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The design poetics of Francesco Fichera, between traditional representation and digital communication

Abstract

This contribution illustrates the important relationship between architectural project design and the modern instruments of digital representation and communication. We investigate the integration between the traditional techniques for elaborating and the digital methods for communicating a project through the “G. De Felice” Technical and Commercial Institute (1926) project by architect F. Fichera of Catania, Sicily. The nature of the documentary material, exhibited and conserved at the MuRa museum in Catania, demands an analytical reinterpretation of the design poetics of the time and the place, and the need for new digital languages to document and communicate the precious archival heritage through close comparison between realised architecture and design thought.

Keywords

Archives — Project Design — Digital Representation —
Communication — Digital Cultural Experiences

Local identity can be understood, experienced, and expressed through the architecture, planimetric solutions, and spatiality of the buildings that characterize the city. This is also achieved through the visual perception of the inhabitants and the analytical perception of those who study them for the relationships between solids and voids, the implied geometries of individual projects, and the recognition of architectural styles. This paper explores and illustrates the important relationship between the design drawings conserved in archives and the digital tools available to support their representation, knowledge, fruition, and communication in cultural spheres. The study is part of a research project that aims to reveal and appreciate the early 20th century architecture that enriches the city of Catania with a stylistic and formal identity of high cultural value.

Architectural archives represent unique and significant sources for understanding and transmitting the design principals of the historical period and the architect, as well as emphasising the importance of the figurative value of architectural design (Palestini 2016, 2017, 2019).

This paper investigates the irreplaceable traditional approaches to design expression and the digital techniques for its communication through detailed analysis of a project by Sicilian architect, Francesco Fichera¹ (1881-1950), who designed the “G. De Felice” Technical and Commercial Institute in 1926. The study is part of the research, teaching and dissemination activities conducted at the MuRA museum² in Catania (Galizia et alii 2019). The museum exhibits and preserves the original projects of the architect that contributed to the design and form of the architectural and urban identity of the territory. It is the very nature of this documentation that prompts the need to study and analyse the design poetics of the time

and place, as well as the need to harness new languages and digital tools to collect and narrate the precious documentary heritage, associating architecture with its prevailing design thought.

The methodological approach adopted consists mainly of two phases:

Historical and archival investigation: understanding and analysis of project drawings to highlight the importance of traditional drawing in the conceptual and final design phases.

Digital representation and communication: graphic enrichment of heritage documentation and narration through virtual, immersive, and interactive explorations.

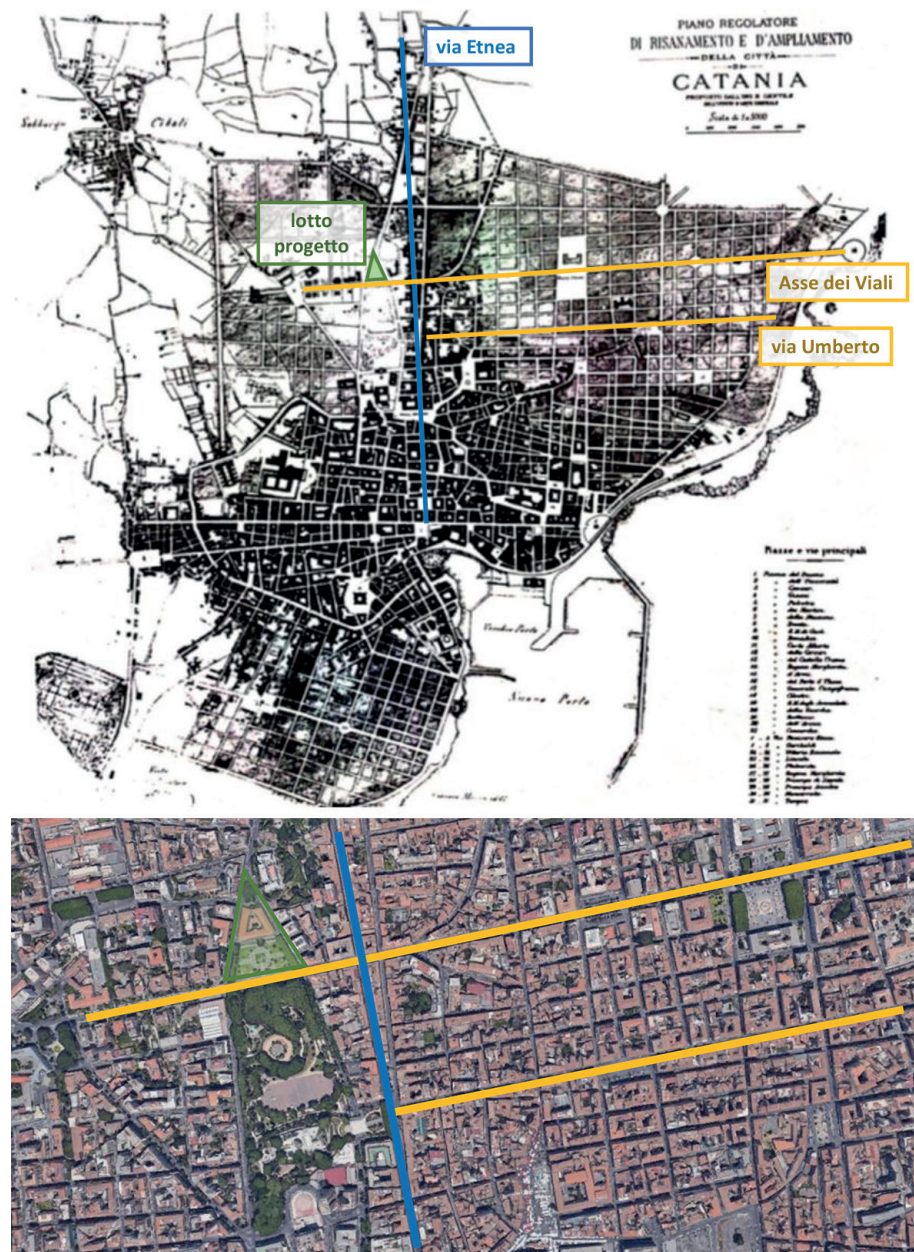
The possibility of comparing archive documentation (period photos, eido-types, and technical drawings) with the realised architecture in its current state spurs the need to communicate and render the design principals appreciable through a virtual simulation experience using 360° panoramic images. Therefore, an immersive experience of fruition and knowledge of one of the most emblematic and characteristic public buildings designed by the architect from Catania is proposed.

Catania in the early 20th century: urban planning and Fichera

The urban environment of Catania is the result of its connection with the two natural backdrops that characterise and enrich the area: the sea to the east and to the north, Mount Etna, the volcano from which lava flowed into the western part of the city in 1669. In 1833, Sebastiano Ittar provided designs of the northward expansion of the city along the north-south axis of the present-day Via Etnea, highlighting the expansion of the historic centre outside the walls. Towards the end of the 19th century, the urban layout changed with the addition of two expansion axes, Via Umberto and Asse dei Viali, crossing Via Etnea orthogonally north of the ancient walls. In 1888, the new urban development plan of the city³ aimed at developments inspired by 18th-century notions of a modern city. The first public buildings of a social nature began to flourish along the new Asse dei Viali in the early 20th century; among these was the ‘De Felice’ institute. Forming a scenic backdrop to the trapezoidal Piazza Roma, it is set inside a context characterised by large green spaces and neoclassical and modern architecture (Fig. 1). The project was entrusted to the architect Francesco Fichera, a great protagonist of Sicilian architectural culture in the first half of the 20th century, who realised numerous residential and public works. His design poetics is characterised by the continuous relationship between functionality and aesthetics, ranging from Rationalism to Eclecticism, Liberty, and Déco. Especially in the public buildings he designed⁴, he managed to combine present and past and negotiate representative and symbolic requirements with the new culture of the period. This was achieved through the contemporary use of classical stylistic elements and the search for significant design solutions that give plasticity and three-dimensional spatiality to the buildings, while respecting the linguistic continuity between tradition and modernity (Galizia 2002; Guarrera 2017).

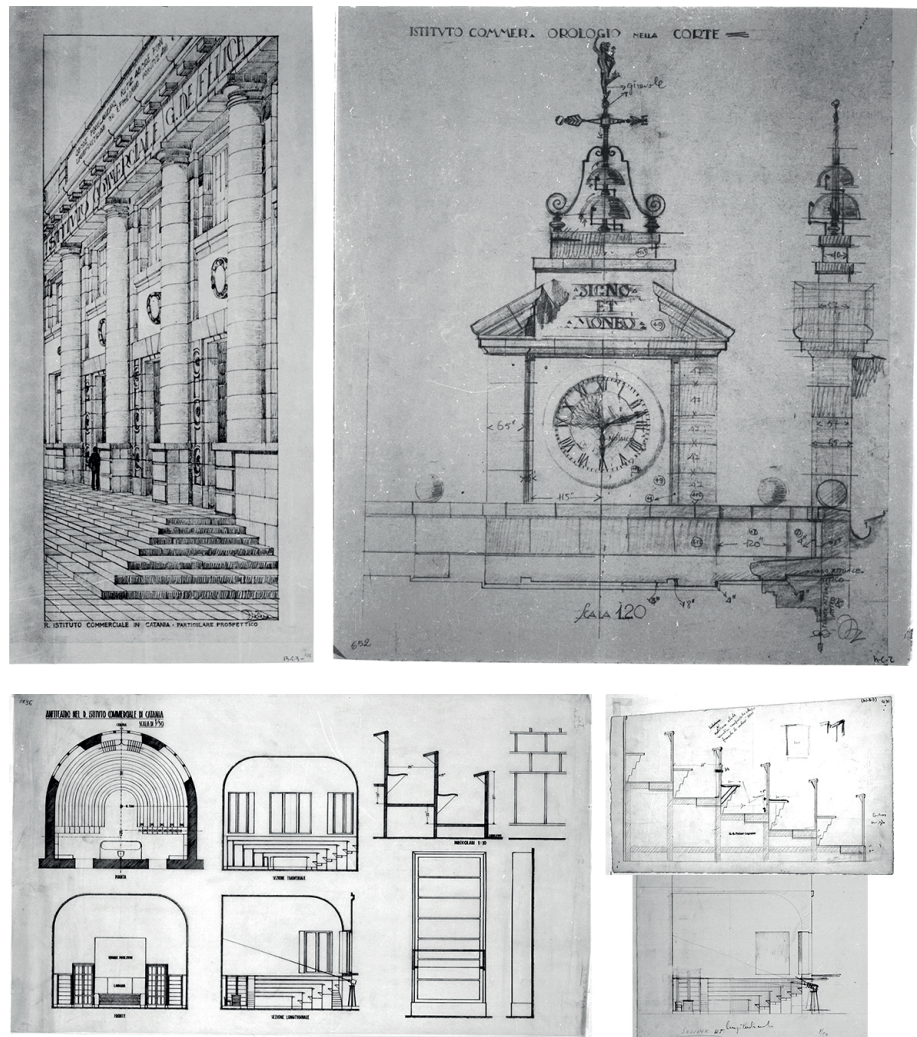
The Fichera Fund and the project archive drawings of the ‘G. De Felice’ Institute (1926): analytical reinterpretation and design genesis

The MuRa museum exhibits, archives, and preserves the Francesco Fichera Project Archive Fund, donated to the DAU⁵ by his heirs in 1976. The architect’s large body of work in Sicily gave rise to a heritage of original documents in the archive consisting of about 1600 drawings made

**Fig. 1**

Top: Master plan for the renovation and expansion of the city of Catania by Bernardo Gentile Cusa (1988); bottom: current view from above.

with different techniques or in heliographic copy. Among the drawings, it is possible to admire preliminary sketches for the project in question, drafts from different conceptual phases, and final graphic designs. They are all orthogonal or perspective representations ranging from detailed drawings to broader urban contexts, highlighting the important role of design in the conception phase. Figures 2 and 3 show how Fichera uses traditional graphic representation codes to emphasise the importance of design both in the conceptual phase and in the final rendering of the project, enriching the representations with graphic details and notes that offer greater comprehension of his work. The integrated use of different scales of representation, perspective projections, and shadows allow the designer to better communicate the three-dimensional articulation underlying his work. The prevalence of the technical elaboration based on the Monge projection method, which is still of undisputed importance today, is supplemented with 2D three-dimensional representations that provide information on the use of the materials envisaged for the project in addition to the geometric aspect. This allowed the architect to expand the graphic language code used to communicate the project at a time when the graphic

**Fig. 2**

Francesco Fichera, De Felice Institute. Left: perspective of the entrance; right: project drawing of the courtyard clock (F. Fichera Fund - MuRa).

Fig. 3

Francesco Fichera, De Felice Institute. Preliminary and final designs of the aula magna (F. Fichera Fund - MuRa).

design was not yet influenced by the new forms of digital representation. The architectural choices adopted for the institute summarise the architect's *modus operandi* and the historical period in which he worked. Here, more than in other projects, Fichera finds himself making use of the design flair that distinguishes him, especially in corner solutions, having to design the building within an irregular triangular lot. «L'irregolarità non è d'altra parte così sentita che possa vantaggiosamente sfruttarsi per trarne un motivo pittoresco» (Fichera 1928) and for this reason, he decides to disguise this dissymmetry by constructing an apsidal rear elevation. This feature is skilfully implemented to conceal the offset between the symmetry axis a of the building and the median m of the irregular triangle of the lot, as can be seen from the analysis of the implied geometries applied to the design drawing of the ground floor plan (Fig.4).

Despite this, the architect does not forego defining the project through proportional ratios and gives further plasticity and movement to the north elevation, creating a play of volumes defined by the superimposition of planes and surfaces of different thicknesses that disconnect the wall mass. Fichera also smooths the two side wings of the planimetric layout with two cuts that are orthogonal to the bisectors of the triangle, giving perceptive continuity to the reading of the wall envelope. With clear reference to the Viennese culture of Otto Wagner, the architect manages to harmoniously relate to the triangular plot and organises the system of classrooms on two floors, along a corridor facing the trapezoidal courtyard, concentric to the perimeter of the building. The apse on the rear elevation, the annular dis-

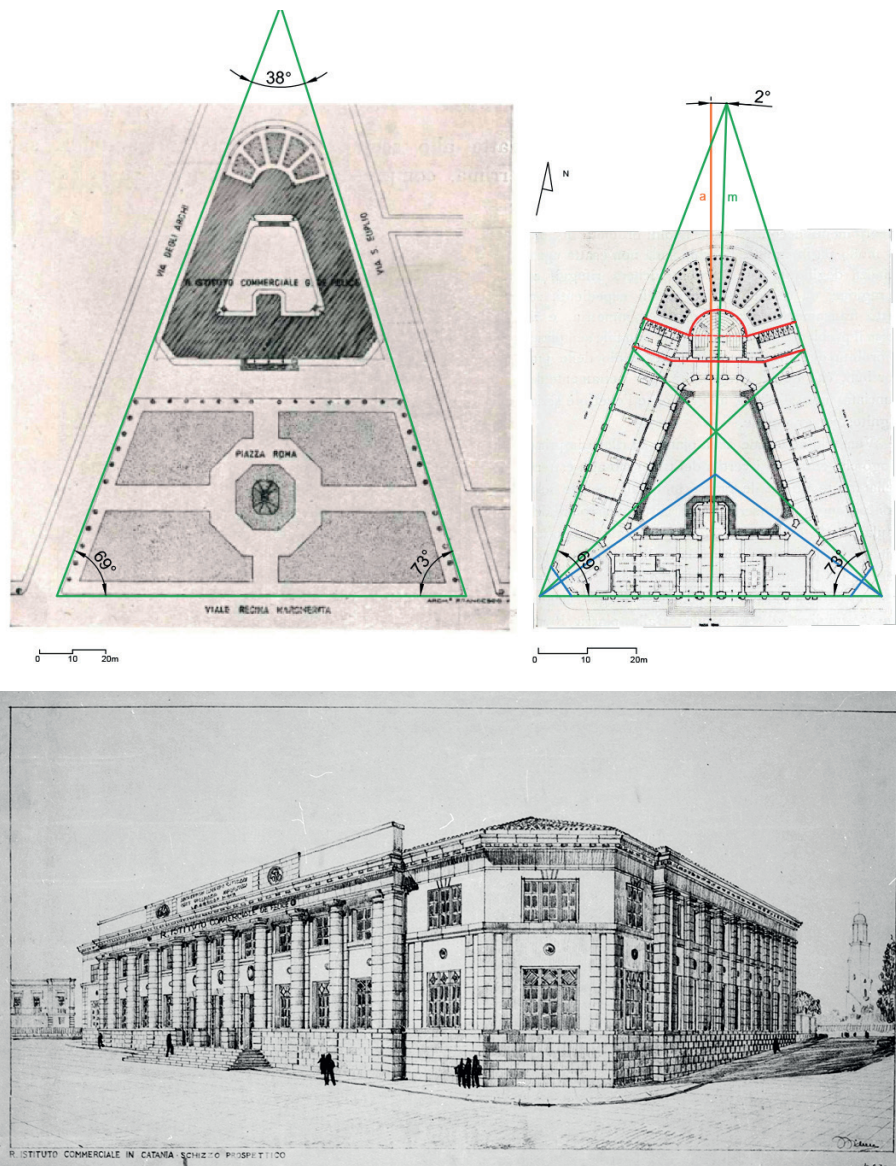


Fig. 4

Left: general plan; right: ground floor plan and rough compositional genesis (triangular plot and medians in green, building axis of symmetry in orange, bisectors and chamfers of the corners at the base in blue, and elements delimiting the empty/full boundary in red).

Fig. 5

Francesco Fichera, De Felice Institute. Perspective of the corner solution between the south and east elevations (F. Fichera Fund - MuRa).

tribution system, and the polygonal rooms at the two corners of the main elevation are, in fact, an obvious reference to the plan of the Postparkasse building by the Austrian designer. These devices, together with the two-tone lava stone on white background decoration of the elevations and the overlapping surfaces that compose them, exalt the perceptive values of the intentional breaking of the volumetric compactness, which is well illustrated in the perspective view in figure 5 (Guarrera 2020; Messina 2020). In attempting to reconstruct the compositional genesis of the building in plan and elevation through traditional drawings, one cannot fail to emphasise the obvious reference to Marcello Piacentini's Courthouse in Messina. The tripartite openings of the elevations are certainly reminiscent of the compositions of the Viennese secession architects, and the use of Doric half-columns and half-pilasters reminiscent of the Italian neoclassical tradition. Fichera develops the representative role in the main elevation, endowing it with the same number of columns and tripartite scheme of openings as the elevation of Piacentini's Courthouse. Unlike the Courthouse, however, he interrupts the giant order used along the two lateral elevations and lends a simpler geometry to the corner solutions that are set slightly back from the planes of the elevations (Rocca 1988). The *a posteriori* graphic analysis carried out on Fichera's traditional design drawings once again highlights the importance of the role of

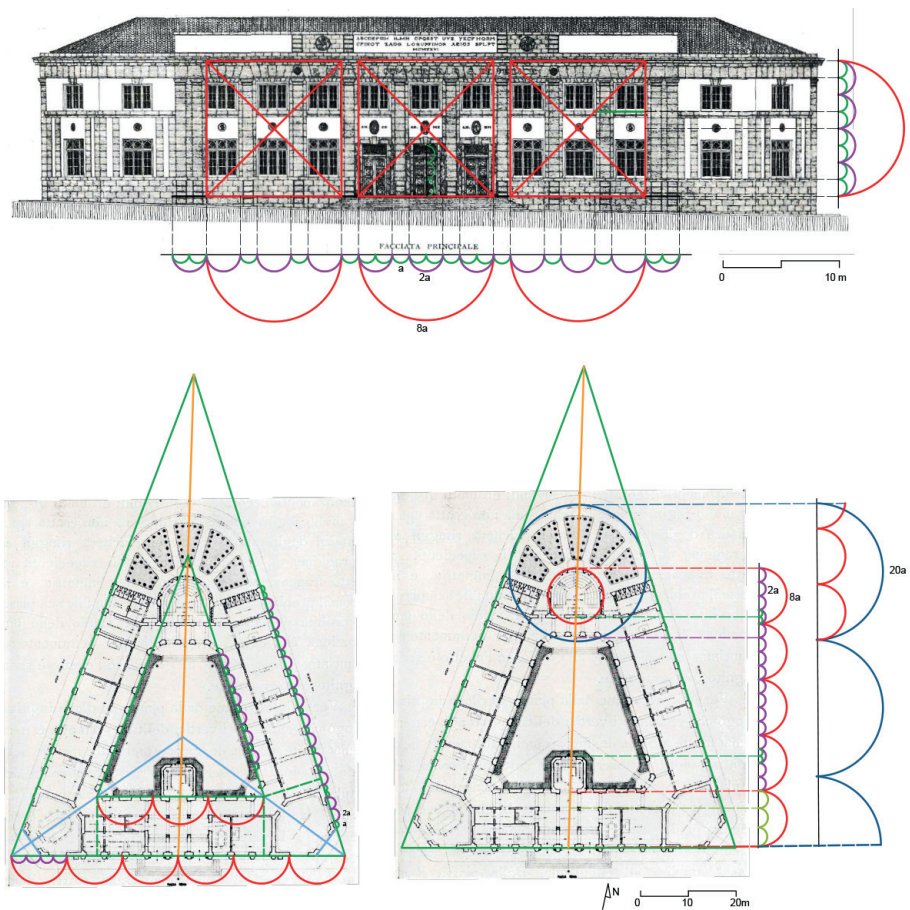


Fig. 6
Geometrical analysis of the south elevation.

Fig. 7
Geometrical analysis of the ground floor plan.

drawing in the conceptual and control phase of the project (Vernizzi 2018). The search for geometric genesis highlights the desire for a design harmony between the parts, achieved through regulating paths underlying the compositional form (Figs. 6-7). The positioning of the structural and decorative elements is defined by a modular grid that marks the relationship between solid and void. The regulating aspect is given by the width of the Doric columns and the frame superimposed on the masonry (a), which define the solid section and lend rhythm to the architectural composition. The tripartite entrance openings are defined by the same module ($2a \times 3a$), as is the height of the building ($8a$) and the proportioning of the other openings and elements that make up the façade layout (Fig.6). The same modularity is found in the compositional definition of the planimetric plant. As can be seen in Fig. 7, the depth of the corridor, the stairwell, the courtyard, the diameters of the apse of the north elevation ($8a$), and the circumference of the lot closing ($20a$) are all based on the same modular genesis, similar to the openings of the side elevations and the inner courtyard.

The advantage of analysing the original plans from the archives and publications in architectural journals of the time together with digital representations obtained from the survey of the realised work as it stands, represents an opportunity for graphical enrichment for a better understanding of the architect's design process and the importance of the graphic tools used.

New forms of digital communication: the role of drawing, surveying, and 3D modelling in understanding and using architectural design

The early 20th-century designs and period photographs that bear witness to the realisation of the project in those years, together with the study of the designer's expressive poetics, stimulate broad reflection on the role of

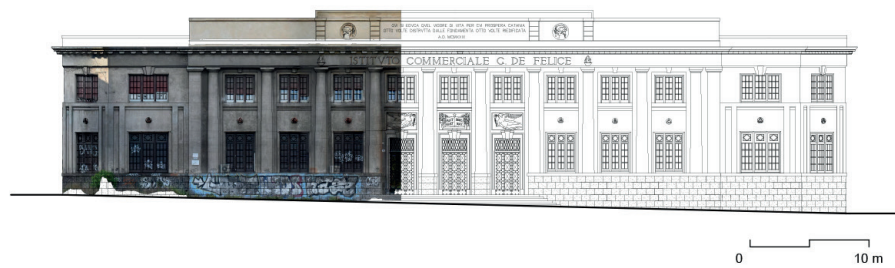


Fig. 8

Digital drawing of the south elevation, superimposed on the orthophoto taken from the photogrammetric survey (reconstruction by Di Salvo C., Murabito R., Russo E., and Spampinato M.).

digital drawings in the documentation of valuable historical architecture. In recent years, information and communication technologies (ICT) have been applied to the apprehension and dissemination of archive projects through different forms of representation. It has allowed the digitisation and preservation of archival heritage and dissemination and accessibility to a greater number of users (Galizia et alii 2020; Guccione 2009b; Santagati et alii 2020).

In order to document Fichera's compositional poetics and render the substantial body of graphic design representations of the institute clear and interactive, a photo acquisition campaign was implemented with a dual role: A multi-image photogrammetric survey to convey the three-dimensional spatiality of the building and the possible variations between design and actual state.

The acquisition of 360° panoramic photos for the creation of a virtual tour including interactive elements for viewing archive drawings and period photos, enabling the enjoyment of the architectural work, even from a distance. Figure 8 shows the digital reconstruction of the institute's main elevation viewed through the orthophoto obtained from the photogrammetric survey and the 2D CAD representation of the elevation. Comparison with the project drawing in figure 6 evidence the loss of the dual tones of the façade designed and realised by the architect, while the architectural design harmony remains unchanged. The relationship between the two representations is crucial for the apprehension of the historic building, also in terms of potential restoration work aimed at returning the architecture to the city as it was conceived by its designer.

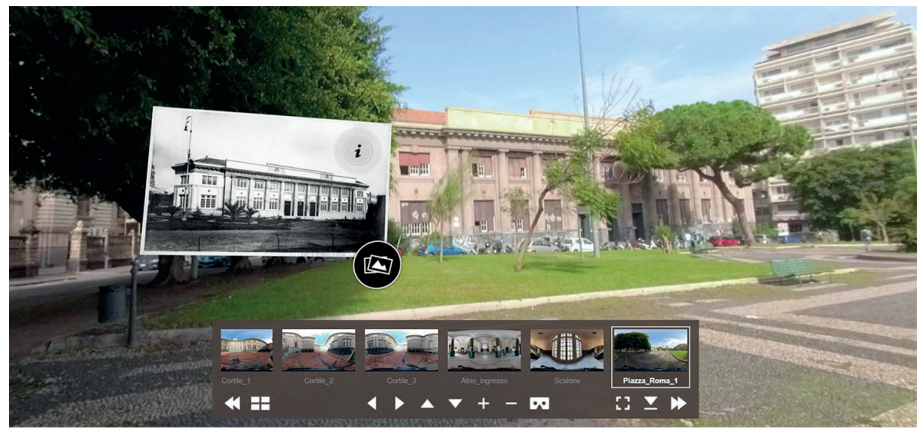
Being one of Fichera's most important building designs now on display at the MuRa museum in Catania, we opted for appreciation and dissemination methods that could be integrated into the museum's repertoire. The virtual tour was conceived and designed around the most significant areas of the building—the relationship with the context, the courtyard, the entrance hall, the monumental staircase, the lecture hall, and the library—and ensuring user interaction with the multimedia elements that narrate the building as it stands (Fig. 9). The interaction with the architecture takes place from the same photographic perspectives of the period photographs and Fichera's project drawings, in a continuous dialogue between the realised work and archive documents. This places visitors and students at the centre of the path between the architectural project and the construction, allowing them to appreciate the variations between the building in its current state, its initial state, and the project drawings. The multimedia elements available during the virtual tour include photogrammetric models, orthophotos, archive project drawings, and 3D reconstructions (Fig. 10) (Vernizzi 2017). For example, the 3D rendering of the courtyard façade allowed the interpretation of Fichera's design choices, of his attention to the laws of perception applied through the implementation of two tones,

Fig. 9

Virtual tour. Top: external view from Piazza Roma; bottom: entrance hall.

Fig. 10

Top: photogrammetric model, orthophoto, and 3D model of the courtyard elevation (modelling by Di Gaetano F., Pirrello G., and Miceli D.); bottom: longitudinal section of the courtyard (Fichera 1928).



which is currently hidden by inappropriate restoration work.

The digital representations and innovative tools allow the collection of data and processed information that are central to the appreciation and communication of the existing heritage within a single virtual environment. From this perspective, the survey and the 2D and 3D digital representation become interpretative and communicative tools of the architectural heritage, within a path of understanding architectural spatiality and education on the importance of archive documents. VR techniques project designs beyond conventional museum displays and allow connection with the underlying architecture of the city. Today, digital representation technologies provide a valuable contribution to the communication of Fichera's poetics and render the precious collections of project drawings usable in innovative and

alternative ways. They form a path from the traditional drawings evoking the original design techniques of the time to digital representations that transcend the flatness of the design sheets.

Note

¹ Born in Catania in 1881, he graduated from the Royal School of Application in Rome in 1905 and, in 1909, he obtained a Diploma in Architecture at the Academy of Fine Arts in Palermo. From 1913 he held the chair of Ornate Design and Elementary Architecture at the first unit of the Faculty of Engineering in Catania.

² The Museum of Representation since 2015 is part of the Museum System of the University of Catania pertaining to the Department of Civil Engineering and Architecture of the University of Catania. The scientific director of the MuRa is Professor of Architecture, Mariateresa Galizia. The research is part of the PIA.CE.RI Plan funding. - MUARCH UNICT 2020-22 intradepartmental project line 2. The author would like to thank the Museum of Representation for allowing the drawings and images from the Francesco Fichera Fund to be consulted and published.

³ 'Master Plan for the Rehabilitation and Expansion of the City of Catania', drafted by Bernardo Gentile Cusa.

⁴ Among the public works designed in Catania: the Electric Company Building (1913), the Post Office (1919), the 'Archimede' Technical Industrial Institute (1917), the Courthouse (1936).

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