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## Diseño tecnológico de un lugar de culto: valor histórico y constructivo. Technological design of a worship place: historical and constructive value.

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*Resumen*-- La revolución del diseño tecnológico no sólo se deriva del uso de nuevas tecnologías, sino de un diálogo entre el valor arquitectónico, histórico y funcional que conservan los lugares y su valor simbólico. Se trata de un proceso complejo y lleno de matices que tiene en cuenta no sólo las características físicas de un edificio, sino también su significado cultural e histórico. Al analizar las características arquitectónicas e históricas de un edificio, los diseñadores son capaces de identificar la calidad formal y material de la arquitectura, así como el poder creativo vinculado al *genius loci*, o espíritu del lugar. La afirmación de Servius, "Nullus locus sine genius", subraya la importancia de comprender el carácter único de un lugar, ya que influye en el diseño y la función del espacio. Esto es especialmente cierto en el caso de los lugares de culto cristianos, donde cada piedra, distribución espacial y ornamento conlleva un profundo significado simbólico, moral y social. El diseño de una iglesia no es una mera cuestión estética o funcional, sino una empresa teológica y espiritual que requiere un planteamiento consciente de la tecnología y el diseño. El proyecto tecnológico de una iglesia antigua requiere una interpretación material y simbólica de las transformaciones históricas que ha sufrido el edificio. Esto incluye un examen cuidadoso del contexto físico y cultural del edificio, así como una comprensión del significado teológico y espiritual de sus elementos de diseño.

*Palabras clave*— Diseño tecnológico; Genius Loci; Valor simbólico; Lugar de culto cristiano; Rendimiento tecnológico.

*Abstract*— The revolution of technological design is not only derived from the use of new technologies, but from a dialogue between the architectural, historical, and functional value that places preserve, and their symbolic value. It is a complex and nuanced process that considers not just the physical characteristics of a building, but also its cultural and historical significance. In analyzing the architectural and historical features of a building, designers are able to identify the formal and material quality of architecture, as well as the creative power linked to the *genius loci*, or the spirit of the place. The statement by Servius, "Nullus locus sine genius," emphasizes the importance of understanding the unique character of a location, as it influences the design and function of the space. This is especially true for Christian places of worship, where every stone, spatial distribution, and ornament carries a deep symbolic, moral, and social meaning. The design of a church is not merely a matter of aesthetics or function, but a theological and spiritual undertaking that requires a conscious approach to technology and design. The technological project of an ancient church requires a material and symbolic interpretation of the historical transformations that the building has undergone. This includes a careful examination of the building's physical and cultural context, as well as an understanding of the theological and spiritual significance of its design elements.

*Index Terms*— Technological design; Genius Loci; Symbolic value; Christian worship site; technological performance.

### I. INTRODUCTION

For a lot of centuries the church building has pursued the revival of a symbol, the cross, the emblem of humanity redeemed by Jesus Christ's sacrifice, even if in the most

different ways. However, contemporary religious architecture seems to have definitively dissolved the link with the semantic value of a symbol, relying on an abstract as well as an arbitrary formalism. However, the design of a place of worship is always a dialogue between the architectural, historical, and functional value that these places retain, and their symbolic value.

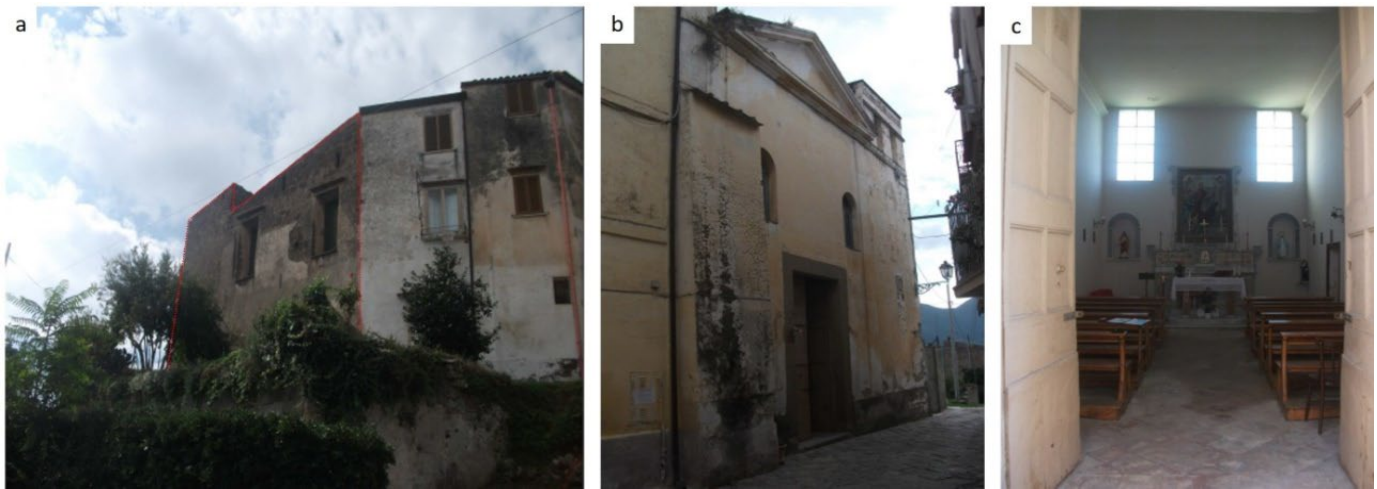


Fig. 1. (a) The east prospect, completely confused in the urban context, lacking its identity as a sacred building; (b) The main prospectus; (c) The interior of the church before the discovery of frescoes at floor level.

This dialogue is already intrinsic in the term church, in which the dualism between the material and the immaterial component is present: the building made of stones (a meeting place in which the community assembles, prays, officiates and acts) and the community, which is itself a church (gathered around the cross of Christ, on its way to God), made of living stones.

In many ways it is possible to interpret the material concept of the church, but in all cases, it is possible to symbolically identify an analogy between the earthly place where God dwells and the mystical place which is God himself.

"S. Massimo the Confessor develops the idea that the temple is the image of the universe, of man and of God; the "Saint of Saints" is the most noble part of it and the whole is summed up in the mystery of the altar. It is truly the centre and the "heart" of the building. Now, this mystery of the altar consists in the idea that the altar is the Christ". (Hani, 1996)

Everything radiates from the two fundamental elements for the Christian worship: the altar and the tabernacle. The altar as a mystical place is the spirit, but it is also the table, the stone of sacrifice, through which man is in contact with God, placed on the axis earth-sky and for this reason it is the holiest object of the temple. The Christian tabernacle as a mystical place is the soul, where the authentic Manna is placed, the "Living bread descended from heaven" (Jn 6:51), Christ present and alive among us. A third element is fundamental in the earthly and material Christian church: the aisle where God's people, who are the body of the church, gather. The church of God (made up of men, living stones) on its way to Christ proceeds in the aisle ("the stone transposition of the New Testament") until it reaches the altar, where it stands under the Cross of Christ. Therefore, the spatial distribution of a church has two main directions: the ascendant one towards God (the dome) and the horizontal one going from west to east (the aisle). God's church (made up of people, living stones) on its way towards Christ proceeds in the aisle (the stone transposition of the New Testament) up to reach the altar, where it is placed under Christ's Cross. The apse is, in fact, traditionally in the east because Christ is the rising sun.

Therefore, "the Temple represents for the Christian assembly the body of Christ, but since the assembly is also the body of

Christ, this constitutes its spiritual temple, the mystical body of Christ. Finally, the individual soul is also capable of becoming this temple. The sacred building can therefore be considered from a triple point of view: as the humanity of Christ, as a church and as the soul of every believer, being these three points of view also inseparable, since the last two are only consequences of the first. (Hani, 1996)

Many other considerations can be made about the mystical meanings of the other architectural elements of the Christian temple: from the analysis of the building shape (spatial relationship between aisles, chapels, transept, apse) and the table of the Holy Word (ambo, pulpit, and lectern), to the interpretation of the didactic value of doors, windows and frescoes, floor drawings and decorations of choirs and altars (Dianich, 2008).

## II. NULLUS LOCUS SINE GENIUS

The theological and cosmological symbolism underlying the Christian temple substantiates the dialogue between architectural, historical, and functional value of worship places. It can identify the formal and material quality of architecture, but also the creative power properly linked to the purpose of sacred architecture, which is to reveal the image of divine Nature imprinted in creation. Cosmology, ontology, and metaphysics give sacred places (and their architectural elements) a symbolic meaning that materializes the immaterial qualities of God.

"Nullus locus sine genius" (there is no place without genius), Servius wrote following the belief of an animistic religion according to which everything is permeated by energy and reason, including places. If this assertion is true for natural places, it assumes an ulterior value for places of Christian worship, because every stone, every spatial distribution, every ornament takes on a profound symbolic, moral, and social meaning. In fact, if the living Church is universal and opens, according to a centrifugal motion, its action of evangelization to whole the world, the material Church, with a centripetal motion, tends to enclose in a circumscribed place the universal salvific action of Christ.

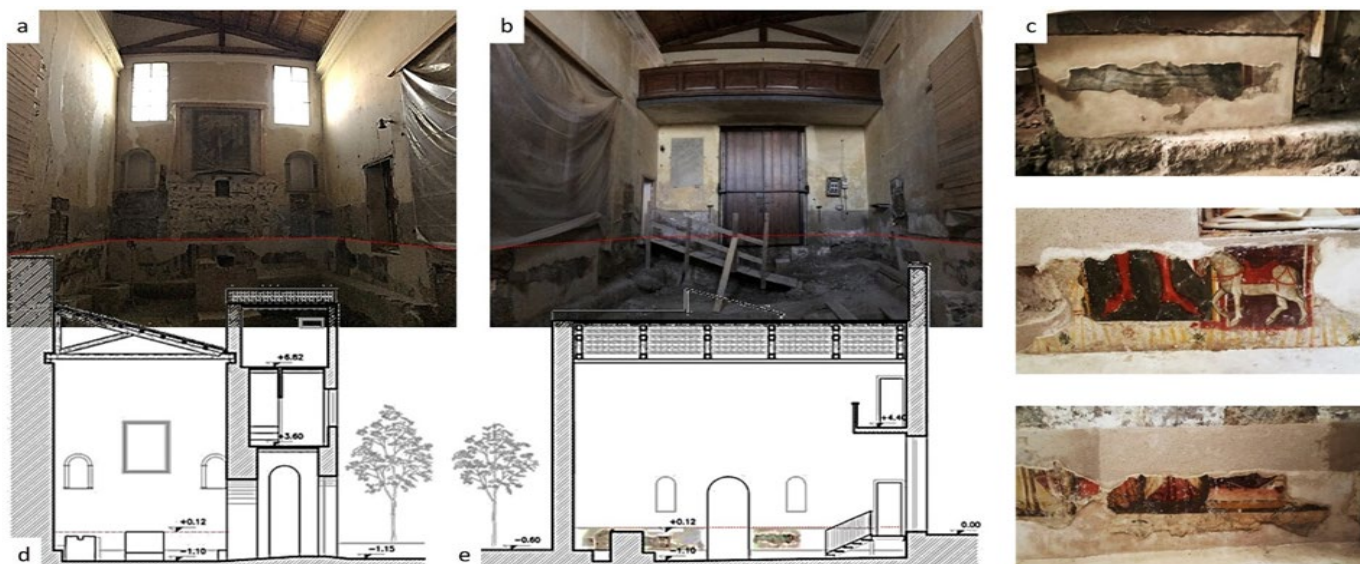


Fig. 2. (a) The internal east prospect; (b) The internal west prospect; (c) Frescoes at floor level; (d) N-S section; (e) E-W section

All creation comes into the church representatively through two kinds of flows: matter (faithful) and energy (light of the sun). In this place, through this encounter of flows, God meets his people.

For this reason, the design of a worship place does not respond to the creative rules of architectural art, freely inspired and responsive to the technological culture and composition of the age in which it is expressed, but it is the result of a vocation.

The construction of a temple is the result not of the creative inspiration of an architect, but of the "symbolic rules" that must be brought back to God. The temple on earth must refer to the celestial archetype communicated directly by God. God dictates the dimensions of the Ark to Noah (Gen 6) and an architect angel shapes the dimensions of the New Jerusalem with a golden reed (Ap 21).

The biblical description of the construction of the temple of Solomon, in the first book of Kings, is detailed in time (he built it in seven years: from the year four hundred and eighty after the exit of the Israelites from the land of Egypt, the fourth year of Solomon's reign over Israel, in the month of Zhiv, to the eleventh year, in the month of Bul), shape (in front of the hall of the temple there was the vestibule; on the wall of the temple, he built a three-storey building around it; inside he built the shrine), dimensions (the temple was sixty cubits long, twenty cubits wide, thirty cubits high; the vestibule was twenty cubits long, in the sense of the width of the temple, and ten cubits deep in front of the temple; the hall of the temple was forty cubits long; the shrine was twenty cubits long, twenty cubits wide, and twenty cubits high), finishes (he made windows in the temple with frames and grilles; he covered walls and flooring of the temple with wood), ornaments (wood was carved with palms and cherubs, coloquins and blossoming flowers; two wooden cherubs covered with gold) and materials (intact quarry stone; cedar, cypress and olive wood, pure gold - I KINGS 6: 2-38) . Nothing is accidental because it might be the dwelling place of God: "About this temple which you are building: if you will keep my laws and give effect to my decisions and be guided by my rules, I will give effect to my word which I gave to David your father, and I will be ever among the children of Israel, and will not go away from my people." ( I KINGS 6:12-13)

The significance of a Christian place of worship makes us reflect about what a church should be rather than what it is (Norberg-Schultz, 1983).

Considering these premises, from a methodological point of view, the intervention of technological restoration was carried out starting from a real anamnesis of the building organism,



Fig. 3. The internal east prospect



Fig. 4. The internal east prospects.



Fig. 4. The external east prospects.

whose "medical record" reports the data critically processed in the various phases of the cognitive analysis, which is the substantial foundation of the design choices:

1. Historical analysis: in which elements about the building and its surroundings have been acquired, from old documents, archival research, and iconographic materials, leading back to the profound reasons for the made architectural choices.
2. Morphological and dimensional analysis: starting from an accurate architectural and photographic survey of the status quo, which also suggested geometric and cosmological deductions to justify the hypotheses of the original structure of the church.
3. Technological analysis: alongside the technological survey on sight, a diagnostic phase of the construction system and materials, which has given rise to a "set of information" useful for identifying the state of the technological system, the current and potential performance of the components and the qualities still present to be preserved and enhanced.
4. Structural analysis: aimed at determining, which was the original structure, identify the transformations that occurred over time and evaluate the entire structural system both the state of preservation and the static compatibility.
5. Conservation analysis: which provided both the complete cracked picture and the method tools for the research of valuable elements to be enhanced.

From a technical point of view, the complexity of the restoration design puts the problem of knowledge at the forefront as a preliminary step both to the design phase of the project and to the implementation phase of the construction site.

The methodological approach is symbolic-theological, both to investigate the cognitive links present in the observed signs, and to appropriately define the choices of the project in search of the original value.

### III. THE CHURCH OF ST. LEO

The tiny church in Sessa Aurunca (CE) dedicated to Saint Leo is the place of experimentation of the theologically conscious method that assumes the physical-functional readjustment of an ancient sacred place as a reinterpretation of theological symbols.

"Founded by Adi and sold by Richard II Prince of Capua to Abbot Oderisio I in January 1098, Saint Leo appears, as reported in Princes of Capua's privileges, among the possessions of Sant'Angelo in Formis in September 1107, and in November 1120, only to reappear two years later in Pope Callistus II's privilege". (Frisetti et al, 2018)

The dedication of this place to Saint Leo is perhaps due to its history, which wants it in Sessa Aurunca disguised to escape from the Normans after the defeat at Civitate in 1053. The popular tradition says that the tiny Saint Leo's church is the place where he protected himself disguised before being recognized and where he also made the miracle of a leper's healing.

The church is a *piedicroce* of small sizes, about 7 metres for 15metres, with an east-west orientation introducing the current entrance in the north and two rooms of relevance in the south, extension of the XVIII century to the side of the primitive bell tower. (Fig. 1) The discovery of the frescoes, together with brief historical research and the toponym, convinced the Diocese of Sessa Aurunca to start further investigations on the site. The total removal of the floor revealed the original height of the ancient factory in wrought metal and two decorated masonry altars, one parallel to the eastern wall, and the other in the middle of the northern wall, a font made of stone in the north-east corner and a millstone in the diametrically opposite corner. After the floor removal to carry out dehumidification works, traces of frescoes and masonry altars, plastered and with fresh decoration traces, were discovered along the walls. (Fig. 2) On a closer examination it was noticed that the frescoes were spread over several layers, one from the 15th century and, under it, another layer dating back to nearly the tenth century. The place and the toponym linked to Saint Leo have thus suggested more detailed investigations aimed at investigating which other portions of frescoes were present and how far they went below the floor level. A band of fresco decorations, extended on three sides in the north, south and east, emerged, thus opening a scenario full of suggestions.

The interpretation of the whole leads to define the primitive plant, consisting of a *piedicroce* and a central bell tower on the west side, where the subsequent close investigations of the elevations have confirmed the presence of an entrance hall and the bell tower, now incorporated in the structure. The entrance from the bell tower to the *piedicroce* was closed in a period

between the eleventh century and the fifteenth century, given that, following a detachment of an 18th century fresco, it revealed the presence of other fresco portions in correspondence with the infill wall of the entrance from the bell tower to the *pedicroce*.

The removal of the modern plaster at height was subsequently made for the whole wall surface, in search of both the probable openings such as windows or other entrances, and of any other traces of fresco decorations. The mullioned windows on the north and south walls, still frescoed, and part of the primitive entrance in the east, placed under the fresco layer of the XII and XV century, emerged.

The elements found made it possible to establish the main transformations that the building has undergone over time. The *façade* emerged, with the entrance in the east, with a lunette and a mullioned window aligned above it, then replaced with a splayed oculus, the threshold, and the entrance level, lower than the opposite side of the *pedicroce*, let us understand quite doubtless that the original entrance was in the east. This entrance still preserves the wooden platband and it is possible to see the interventions aimed at restricting its entrance, but it is not evident what this operation was functional to. (Fig. 3-4)

The sacred elements of the architecture coexist in the timeline. The *façade* in the east (Fig. 5) with the mullioned windows aligned with the primitive entrance above the lunette, to allow a blade of light from the rising sun to shine, was projected at sunrise on the presbyteral part now entrance in the west, in contradiction with a lot of contemporary churches that had the apse facing east. On the two sides, two lower mullioned windows illuminating the *pedicroce* together with the entrance openings that aren't usable any longer. The floor, in wrought metal, which from the entrance in the east now subjected to the countryside of nearly one metre high, tilts upwards to reach the presbyteral part, the sacred site in the sacred.

This is an expedient, not only aimed at raising the place of the celebration and making it more visible to the faithful people and show it as the place to tend to, but a place a practical question is associated to, to want to keep the sacred place safe from the waters, at the highest point.



Fig. 6. E-W Section

The design choices for the restoration, in front of a site of a such complexity and stratification, have been very complex. Conservation passes through the restoration and enhancement of the good and the current liturgical needs, through the implementation, even though minimal, of electrical and sound systems. The greatest difficulty was found in designing the *pedicroce* use. The floor in wrought metal, that was found, is placed 1.20 metres below the previous floor level and the street facing the new *façade* and current entrance. This last circumstance made it necessary the compulsory introduction of a steel and glass staircase to allow the overcoming of the elevation, unfavourable for the already tiny indoor space.

The choices of interpreting the stratification and the elements found have been dictated by the will and the preciousness of what was found, even giving back an interpretation that is not only linked with the mere principles of restoration, dictated by the recognizability and reversibility of the interventions, but also with the generating and inspiring principles of architectural forms.

The *pedicroce*, with the disassembly of the modern furnishings and the highlighting of the floor and the perimeter conformation, as well as of the primitive openings, recovers its balance of sacred body in relationship with the light. East-west orientation, entrance and reading of the ancient elevation of outdoor floor, mullioned windows on the *façade* and those ones on the side, the gently sloping floor made of wrought metal and perimeter seats, masonry altars with decorated plaster (Fig. 6), rehabilitate sacred architecture and give it a strong symbolic interpretation through an ancient semantic language that is modern at the same time.

In order to make the *pedicroce* fully enjoyable, it was proposed the restoration of the wrought metal and the integration of some parts of it with similar material, alternatively, if this is not possible, with a wrought metal in crushed pottery, the restoration of the "reliquary" and "altar" found under the floor and related stone materials, the restoration of the perimeter frescoes and all the stone wooden elements still present. Furthermore, in order to make the important pre-existing features visible and usable, it was proposed to create an entrance at height from the main entrance and a staircase leading into the *pedicroce*, and an entrance from the side, always at the current ground level, with recognizable removable elements of iron and wood.

#### IV. CONCLUSIONS

A careful analytical phase on the local context has been the premise to guide the design choices to obtain the preservation of the symbolic and historical-architectural value.

Considering the nature of the building, to keep the material and use functionally spaces, it has been proposed a technological rehabilitative intervention, methodologically founded on the principles of reversibility and recognizability, which allow the reading of its historical evolutionary phases.

The technological design offers, in fact, a material and symbolic interpretation of the historical transformations that the building underwent, and, at the same time, it returns the tiny church to worship not only as a rediscovered place of faith, but also as a material testimony of the message of faith.

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