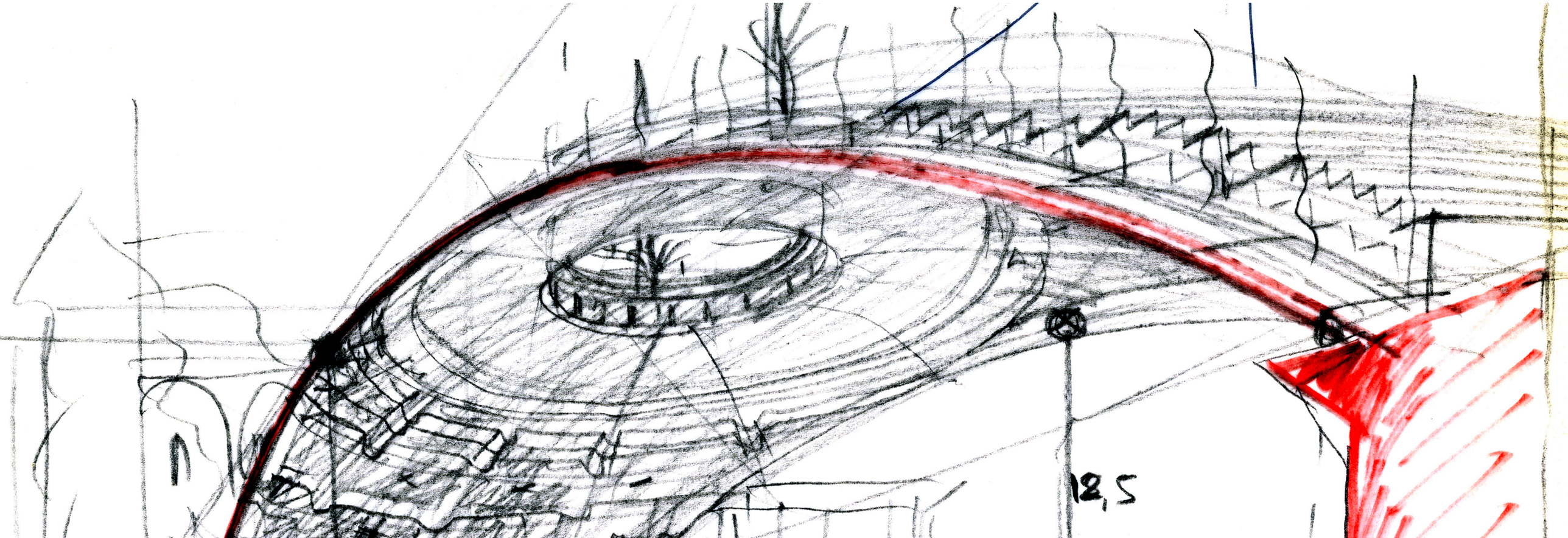
diségno 10.2022

unione italiana disegno
10.2022

diségno

ISSN 2533-2899

english version



diségno

10.2022

DRAWING IN ARCHITECTURAL ARCHIVES

diségno

Biannual Journal of the UID Unione Italiana per il Disegno Scientific Society
n. 10/2022
http://disegno.unioneitalianadisegno.it

Editorial Director
Francesca Fatta, Presidente dell'Unione Italiana per il Disegno

Journal manager
Valeria Menchetelli

Editorial board - scientific committee

Technical Scientific Committee of the Unione Italiana per il Disegno (UID)
Marcello Balzani, Università degli Studi di Ferrara - Italia
Paolo Belardi, Università degli Studi di Perugia - Italia
Stefano Bertocci, Università degli Studi di Firenze - Italia
Carlo Bianchini, Sapienza Università di Roma - Italia
Massimiliano Ciammaichella, Università IUAV di Venezia - Italia
Enrico Cicalò, Università degli Studi di Sassari - Italia
Mario Docci, Sapienza Università di Roma - Italia
Edoardo Dotto, Università degli Studi di Catania - Italia
Maria Linda Falcidieno, Università degli Studi di Genova - Italia
Francesca Fatta, Università degli Studi *Mediterranea* di Reggio Calabria - Italia
Andrea Giordano, Università degli Studi di Padova - Italia
Elena Ippoliti, Sapienza Università di Roma - Italia
Alessandro Luigini, Libera Università di Bolzano - Italia
Francesco Maggio, Università degli Studi di Palermo - Italia
Caterina Palestini, Università degli Studi "G. d'Annunzio" di Chieti-Pescara - Italia
Rossella Salerno, Politecnico di Milano - Italia
Alberto Sdegno, Università degli Studi di Udine - Italia
Roberta Spallone, Politecnico di Torino - Italia
Graziano Mario Valenti, Sapienza Università di Roma - Italia
Chiara Vernizzi, Università degli Studi di Parma - Italia
Ornella Zerlenga, Università degli Studi della Campania "Luigi Vanvitelli" - Italia

Members of foreign structures
Caroline Astrid Bruzelius, Duke University - USA
Glaucia Augusto Fonseca, Universidade Federal do Rio de Janeiro - Brasile
Pilar Chías Navarro, Universidad de Alcalá - Spagna
Frank Ching, University of Washington - USA
Livio De Luca, UMR CNRS/MCC MAP, Marseille - Francia
Roberto Ferraris, Universidad Nacional de Córdoba - Argentina
Ángela García Codoñer, Universitat Politècnica de València - Spagna
Pedro Antonio Janeiro, Universidade de Lisboa - Portogallo
Michael John Kirk Walsh, Nanyang Technological University - Singapore
Jacques Laubscher, Tshwane University of Technology - Sudafrica
Cornelie Leopold, Technische Universität Kaiserslautern - Germania
Carlos Montes Serrano, Universidad de Valladolid - Spagna
César Otero, Universidad de Cantabria - Spagna
Guillermo Peris Fajarnes, Universitat Politècnica de València - Spagna
José Antonio Franco Taboada, Universidade da Coruña - Spagna

Editorial board - coordination
Paolo Belardi, Massimiliano Ciammaichella, Enrico Cicalò, Francesca Fatta, Andrea Giordano, Elena Ippoliti, Francesco Maggio, Alberto Sdegno, Ornella Zerlenga

Editorial board - staff
Laura Carlevaris, Luigi Cocchiarella, Massimiliano Lo Turco, Valeria Menchetelli, Barbara Messina, Cosimo Monteleone, Paola Puma, Paola Raffa, Veronica Riavis, Cettina Santagati, Alberto Sdegno (delegate of the *Editorial board - coordination*), *Ilaria Trizio, Michele Valentino*

Graphic design
Paolo Belardi, Enrica Bistagnino, Enrico Cicalò, Alessandra Cirafici

Editorial office
piazza Borghese 9, 00186 Roma
redazione.diségno@unioneitalianadisegno.it

Cover
Sketch (detail), design for the Ponte dell'Accademia by Francesco Cellini and Giovanni Morabito, 1985. University Iuav of Venice, Archivio Progetti - Bastiana and Francesco Dal Co collection.

The published articles have been subjected to double blind peer review, which entails selection by at least two international experts on specific topics.
For Issue No. 10/2022, the evaluation of contributions has been entrusted to the following referees:
Fabrizio Agnello, Giuseppe Amoruso, Adriana Arena, Marinella Arena, Laura Baratin, Salvatore Barba, Cristiana Bartolomei, Carlo Battini, Francesco Bergamo, Marco Giorgio Bevilacqua, Alessio Bortot, Stefano Brusaporci, Pedro Cabezos Bernal, Cristina Càndito, Marco Carpiceci, Mario Centofanti, Valeria Cera, Stefano Chiarenza, Emanuela Chiavoni, Alessandra Cirafici, Vincenzo Cirillo, Daniele Colistra, Giuseppe D'Acunto, Antonella Di Luggo, Isabella Friso, Carlo Inglese, Alfonso Ippolito, Pedro Antonio Janeiro, Federica Maietti, Marco Muscogiuri, Daniela Palomba, Lia Maria Papa, Leonardo Paris, Andrea Pirinu, Manuela Piscitelli, Daniele Rossi, Gabriele Rossi, Marta Salvatore, Giovanna Spadafora, Daniele Villa, Marco Vitali, Andrea Zerbi.

Consultant for English translations Elena Migliorati.

The authors of the articles declare that the images included in the text are royalty-free or have obtained permission for publication.
The publisher has tried its best to contact copyright holders of the image published on p. 18 and remains at the disposal of any possible owners.

The journal *diségno* is included in the list of scientific journals of the National Agency for the Evaluation of the University System and Research (Anvur) for the non-bibliometric area 08 - Civil Engineering and Architecture and is indexed on Scopus.

Published in June 2022

ISSN 2533-2899

10.2022 diségno

5	*Francesca Fatta*	**Editorial**
		Cover
7	*Caterina Palestini*	Research and Archives of Architecture: the Roles and Disseminations of Drawing
		Image
18	*Anonymous*	The Bodleian Library in Oxford
19	*Paola Puma*	Trees and Labyrinths, Libraries and Archives: the Architectural Drawing between Real Space and Re-Imagined Space
		DRAWING IN ARCHITECTURAL ARCHIVES
		Research Methodologies
27	*Chiara Vernizzi*	Architecture Drawings and Digital Archives: Acquisition, Structuring, Preservation
39	*Laura Farroni* *Marta Faienza* *Matteo Flavio Mancini*	New Perspectives for Drawings in Italian Architecture Archives: Reflections and Experiments
51	*Alberto Sdegno* *Veronica Riavis*	For a Digital Archive of Interactive Models by Marcello D'Olivo
65	*Davide Mezzino* *Beppe Moiso* *Tommaso Montonati* *Francesca Valentina Luisa Lori*	The Digitization of the Photographic Archive of Museo Egizio: Strategies of Interpretation and Communication
		Collections
77	*Margherita Guccione*	MAXXI Architettura between Museum and Archive. Protection, Research and Valorization of Architects' Archives in the 21st Century
85	*Sonia Mollica*	The Italian *Album dei fari*: between Knowledge and Digitization
95	*Vincenzo Bagnolo* *Raffaele Argiolas* *Simone Cera*	Digital Translations of Paper Architectures
107	*Maurizio Marco Bocconcino* *Mariapaola Vozzola*	From the Shelf to the Map, from the Map to the Information Model and Back: the Archivio Porcheddu at the Politecnico di Torino
		Digital Reconfigurations
123	*Francesco Maggio* *Eleonora Gelardi*	The Construction in Progress of a Private Archive

135 *Manuela Incerti, Gianmarco Mei, Anna Castagnoli* — Ubaldo Castagnoli: on the Graphic and Historical Traces of an Exponent of Gruppo 7

147 *Massimiliano Ciammaichella* — Memory of the Ephemeral. Towards an Italian Baroque Theatre and Scene Digital Archive

161 *Fabrizio Avella* — The Third Competition for Ernesto Basile's Palace of Justice. Analysis, Conjectural Reconstruction and Photo Insertions

173 *Wilson Florio, Ana Tagliari* — The Enhancement of Cultural Heritage: from Documentation to Digital Simulation of MAC USP by Paulo Mendes da Rocha

185 *Vincenza Garofalo, Elisa Luna* — Palazzo Lanza dei Principi di Deliella. From Ernesto Basile's Archive Drawings to Virtual Reconstruction

197 *Alessandra Cirafici, Alice Palmieri* — Naples: Waterfront Projects between the Two Wars. Architectural Visions and Thoughts on the City in the Drawings of the Frediano Frediani Private Archive

RUBRICS

Readings/Rereadings

215 *Luigi Cocchiarella* — *I luoghi di Dedalo. Elementi teorici dell'architettura* by Vittorio Ugo. A Rereading

Reviews

221 *Mirco Cannella* — Vincenzo Cirillo (2021). *Feste Settecentesche a Napoli. Disegni e progetti per l'architettura effimera.* Napoli: La Scuola di Pitagora

223 *Andrea Giordano* — Domenico Pastore (2021). *Dalla superficie al volume. Una lettura grafica dei Solidi di Cesare Leonardi.* Melfi (Potenza): Libria editrice

225 *Sereno Innocenti* — Giuseppe Caglioti, con Tatiana Tchouvileva e Luigi Cocchiarella (2020). *Odi et amo. Dalle ambiguità percettive al pensiero quantistico*. Milano: Mimesis

227 *Marcello Scalzo* — Felice Romano (2021). *Nouvelle Méthode di Jean-Jacques Lequeu. Ridisegno, analisi grafica e rilettura critica.* Milano: FrancoAngeli

Events

231 *Michela Ceracchi* — *REAACH-ID 2021 Symposium*. Research and Reflections on the Use of Digital Technologies for Representation

235 *Edoardo Dotto* — *III Research Evaluation Seminar in SSD ICAR/17 – Disegno. Disciplinary strategies and policies*

237 *Marco Fasolo* — *Representing Time. Architecture, Geometry and Astronomy. International Study Day*

239 *Barbara Messina* — *ANNA SGROSSO through Memory and Future*

243 *Rossella Salerno* — *Connecting. Drawing for Weaving Relationships*

246 *Michele Valentino* — *Workshop 3D Modeling & BIM. Information and 3D Modeling for Cultural Heritage*

251 — The UID Library

The Third Competition for Ernesto Basile's Palace of Justice. Analysis, Conjectural Reconstruction and Photo Insertions

Fabrizio Avella

Abstract

The competition for the Palazzo di Giustizia in Rome takes place in four phases that develop between 1884 and 1887. The project of the third competition (1886-1887), drawn up by Ernesto Basile (Palermo 1857-1932), reveals a great maturity design that transforms the complex functional program into a rigorous neo-Renaissance style building. The jury recognizes the quality of the project and selects it for the final phase by invitation (1887) together with that one of Guglielmo Calderini, who will be the winner. The original drawings of the unrealized work are kept at the Basile Endowment of the Department of Architecture of the University of Palermo: among them there are sketches, preparatory drawings and final project drawings, mainly in pencil and ink on paper and cardboard, with, in some cases, monochrome watercolor glazes.
The studio applies a consolidated methodology: analysis of the original drawings, survey, plane vectorization, graphic analysis of compositional functions and parties, interpretation of graphic inconsistencies, three-dimensional modeling, rendering and photo insertions. Thanks to an in situ photographic campaign it was possible to perform some photo insertions, processed respecting both the congruence of the perspective view of the photos and the lighting conditions. The photo insertions allow a visual comparison between the realized work and the unbuilt one, as well as the relationships established with the urban context.

Keywords: Ernesto Basile, archive drawings, conjectural reconstruction, rendering, photo insertion.

Introduction

This study is part of the trace of operations of graphic analysis and conjectural reconstruction of unrealized architectures starting from drawings and archival documents; it has, as its object, the project of the third competition of the Palazzo di Giustizia in Rome (1886-1887) by Ernesto Basile (Palermo 1857-1932).
Basile elaborates the project during his stay in Rome, stated in 1882, the year in which he is called to carry out the function of assistant to the chair of Technical Architecture at the Royal Application School for Engineers and Architects, held by Enrico Guj. The following year he himself became a lecturer in charge until 1890, the date of his return to Palermo.
These years are marked not only by academic activity, but also by the elaboration of projects for two important institutional headquarters to be built in Rome, which in 1871 became the capital of the Kingdom of Italy: the Palace of Parliament and the Palace of Justice.
The two events of the competition projects overlap temporally and for Basile they are an opportunity to develop a language suited to institutional and representative offices of this caliber [1].
The essay focuses on the study of the building fronts and on the relationships with the urban context, visualizing them through photo insertion operations.

 BY-NC-ND

The project

The competition for the Palace of Justice, announced by the Minister of Grace and Justice Giuseppe Zanardelli, takes place in three phases, in 1884, in 1885/86, in 1886-1887, followed, in 1887, by the invitation-only competition reserved for finalists Ernesto Basile and Guglielmo Calderini, whose project was declared the winner in December 1889 [2].
The Palace of Justice will have to be built in the expansion area of Prati Castello [3], on the Lungotevere, and is one of the key buildings of a political program that, in search of a new "national style", wants to redesign the face of the capital also thanks to the construction of buildings that represent the new institutions: in the client's request it is expressly written that the new Palace of Justice must have an "almost monumental" character and "a grandiose and severe aspect, as befits the temple of justice" [Zanardelli in Kirk 1996, p. 84].
It is also clear the intention to redesign a piece of the city that has a strong historical connotation and that the construction of the Palace of Justice should be included in a broader program of urban redesign: "The building would have had a large square in front and behind; finally, due to its location, conceived in line with a new road artery, now Via G. Zanardelli, it would have been, across the Umberto Bridge, in ideal continuity with the innermost Piazza Navona" [Lo Tennero 2014, p. 116] (fig. 1).
The two instances, the architectural one and the urban one, are well summarized by Kirk: the construction of the new institutional headquarters must mark "the development of modern building typologies, the creation of a political program of architectural representation and the redesign of the urban landscape of the capital" [Kirk 1996, p. 83] [4].
The project of the third competition elaborates the layout of the second [5], probably a necessary choice dictated by the limited time available: the third competition is, in fact, announced in May 1887 and the delivery is set for the month of september of the same year. Basile himself defines it as "an immediate derivation of the one presented at the last competition, with the variants suggested by a further study made on the basis of the reasoned previous verdict" [Basile 1887, p. 7].
Basile, already in the second version of the competition, completely rethinks the project compared to the one presented for the first [6]: he sets aside the idea of the central courtyard, replaced by a new nucleus consisting of the great Hall of Lost Passes and abandons the neo-Florentine style, considered not well suited to the building, in favor of a neo-Renaissance language, thus responding to the requests of the examining commission.
The floor plan has a quadrangular development, 170 meters on the main front and 146.5 meters on the side faces. The scheme has two main axes of symmetry, perpendicular to each other, which intersect, in the center, in the Hall of Lost Steps, the compositional fulcrum of the entire project; as Basile writes "it holds the center of the building and forms its heart" [Basile 1886, p. 17].
The basement includes accessory functions and local for prisoners awaiting trial; on the ground floor there are many of the auxiliary functions in judicial processes activities of, such as chancelleries, council chambers, rooms for investigative documents, rooms for appraisals and other rooms for prisoners. The mezzanine floor is the one that houses the Civil Court and the Assize Courts and the Hall of Lost Steps (fig. 2).
On the first floor the functions considered to be the most important, namely the Court of Cassation, on the left, and

Fig. 1. Partial plan of Rome with highlighted the insertion area of the Palace of Justice.

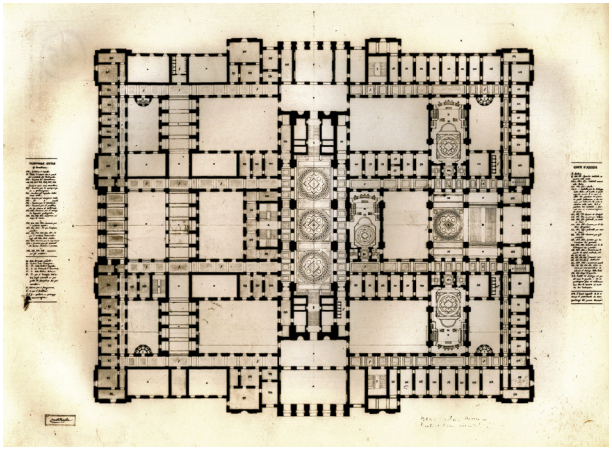
the Court of Appeal on the right, mirroring the Hall of Lost Steps.
On the second floor the offices of the Council of the Lawyers' Association, the Disciplinary Council of Attorneys, the Library, the Registers Office on the left and the offices of the Commercial Court and the Urban Court on the right.
The system remains similar in the development of the third version unless the Hall of Lost Steps is moved from the mezzanine to the ground floor, at the same level as the main entrance, a change that involves the redesign of the stairs (fig. 3).
The articulation of the fronts takes up the volume of the previous project, but some variations are introduced to meet the requests of the examining commission: "the basement area is strengthened, a Doric entablature is added to crown the ground area, and the height of the principal order is reduced in relation to the one of the underlying parties […]; the Hall of Lost Steps is made evident on the outside with a rectangular elevation and the interior decoration in the lower area changed" [Basile 1886, p. 17].
The reinterpretations of the main façade in the third version concern the redesign of the central portion, in which an entrance with three arches is preferred to the previous with five ones and semicircular niches with statuary elements are inserted between the windows of the last level.
On the main front, the central body marks the entrance with a strong overhang and with a colonnade resting on a base set between slightly projecting foreparts; the lateral wings have a succession of openings with a tympanum on the first floor and they are closed by slightly projecting angular bodies. In both versions all the walls are treated with ashlar (fig. 4).
Both the lateral and the rear fronts reiterate the theme of the façade with projecting elements in the central portions set between slightly projecting foreparts, similar in language to the angular ones. The tympanum above the colonnades, present only on the main front, is omitted in order to underline its hierarchically dominant role (figs. 5-7).
The modular scanning of the vertical axes and openings are consistent with both the plan and the elevations of the second version.

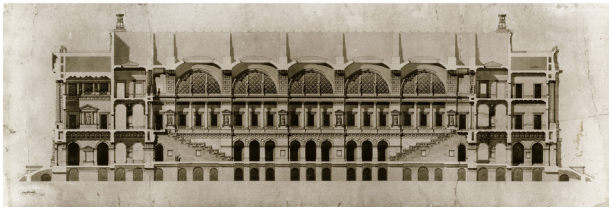
Archival and documentary units

The original drawings of the third competition are part of the *Drawings Archive of the Basile Fund of the Scientific*

Fig. 2. Ernesto Basile, Plan of the mezzanine floor of the second competition (Fondo Basile - DARCH UNIPA, ADP 105).

Fig. 3. Digital modeling of the Hall of Lost Steps (graphic elaboration M. Marchese); Ernesto Basile, Section of the third competition (Fondo Basile - DARCH UNIPA e, ADP 166).





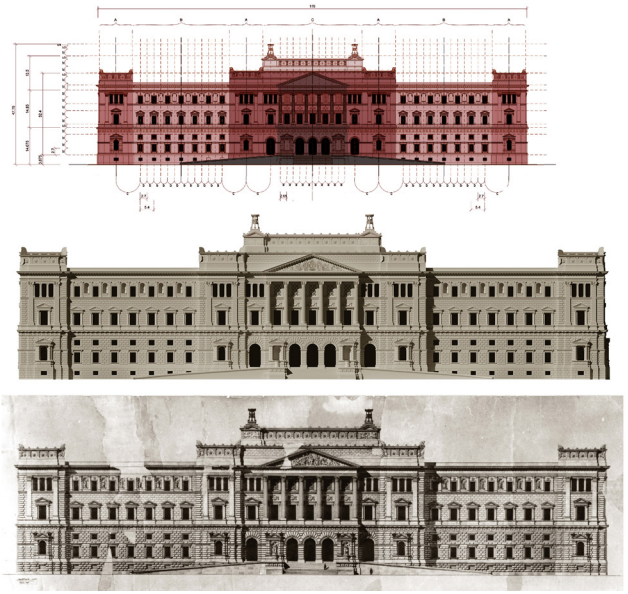


Fig. 4. Analysis and digital model of the main front (graphic elaboration D. Di Bella); Ernesto Basile, Main prospectus of the third competition (Fondo Basile - DARCH UNIPA, ADP 145).

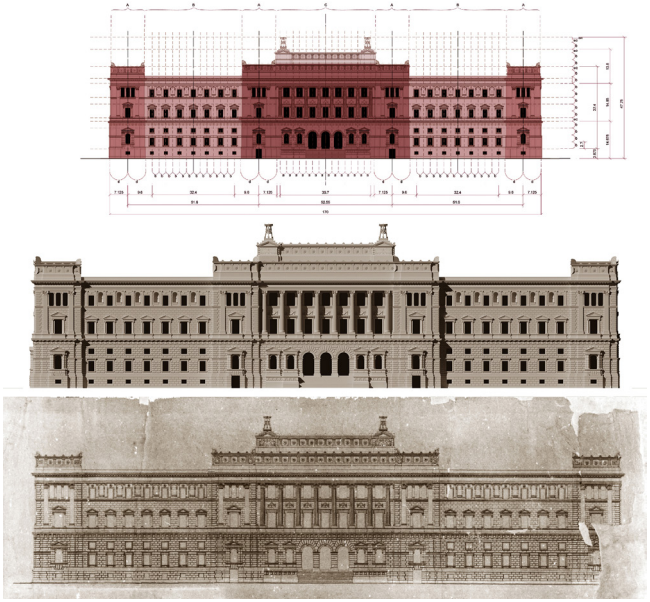


Fig. 5. Analysis and digital model of the rear face graphic elaboration D. Di Bella); Ernesto Basile, Rear prospectus of the third competition (Fondo Basile - DARCH UNIPA, ADP 161).

Collections of the Department of Architecture of the University of Palermo [7].
The documentary units examined belong to the Drawings Archive - Projects section and are cataloged within the archive unit 19 with the codes from ADP139 to ADP 173 [8]. There are 35 documentary units including design sketches, preparatory drawings, study drawings and definitive drawings. The sketches and the draft drawings are on paper and, in some cases, on the back of illustrated postcards, confirming the character of a quick note of ideas; the line is in Indian ink or blue ink, they are not scaled and small in size, varying between 133 x 107 mm. and 147 x 326 mm.
The study drawings are almost all made on paper, with the exception of a drawing of the forepart drawn on glossy paper; they are all in 1:200 scale, with the exception of a partial section in 1:250 scale, and are made with blue ink, except for the aforementioned drawing of the forepart made with pencil, Indian ink and blue ink. These are mainly studies of portions of the prospectus on small format supports, between 133 x 107 mm and 175 x 151 mm.
The final drawings relate to the elevations: two of them represent the main façade, on a scale of 1:250 and 1:100, both in pencil, Indian ink and monochrome watercolor on cardboard, in sizes 412 x 777 mm and 589 x 1835 mm; the right side elevation, in scale 1:100, is made in pencil, Indian ink and monochrome watercolor on cardboard, size 658 x 1460 mm; the left side elevation, in scale 1:200, is in Indian ink and monochrome watercolor on cardboard, size 581 x 907 mm; the longitudinal section, in 1:100 scale, in Indian ink and monochrome watercolor on cardboard, measures 608 x 1771 mm. With less than two plan studies (ADP141 and ADP143) no planimetric drawings are available, although they had been drawn up and presented.
With regard to the planimetric studies, reference is therefore made to the plants belonging to the archival unit no. 17, including 34 documentary units relating to the works of

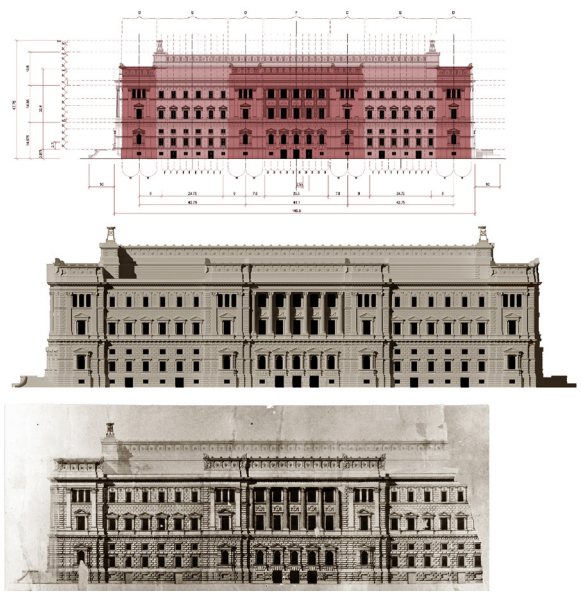


Fig. 6. Analysis and digital model of the right front (graphic elaboration D. Di Bella); Ernesto Basile, Right side elevation of the third competition (Fondo Basile - DARCH UNIPA, ADP 162).

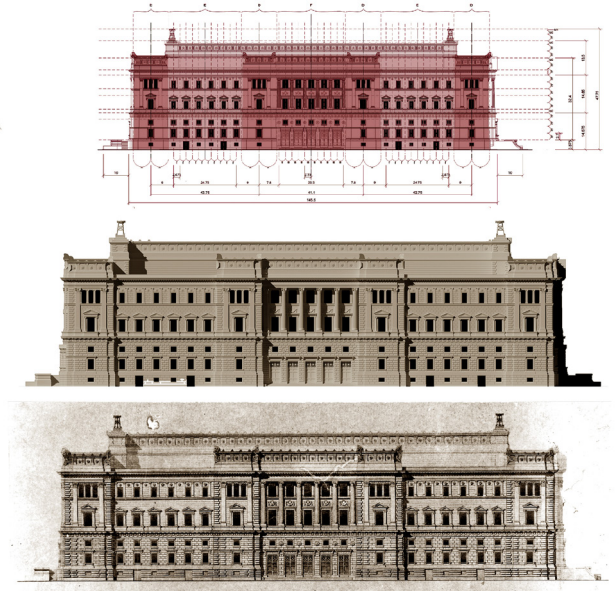


Fig. 7. Analysis and digital model of the left front (graphic elaboration D. Di Bella); Ernesto Basile, Left side elevation of the third competition (Fondo Basile - DARCH UNIPA, ADP 163).

the second competition. In particular, the plans, considered definitive, on a scale of 1:200, of the underground floor, the ground floor, the mezzanine floor, the first floor and the second floor, identified by the ADP 103 to ADP 107 codes were taken into consideration. it deals with large format plates, measuring from 853 x 1133 mm of the first floor to 967 x 1140 mm of the ground floor.
The drawings were restored in 1999 by the Paper Restoration Laboratory of the National Institute for Graphics of the Ministry of Cultural Heritage [9].

Some notes on the drawing according to Ernesto Basile

It is worth making some considerations on the role of drawing according to Ernesto Basile, which can be deduced from his manuscript *Architettura. Dei suoi principi e del suo rinnovamento*, dated 1882 [Basile 1882], in which he notes various reflections about the methods and techniques of representation. Regarding the methods, it is undeniable how important the drawings in plan, elevation and section are considered: he uses them in the study sketches and in the preparatory and executive drawings, in scale, masterfully executed and with an extraordinary attention to detail. For him, however, the projection drawing has a value aimed more at the design and execution than at communication, because "coordinating the separate impressions received from the plans, sections or elevations, in an impression, is very difficult" [Basile 1882, p. 92]: so difficult that "it is not appreciated by the public for which it is almost always a kind of mysterious writing, a hieroglyph, in which it does not understand anything" [Basile 1882, p. 92]. On the contrary, the perspective view offers the possibility of having an image that is closer to the real perception and this gives it a greater ability to communicate. Basile attributes a particularly important role to perspective and

uses it very often, both in the form of quick sketches and in the form of constructed drawings, and recognizes a double value: one relating to the ability to communicate, as "it is free of many of the disadvantages of the simple projection method and the relationships between the dimensions are manifested in a way very close to true" [Basile 1882, p. 98]; the other concerns the process of verifying the design choices of masses and volumes: "The two profiles ab and a'b, for instance, looked at by O produce the same effect while one is very developed in height and the other instead in ledge. Sometimes it is possible to resort to the expedient of developing the profiling of the overhanging frame instead of in height, which from certain particular points of view often refines the masses and makes them less heavy" [Basile 1882, pp. 84, 85].
His perspectives are almost always with vertical plane and often include human figures, to help understanding of dimensional relationships and to enrich the scene (fig. 8).
Regarding the representation techniques, Basile uses several ones: from the quick pencil or ink on paper of the sketches to the sharp pencil on cardboard of the preparatory drawings, to the precise ink lines of the definitive drawings.
There are often shadows, which almost always respect the canonical rule of the inclination at 45° coming from the left, but, rather than the application of an academic dogma, about which his perplexities will be reported, they seem to express the need to see the plastic aspects of architecture. The shadows are performed in various ways: with single ink lines, with sketches, or with watercolor glazes in the final drawings, sharper to mark the projections and recesses and lighter for the secondary elements such as ashlar, statuary and decorative elements.
For Basile, in summary, drawing is not just a simple application of geometric and projective rules, but is, indeed, a complex and refined language of the process that anticipates, generates and communicates architecture.

Fig. 8. Ernesto Basile, perspective view of the third competition (Fondo Basile - DARCH UNIPA, ADP 170).

Methodological process

The preparatory phase for the digital reconstruction was the analysis of the available documentary material: among the drawings of the second competition there are the plans of all levels in a scale of 1:200 and among those of the third competition there are the main elevation in scale 1:250 and 1:100, 12 studies of the central forepart of the main elevation, in scale 1:200, the right side elevation, in scale 1:100, the left side elevation in scale 1:200, the rear elevation in scale 1:100, the longitudinal section in scale 1:100, a perspective view and several detailed sketches.
The available material, in excellent condition and without significant gaps, was considered sufficient to undertake a conjectural reconstruction of the project.
The scans provided by the Basile Equipment were subject to dimensional control thanks to the scaling of the raster images and the verification of metric correspondence with the relief of the original drawings.
We moved on to verify the congruity between the plans of the second competition and the elevations of the third, with particular attention to the overall and partial sizing of the architectural parts, to the positioning of main and secondary axes of symmetry, as well as to the measures and modular scanning of the openings.
The metric measurement system, in use at the time of the drafting of the project, was used to search modular parties, useful for the vectorization of both planimetric and altimetric drawings. A modular system based on the A-B-C-B-A succession on the main front is hypothesized, elaborated by 5.10 m. submodules (2a) for the intercolumniation and 5.40 m. (2b) for the distance between the windows; on the lateral fronts the ternary system is repeated but with a dimensional contraction that generates the succession D-E-D-F-D-E-D, marked by submodules of 4.95 m. for the center distance of the windows and, again, 5.40 m. for the intercolumniation of the colonnaded projection. The rear

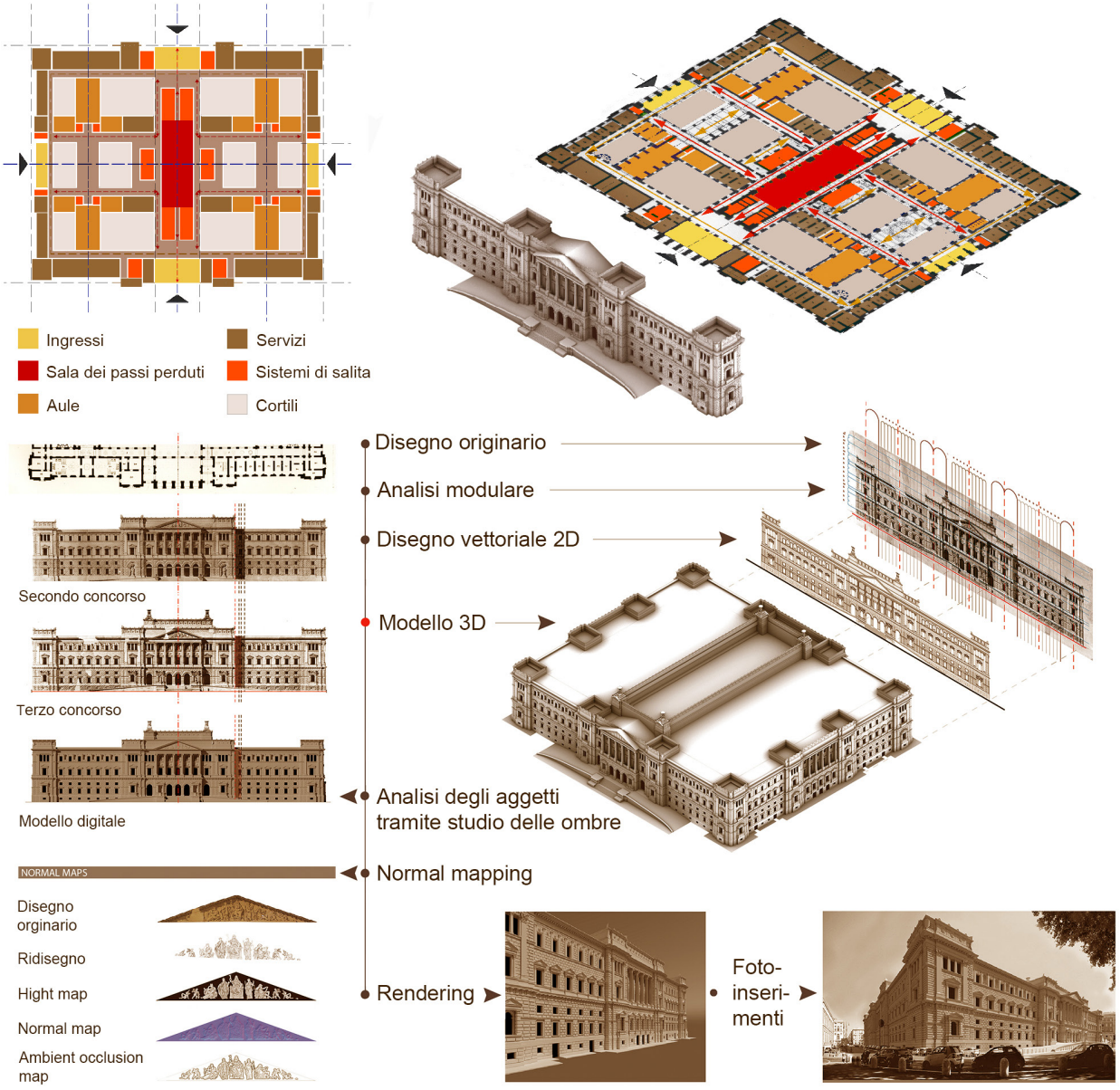


Fig. 9. Analysis of the functions and methodological process (graphic elaboration F. Avella, D. Di Bella).

Fig. 10. Photo insertion, seen from Ponte Umberto I (graphic elaboration D. Di Bella, graphic post-processing by the author).

front repeats the layout of the main one, except for the presence of submodules necessary to define some secondary elements.
Although the hypotheses on modular systems formulated *a posteriori* may have margins of error, in the absence of univocal indications from the designer, the vectorization carried out according to this structure has given excellent results in comparison with the original drawings.
The subsequent phase of modeling the fronts also made use of the information relating to the depth of the projections, which can be deduced from the shading, where present. In fact, having only a cross section available, it was essential to refer to this system of interpretation in the absence of direct metric data. To verify the correctness of the attribution of the measures that cannot be directly deduced, it was decided to apply to the models the shadow deriving from a source at an improper distance, with rays inclined at 45° on the horizontal plane and 45° on the vertical one, applying, therefore, the same academic rule used by Basile and found both in the examined drawings and in those of many of his other projects.
The overlapping of portions of the digitally processed elevations with the original ones made it possible to verify the sizing of the overhangs.
The digital model, performed through surface modeling of a CAD software [10], was limited to the main architectural parts, while polygonal modeling was performed for the sculptural elements and capitals.
Regarding the bas-reliefs, it was decided to avoid polygonal modeling, to avoid the overloading of the computational aspect during the rendering phase, and to elaborate normal maps obtained from the shaded pencil redrawing of the original drawings. The need to redesign them arose because the representation scale does not provide a sufficient level of detail to obtain good maps; furthermore, the shadows rendered with watercolor glazes do not lend themselves to an effective post-processing for the generation of normals, which is more effective when making pencil drawings in which deliberately accentuated shadows are applied (fig. 9).
With regard to the material rendering it was considered that from the original drawings it is not possible to deduce the solutions hypothesized for the material treatment of the wall surfaces. In fact, as already mentioned, there are watercolor glazes for the shading but there are no chromatic indications for the choice of plasters. It was therefore decided to render the surfaces with a monochromatic material that had only a hint of roughness to avoid a too homogeneous effect.

Analysis of the urban context and photo insertions

The area of the building indicated in the competition notice is of great importance from an urban point of view: the courthouse is located on the Lungotevere with the main front in line with the Umberto I bridge, an extension of the road entitled to Giuseppe Zanardelli, leading to Piazza Navona. With respect to this road axis and the bridge, the building is constituted as an urban backdrop and must express its monumentality in a context that sees the architectural presence of Castel Sant'Angelo not far to the west.
The front on the Lungotevere therefore acquires a hierarchically dominant character and is configured as the main elevation with a strong monumental value.
On the opposite side, the rear elevation of the building is the background to the long axis, consisting of via Giuseppe Ferrari, via Lepanto, via Marcantonio Colonna, via Cicerone, which connects Piazza Giuseppe Mazzini with Piazza Cavour.
The front on Piazza Cavour is treated, both by Basile and by Calderini, with less marked monumentality to leave recognizability of main front to the one on the Lungotevere, while, in both projects, the fronts on the secondary roads, via Triboniano and via Ulpiano, are clearly treated as secondary side fronts.
The building therefore aims not only to design an important institutional site, but also to reconfigure an urban portion. It therefore seemed necessary to visualize the value of an architectural symbol capable of redesigning the rich surrounding urban context by choosing photo insertions as an expressive language (figs. 10-12).
To make them, some photographs were taken with a digital camera with focal lengths of 28 mm. The decision not to use wide-angle lenses arose from the need to create images whose perspective was not too aberrated. The same parameter was used to create the rendered perspective views [11].
The camera points were chosen by positioning on elements that are easily recognizable from the satellite zenith views. In the absence of recognizable elements it would be advisable to carry out a topographic campaign to uniquely position the camera points, but, in this case, it was not necessary.

The exact date and time of the photographic shots were also recorded in order to subsequently reproduce the same lighting conditions.
In this way, you have all the information necessary to reproduce the perspective views of the digital model respecting the parameters of the photographic images.
After rotating the model to make the y axis, initially parallel to the lateral sides, coincide with the direction of geographic north, we moved on to the phase of collimating the digital perspective views with the photographic images.
The camera matching method was used [12], inserting at least 8 reference points on planes assumed to be orthogonal [13]. The correspondence of the inserted camera with that of the photographic image is ensured by reporting on the model some planimetric and altimetric measurements taken on the existing building.
The orientation of the model according to the actual topographical position made it possible to reproduce the existing light conditions. By inserting a light source that simulates the sun at the time and date of the photographic shots, two important results are obtained: the first is the exact reproduction of the shadows according to the same inclination of real sunlight; the second is the reproduction of indirect light on the fronts not directly affected by the sun's rays. The rendering engine used [14], in fact, does not limit itself to calculating the shadows deriving from the light source, but also calculates the indirect light of the celestial vault, which varies, according to the position of the sun, in terms of intensity and chromatic values.
In this way, a luminous condition is reproduced that differs from that of the drawings, in which the shadow, as already mentioned, is visible according to the rule of the inclination of the rays at 45°. But Basile himself, while applying it often, recognizes it as misleading: "In truth, it can be said on the contrary that that light will never be obtained, first of all because the architect is not always free to give the exposure that he believes appropriate to a building or a monument, second because even when it was it could not obtain an effect similar to the one drawn for a few moments, the lighting naturally varying with the position of the sun, that is with the hours and with the state of the Sky" [Basile 1882, pp. 96, 97].

Fig. 11. Photo insertion, corner view between via Triboniano and Piazza dei Tribunali (graphic elaboration D. Di Bella, graphic post-processing by the author).

Fig. 12. Photo insertion, view of the front on Piazza Cavour (graphic elaboration D. Di Bella, graphic post-processing by the author).

The last phase was that relating to the superimposition of the perspective views to the photographic ones. Reference points have been identified on the existing building, in this specific case the edges of the wall faces, built on the lot identified in the competition that it occupies in its entirety, as well as Basile's project.
The insertion was subsequently checked by verifying that the horizon of the digital perspective coincided perfectly with that of the photograph.
In addition to the operations of defining the contours, it was necessary to modify the brightness and exposure levels to make the rendering of the view uniform with the photographic one, an operation often inevitable because, although the calculation of the light may be refined, during the rendering phase, it is difficult to perfectly reproduce the conditions of brightness, exposure and contrast of the photographic image.
Finally, some considerations on the choice of grayscale rendering. As already mentioned, Basile's drawings do not give us any indications on the material aspect hypothesized for this building, nor can it be deduced, to date, from written documents or from the final report. The choice of neutral material rendering is therefore obligatory, discarding a priori the hypothesis of imaginative reconstructions, perhaps captivating, but without foundation. The insertion of a view in shades of gray in a color image would have given a jarring effect and it was therefore decided to exclude the color from the final images.

Conclusions

Conjectural reconstructions make important contributions to the knowledge of only designed architectures that often reveal the theoretical apparatus of an architect. Addressing the theme of their relationships with the urban or landscape context, where possible, proposes a further theme of architectural analysis, not only compositional thought, but also, if not above all, a tile of a large mosaic that is the city or the territory. Whether it manifests itself by mimetic analogy or by linguistic contrast, it changes and rewrites the context in which it is inserted. Making these relationships visible also for unrealized projects can make a contribution to knowledge in this respect as well.

Notes

[1] About the stage of Basile's formation, see Sessa 2002, pp. 13-62.

[2] The building will be built between 1889 and 1911.

[3] This provision is included in the Rome City Plan launched on March 8, 1883, known as the "Viviani Plan", named after the engineer who was then director of the Municipal Technical Office.

[4] Original text: «the development of modern building types, the creation of a political program of architectural representation and the redesigning of the urban landscape of the capital» [Kirk 1996, p. 83].

[5] For the description of the project for the second competition see Basile 1886.

[6] For the description of the project for the first competition see Basile 1884.

[7] The Scientific Responsible is Prof. Ettore Sessa, who is thanked for his availability.

[8] For a complete description of the archival and documentary units see Mauro, Sessa 2015.

[9] For a complete and detailed description of the restoration interventions see Mauro, Sessa 2000.

[10] Rhinoceros 6 software was used for 3D modeling.

[11] The relative wording of cameras in rendering software is often referred to as FOV (Field of view). The shots taken with wide-angle lenses of 28 mm in length. they generate perspective images with a viewing angle of 65.47 °, wider than the 60 ° conventionally indicated, but still acceptable.

[12] The process was carried out with 3DStudio Max 2020.

[13] The process works with a minimum of 5 collimation points, called CamPoints (4 on a reference plane and a fifth for the depth), but we preferred to insert more to obtain a more accurate result.

[14] The rendering engine used is Vray.

Author

Fabrizio Avella, Department of Architecture, University of Palermo, fabrizio.avella@unipa.it

Reference List

Basile, E. (1981). *Architettura Dei suoi principi e del suo rinnovamento, 1882*. Palermo: Novecento.

Basile, E. (1884). *Per il mio progetto del Palazzo di Giustizia in Roma e per l'arte*. Roma: Stabilimenti del Fibreno.

Basile, E. (1886). *Memoria annessa al progetto dell'architetto Ernesto Basile, Concorso per il progetto del palazzo di Giustizia in Roma, 30 aprile 1886*. Fondo Basile (DARCH-UNIPA) Palermo, ms. (riproduzione).

Basile, E. (1887). *Memoria annessa al nuovo progetto dell'architetto Ernesto Basile, Concorso per il progetto del palazzo di Giustizia in Roma, 30 settembre 1887*. Fondo Basile (DARCH-UNIPA) Palermo, ms. (riproduzione).

Kirk, T. (1996). Roman Architecture before the Lateran Pact: Architectural Symbols of Reconciliation in the Competition for the Palazzo di Giustizia, 1883-87. In F. Boco (a cura di). *Guglielmo Calderini. La costruzione di un'architettura nel progetto di una capitale. Atti del Convegno, Accademia di Belle arti di Perugia*. Roma, 23 settembre 1995, pp. 83-125. Perugia: Guerra edizioni.

Lo Tennero, G. (2014). La partecipazione ai concorsi per il Palazzo di Giustizia dello Stato Italiano (1883-1887). In E. Mauro, E. Sessa (a cura di). *Collezioni Basile e Ducrot: mostra documentaria degli archivi*, pp. 116-122. Palermo: Plumelia Edizioni.

Mauro, E., Sessa E. (2015). *I disegni della Collezione Basile*. Roma: Officina.

Mauro, E., Sessa E. (2000). *Giovan Battista Filippo Basile ed Ernesto Basile, settant'anni di architetture: i disegni restaurati della Dotazione Basile, 1859-1929*. Palermo: Novecento.

Sessa E. (2002). Gli anni della formazione. In E. Sessa. *Ernesto Basile. Dall'eclettismo classicista al modernismo*. Palermo: Novecento.