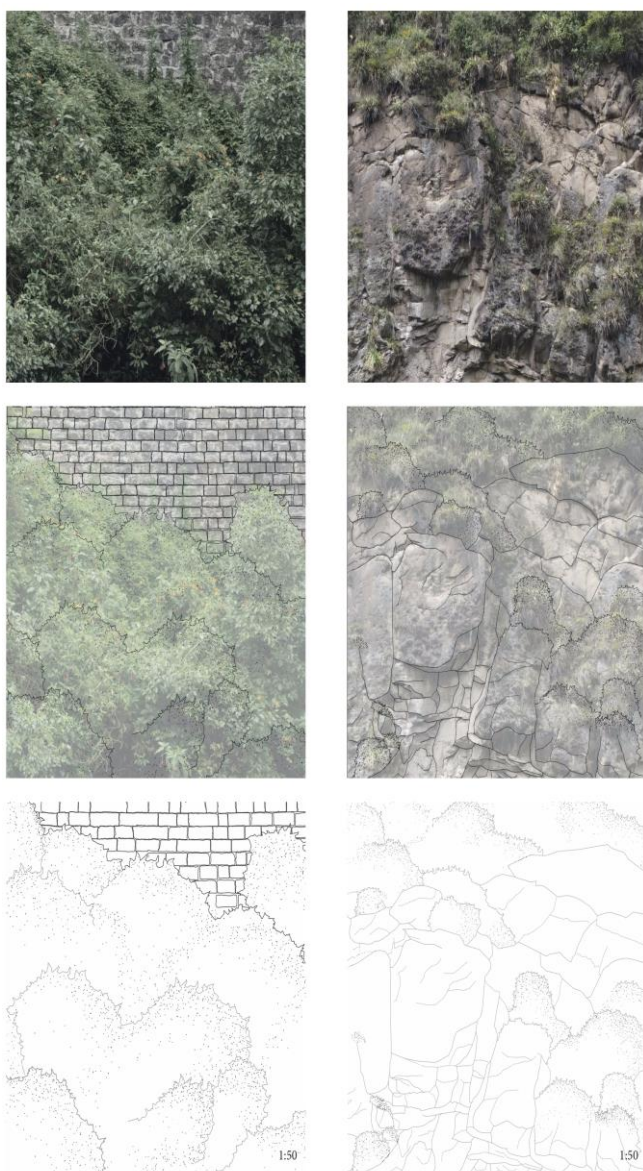


Fig. 6: Example of layering management. (authors' elaboration)

Tab. 1: TLS scans performed in several levels with Faro M70 and Faro S150+ (authors' elaboration).

Level	Faro M70	Faro S150+
Terrace of the roof of the church, upper entrance plaza	-	36
Terraces of the side naves, choir, priest's house	11	22
Square bridge, vertical connections	24	52
Crypt	29	13
Museum at the intermediate level	16	-
Museum	40	-
Lower Galleries, rivet level	14	20
Total	134	143
Total scans M70 + S150		277

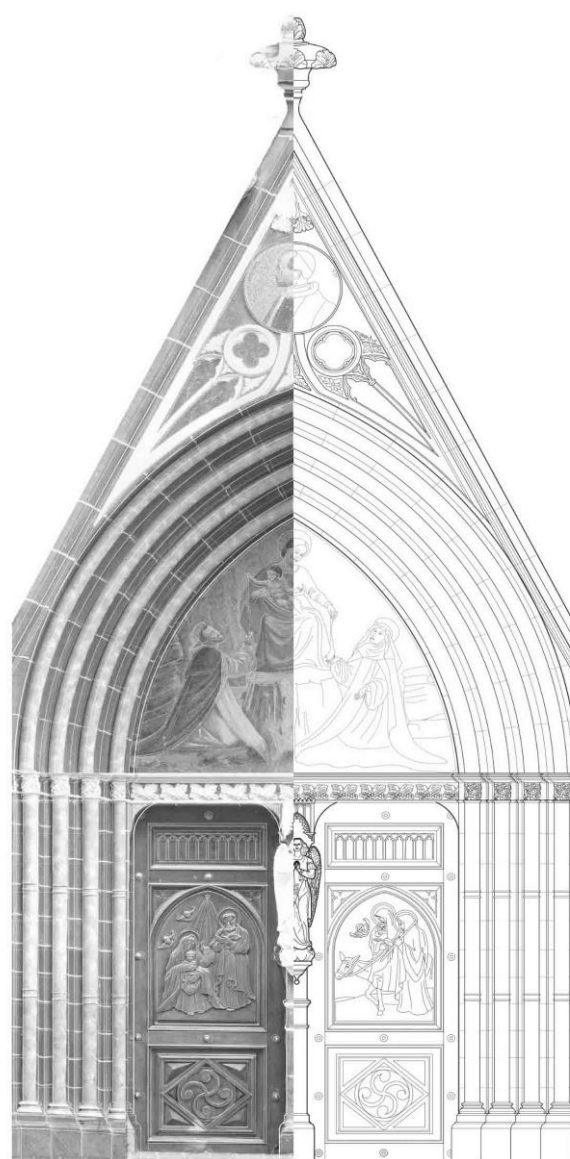


Fig. 7: Example of graphic interpretation (authors' elaboration).

This facilitated the preparation of a survey project based on which data acquisition techniques, instrumentation and timing could be planned. After the verifications carried out in the previous inspection, a survey campaign was prepared with FARO laser scanning technology (LST), integrated for inaccessible parts with aerial digital photogrammetry from a drone DJI MAVIC Mini 2 (Fig. 4, 5).

FARO FOCUS M70 with a maximum range of 70 meters, used mainly for indoors, and a FARO FOCUS S150+ with a maximum range of 150 meters, used for outdoor acquisitions and in height (Tab. 1).

The photogrammetric shots were taken in most cases in aerial mode and were carried out with a DJI Mini 2 drone that has a 1-2.3-inch CMOS sensor, effective pixels: 12MP. A total of 7,205 photographic shots were acquired, out of which

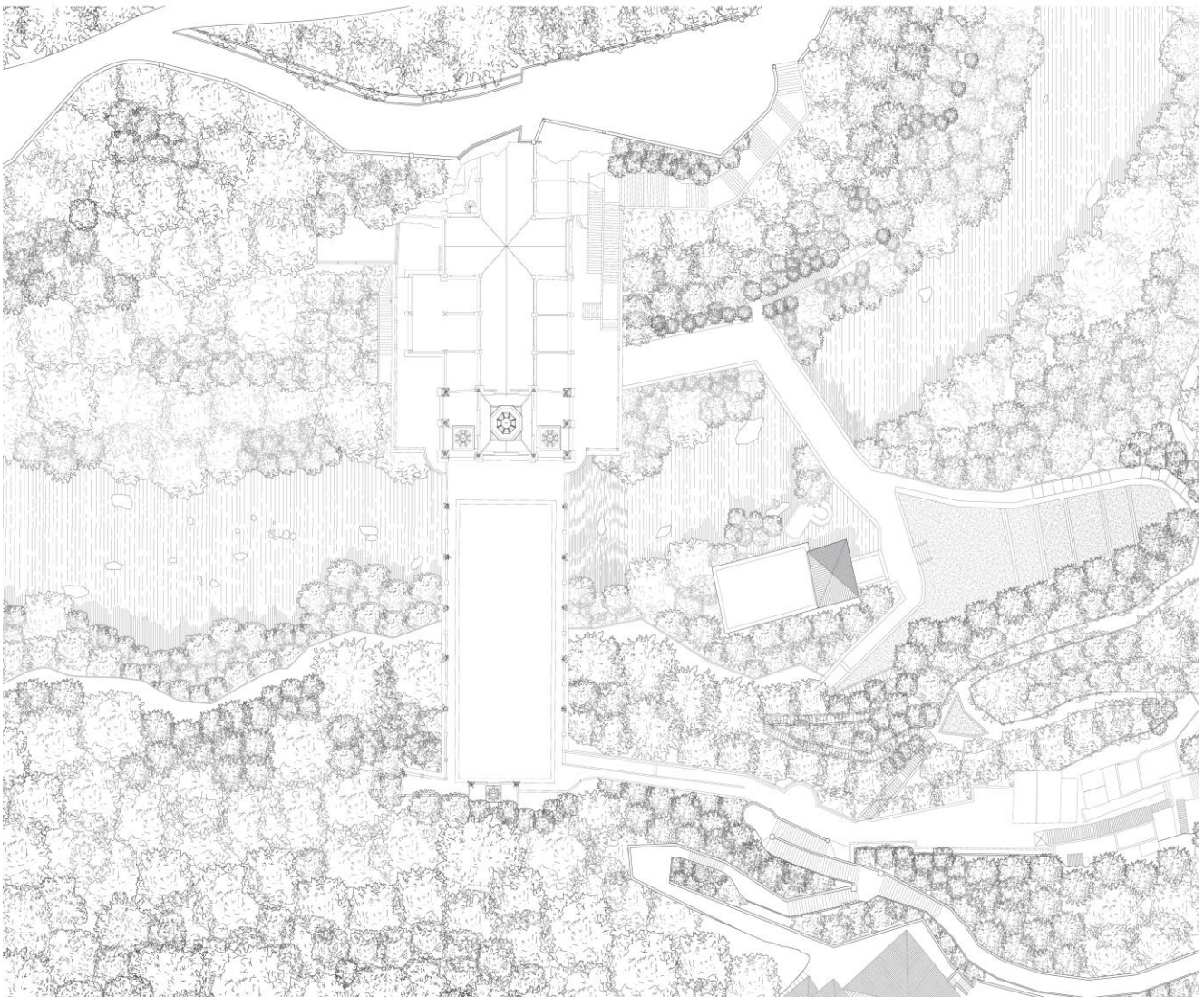


Fig. 8: Landscape planimetry of Las Lajas
(Elaborated by the authors with Montanaro, Manelli, Amati, Colaninno, Cinieri, Cardillo 2023)

During the campaign, around 450 artificial markers placed inside and outside the complex were used, combined, in rare cases, with natural points for optimal registration of the various LST acquisitions. A total of 277 LST acquisitions were performed, and two laser scanners were used: a

3,153 were used for photogrammetric processing and the remaining 4,052 for documentary purposes and to support graphic representation. The drone shots documented with greater quality detail the exterior surfaces, the decorative

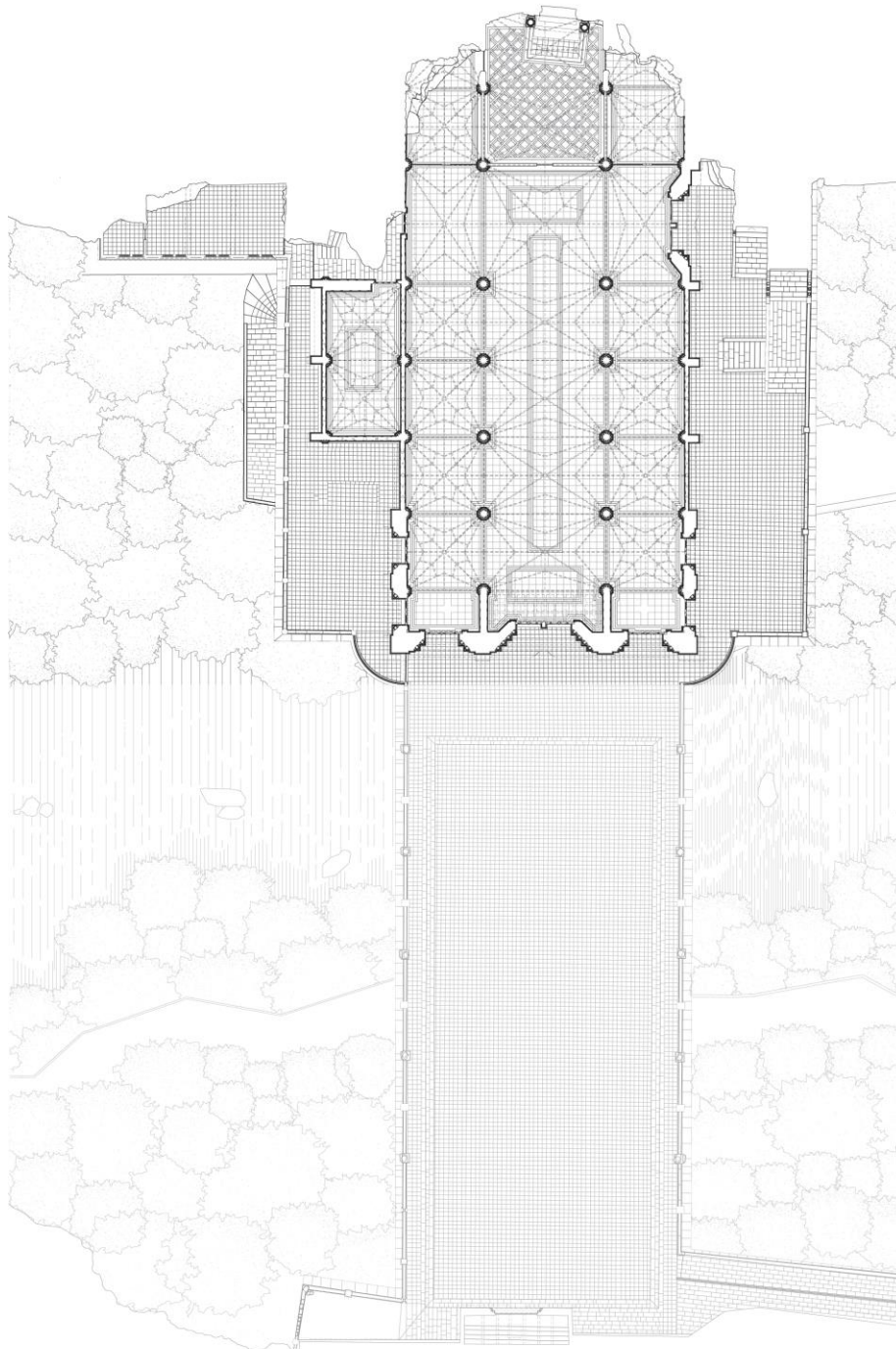


Fig. 9: Plan of the Sanctuary (Elaborated by the authors with Montanaro, Manelli, Amati, Colaninno, Cinieri, Cardillo 2023)

elements, and the sculptures present on the facades and on the bridge/tabernacle.

The processing of the laser scanner data and its subsequent registration was carried out with the

SCENE software from the same FARO company, based on previously placed markers that ensured the union of the individual scans, guaranteeing the precision of the superpositions, integrating them

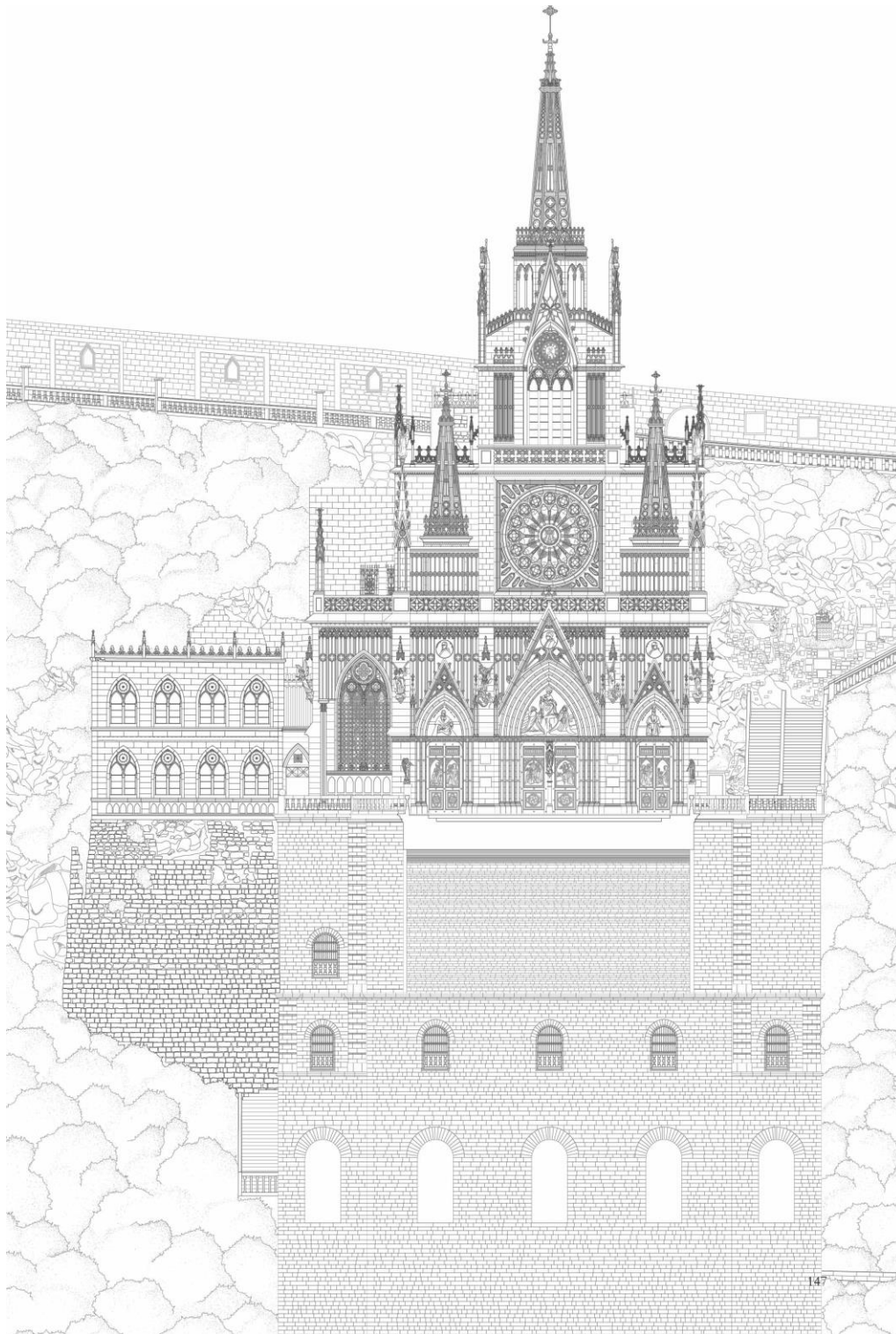


Fig. 10: Facade of the Sanctuary (Elaborated by the authors with Montanaro, Manelli, Amati, Colaninno, Cinieri, Cardillo 2023)

in a global reference system. Errors and overlaps resulting from the registration were checked, ensuring they were within the graphical error limits of the representation scale. At this point, a

total point cloud was generated from which to extract data for the final graphical representation (Gomez & Orozco, 2022).

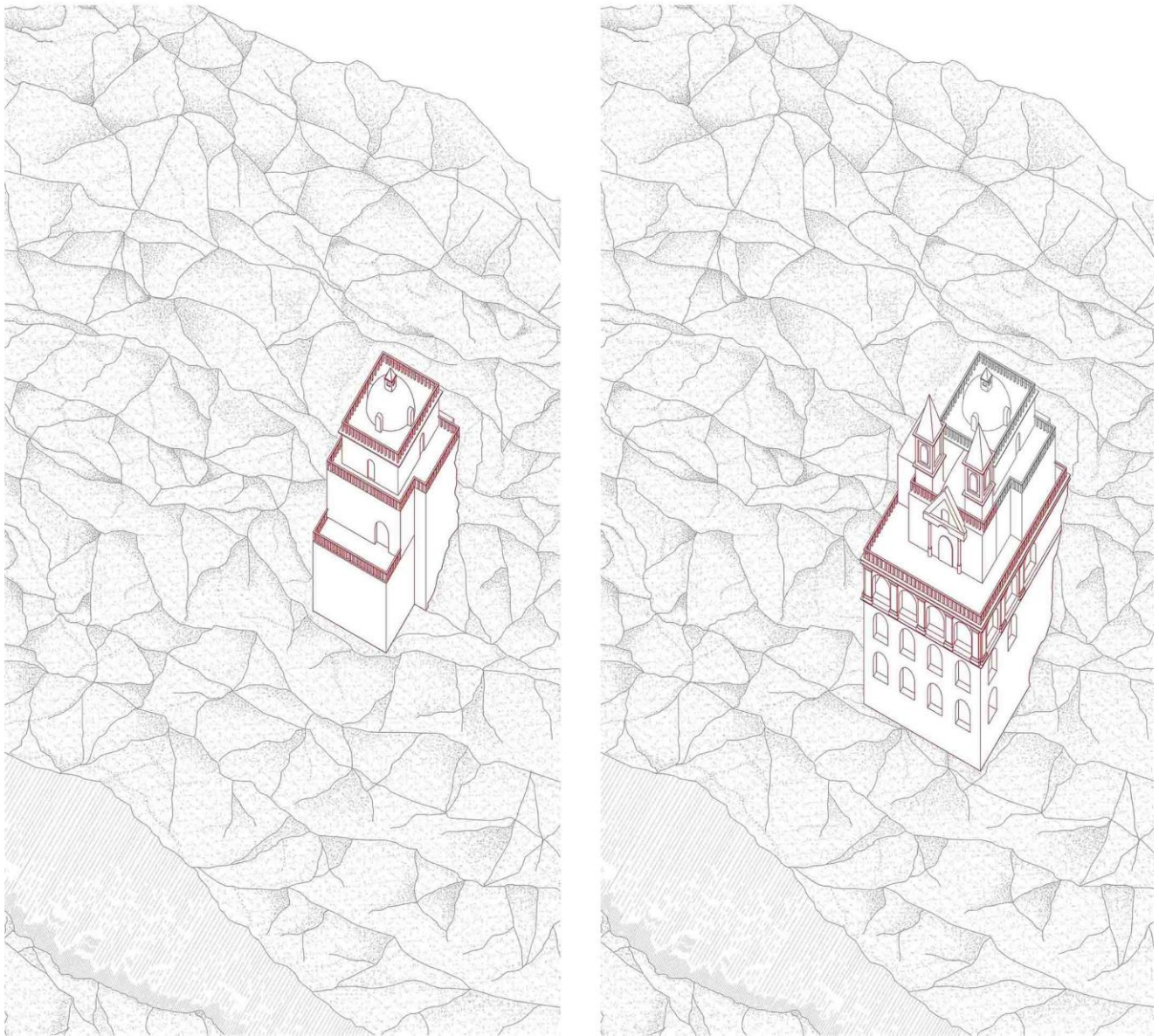


Fig. 11: Hypothesis of the evolutionary phases
(Elaborated by the authors with Montanaro, Manelli, Amati, Colaninno, Cinieri, Cardillo 2023)

The photogrammetric processes were carried out with Agisoft's Metashape software, which allowed extracting orthographic views useful to describe and graphically represent all the decorative/sculptural elements in detail. The photogrammetric process involves the use of acquired photographic shots in a database according to a sequence suitable for use, and a digital photogrammetry software calculates the spatial position of each shot point. The

mathematical model underlying the photogrammetric restitution process is solved through the principle of Bundle Adjustment and uses the least squares process. Once the positions are identified, the system decomposes the images into point clouds and proposes alignments based on the chromatic data of the pixels. Finally, a dense cloud is generated, then a mesh and ultimately a 3D model to which the textures of the same

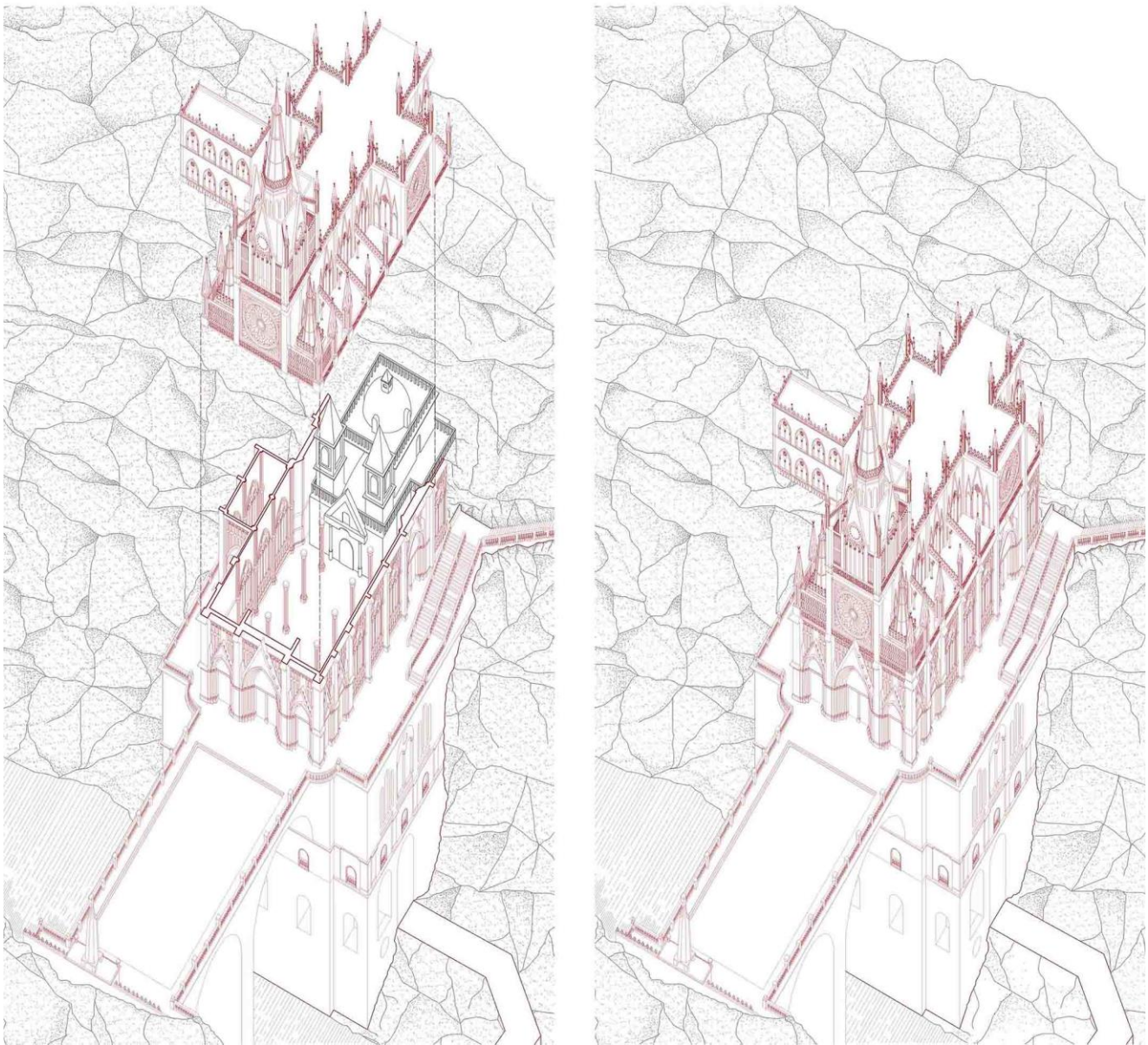


Fig. 12: Hypothesis of the evolutionary phases
(Elaborated by the authors with Montanaro, Manelli, Amati, Colaninno, Cinieri, Cardillo 2023)

photographic images are applied (Marra et al., 2023).

The metric precision of laser scanner data is integrated with the descriptive and photographic qualities of digital stereoscopic photogrammetry, providing a suitable orthographic basis for subsequent rendering operations.

The graphic representation operations were drawn up based on the orthophotos extracted from the total point cloud, with the Orthophoto

SCENE software, and on the digital photogrammetry elaborations (Barba et al., 2023). The graphic representation (Fig. 6, 7) is the result of selection, not automated, but the product of the interpretation of the information contained therein, not deducible exclusively from ortho-photographic views, but also supported by detailed photographic shots (Mayorga, 2023).

The two-dimensional graphic elements identified to represent such a complex and

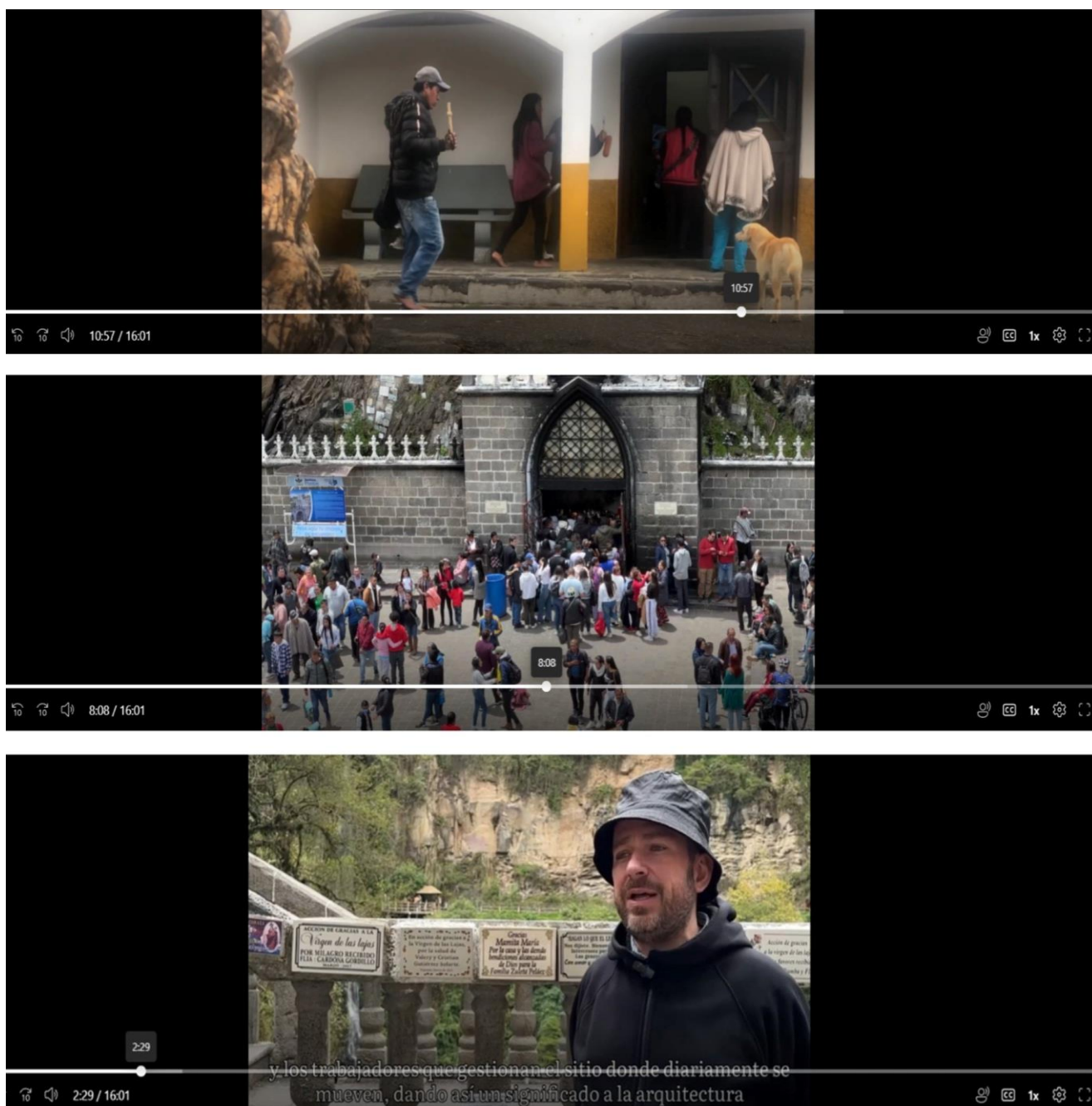


Fig. 13: Frames from video (by Lembo, 2023)

articulated reality is: 8 planimetries of different levels, 1 hypo-graphic plan of the basilica lecture room, 3 elevations, 6 longitudinal sections, and 6 transverse sections (Fig. 8, 9, 10).

For the acquisition of the intangible component, a collection method has been defined based on the use of participatory video to document, through a collective activity with digital video techniques, the cultural landscape, capturing and returning its semantic complexity, its intangible aspects. perceptual and visual, mystical,

and devotional, anthropogenic, and sociological (Bignante, 2011); (Ciacci, 2001).

4.2 Intangible component methodological approach

The participatory video approach was adopted, since it is a set of codified techniques that allows a group of people, even non-specialists, to collectively make a film representation on a specific documentary topic or problem (Frisina,

2013), (Rinaldi, 2014). Participatory video uses visual communication to engage and record a broader range of perspectives. By this means, it aims to develop practical skills that allow participants to produce deeper knowledge (Lembo, 2021). Before the field activity, preparation was carried out on the rules of filming through the common use of mobile devices.

Previous preparation allowed us to obtain uniform shots among the various participants, calibrating them in the same audio and video

Site operators and surveyors; Pilgrims seeking healing; Religious tourists; General tourists; Internal operators/priests/celebrants; Street vendors; Photographers; Inhabitants of the nearby village; Stray dogs. A second level of video classification allows for the complex perception of the territorial dimension of the surrounding spaces, detailed as follows: Overlap between village and sanctuary: Temple; Crypt; museum; square/forecourt/bridge; Chapel; Source of holy water; Refreshment area; Souvenir sales area;

Tab. 2: Methods and results for the analysis of the intangible component (authors' elaboration).

METHODOLOGY	RESULTS	DISSEMINATIONS
<p>Utilization of participatory video as a research tool for documenting the context of survey activities and involved subjects. Each participant captures footage using their smartphone, with standardized shooting settings and fixed shots lasting up to 15 seconds, experimenting with basic rules of photographic composition (close-ups, landscapes, rule of thirds).</p> <p>Shooting criteria: 4k resolution, horizational shooting, maximum 15 seconds.</p> <p>Shared editing of the produced footage.</p>	<p>Total recorded footage: 43.200 sedonds.</p> <p>Post-production and editing (APP; VN video editor) to create 4 short videos (ranging from 3 to 8 minutes in duration)</p> <p>The final products have been classified into videos on architectural survey, videos on visual research, and integrated videos on perceptions.</p>	<p>The main video, lasting 4 minutes and 14 seconds was presented in Sydney, Australia for the 21st Triennial General Assembly of ICOMOS in September 2023.</p>

configurations, to facilitate subsequent editing and post-production operations, which represent a fundamental stage for the final delivery of the film (Maurelli, 2019). Each collector took on the role of filmmaker, taking short shots, with a maximum of twenty seconds (Tab. 2).

All participants took part in the making of the shots in the double role of directors and actors, interviewing and narrating, from different points of view, the intrinsic characters of the place, the intangible aspects that strongly characterize it and that can only emerge through from experience and direct observation (Fig. 13). The shots also extended to the surrounding context, the inhabitants, operators, parishioners and to the relationship between them and the Sanctuary.

Results: the human perception reported in the video allows for the representation of the diversified perception of architecture through its main identified components:

Waterfall viewpoint spots; Stations/devotional deposits for holding cotton balls for healing supplications; Rectory; Walkable/observation roof; Pathway to the valley floor; Connection with the cable car.

5 Conclusion

The surveying of the tangible/physical component of the cultural landscape, which allows each point to be represented and restored according to the criteria of the Cartesian space, is intended to be integrated with that of an anisotropic space (Norberg-Schulz, 1974), with the purpose of measuring the intangible component in the logic of a study proposal aimed at revealing the exceptional values of the cultural landscape more broadly.

The location selected and explored as an application case allows us to question and experiment with data acquisition forms to express

methods also derived from other disciplinary fields aside from the Social Sciences and Humanities; not strictly related to Cultural Heritage, but that can be useful to move towards the creation of a documentation that includes along with the physical-geometric and morphological component of the entire site, that one derived from the perception of the intangible perceptual-visual, mystical-devotional, anthropological and sociological aspects. This

would open new ways of experimenting and refining to combine the different results into a single documentation system.

The idea is to deduce the true meaning attributed to the cultural landscape to give it a marked identity to transfer greater knowledge and awareness for each decision-making process that includes measures related to the tangible and intangible aspects to be protected and safeguarded.

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