881

EERO SAARINEN
CBS BUILDING,
NEW YORK, 1960–1965

HEATHERWICK STUDIO
GINO MALACARNE
PAOLO ZERMANI

TOBIA SCARPA
X-ARCHITECTS
TADAO ANDO

# CASABELLA

DAL 1928

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# 881

**In copertina**
La copertina di questo numero fa riferimento al *Gastrotypographicalassemblage* (1966), composizione disegnata da Louis Dorfsman, direttore creativo della CBS, per la caffetteria al ventesimo piano del CBS Building. Dopo il restauro, dal 2014 l'opera è esposta nel Culinary Institute of America a New York.

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# 62 Tobia Scarpa Chiesa di San Teonisto, Treviso

**Un esempio di buone maniere**
**Francesco Dal Co**

Non disponiamo di informazioni sicure circa San Teonisto, vescovo e martire, e dopo il 1000 patrono della sede episcopale di Treviso. A Teonisto è intitolata la chiesa sorta nell'omonimo monastero formatosi all'inizio del Quattrocento e poi soppresso nel 1810. «Lodevole riforma dell'architetto conte Giordano Riccati», il celebre scienziato vissuto tra il 1709 e il 1790, curatore, tra l'altro, dell'edizione del 1780 di *Elementi di Architettura* di Francesco Maria Presti e studioso dei rapporti tra musica e architettura, la chiesa di San Teonisto ospitava, tra l'altro, una tela di Jacopo da Ponte e «la copia delle Nozze di Cana di Paolo Veronese egregiamente eseguita», come si legge nella *Corografia* di Attilio Zuccagni Orlandini (1844). In seguito a un bombardamento, nel 1944 il monastero è stato raso al suolo e anche la chiesa di San Teonisto ha subito gravi danneggiamenti, che hanno coinvolto la copertura, gli apparati decorativi e il prospetto ora in attesa di venire risarcito delle parti andate perdute e del timpano, in particolare, una prova dei modi costruttivi messi a punto da Riccati. Nella chiesa, come hanno confermato i ritrovamenti fatti durante i lavori di restauro, sono conservate tracce della storia più antica di Treviso, mentre la costruzione è una testimonianza del lascito della cultura illuminista veneta della quale Riccati e la sua famiglia furono tra i principali esponenti. Dopo la guerra, i resti della chiesa sono stati variamente utilizzati e poi abbandonati.

Nel 2009 Luciano Benetton ha acquistato la chiesa, partecipando a un'asta bandita dal Comune di Treviso. Il suo intento era di recuperarla per le ragioni ora ricordate, per poi trasformarla in uno spazio destinato a ospitare manifestazioni culturali di diversa natura, promosse con l'accordo della Fondazione che porta il nome della sua famiglia.

L'incarico di progettare il restauro della chiesa è stato affidato a Tobia Scarpa, da decenni l'architetto che con più assiduità ha accompagnato la crescita delle iniziative


1
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3
CORRADO PICCOLI SU CONCESSIONE DEL MiBACT; RIPRODUZIONE VIETATA


4
CORRADO PICCOLI


5
CORRADO PICCOLI



imprenditoriali promosse dal gruppo Benetton e sul quale hanno fatto affidamento anche alcuni membri della famiglia trevigiana. I lavori sono iniziati nel 2013 e l'8 settembre 2017, con un concerto, un omaggio forse involontario agli studi dedicati all'armonia e all'euritmia da Riccati, la chiesa è stata inaugurata. Con intelligenza Tobia Scarpa ha giocato su un duplice registro: da un lato ha ripristinato la copertura andata perduta nel 1944, riportando l'ambiente principale alla sua originaria configurazione, ovvero a quello di una chiesa a navata unica, dall'altro ha progettato gli arredi in maniera tale da renderlo fruibile per manifestazioni culturali diverse, mostre, conferenze, concerti.

Lavorando sulle loro connessioni, Scarpa ha restituito gli intervalli che separano, in situazioni del genere, gli interventi di restauro da quelli richiesti da un programma di riuso. In maniera decisa ha ripristinato la copertura secondo la sua originaria configurazione grazie all'adozione di un intradosso metallico, segnalandone opportunamente, però, con una lieve linea colorata e continua la diversa natura rispetto al preesistente apparato murario; ha sollevato il nuovo pavimento in legno stendendo così una sorta di intercapedine protettiva sui resti archeologici emersi durante i lavori di restauro; ha disegnato con libertà gli ambienti di servizio annessi alla porzione absidale e si è poi dedicato a un minuzioso lavoro di recupero di tutte le tracce sopravvissute alla distruzione degli antichi apparati decorativi, tracce consistenti che ora sovrastano la delicata monocromia adottata per le ampie porzioni murarie ripristinate o risarcite. Cornici e altari lapidei sopravvissuti ai crolli lungo i muri d'ambito sono stati restaurati e solo alcuni puntuali e contenuti interventi di ebanisteria sono stati inseriti, come nel caso della cornice approntata per l'ingresso dalla corte laterale ora elegantemente recuperata, nelle superfici murarie. Queste sono state trattate anche per accogliere in un futuro prossimo i teleri presenti nella chiesa sino al 1944 e ora ospitati nel Museo civico di Santa Caterina, contribuendo anche in questo modo, come avverrà una volta completati i lavori da compiersi sul prospetto, a reintegrare un documento storico delle amputazioni subite nel corso del tempo.

Nell'arredare la navata e nel renderne fruibile lo spazio per avvenimenti di diversa natura, Tobia Scarpa ha fornito una nuova prova della sua ingegnosa creatività. La sala è ora illuminata da quattro grandi lampadari, simili a intrecci di barre metalliche, dei "rovi" verrebbe da dire, che reggono le fonti di luce riflesse da dischi in vetro, diffondendo una luminosità instabilmente pervasiva. Questi lampadari sono le uniche presenze che si sottraggono al rigore che è cifra dell'arredo progettato per la sala, appoggiato sul pavimento flottante in legno. Nella metà circa della superficie dell'impiantito sono alloggiati due piani inclinati ai quali sono agganciate le file delle sedute in legno, rette da piani metallici traforati. Mossi da alcuni martinetti idraulici i piani possono sollevarsi, mentre le poltrone mantengono grazie agli snodi la loro posizione corretta. I due spicchi di sedute, quando i loro piani di appoggio raggiungono l'altezza massima, formano un corridoio definito da due quinte triangolari che inquadrano l'ingresso principale e si affacciano, sovrastandola, sulla platea occupata dalle sedute complanari prospicienti l'abside sollevata della chiesa. Nella platea sono disposte delle semplici sedute in legno, suscettibili di venire sistemate in file continue grazie a un ingegnoso e semplicissimo aggancio disegnato da Scarpa per rendere solidali i supporti metallici. Ma non è, questo, l'unico attenuato divertimento che si può osservare nella chiesa, dove non è difficile avvertire il piacere che si può provare osservando i numerosi dettagli colti e fantasiosi che Scarpa, come è solito fare, ha disseminato nell'arredo, attenuando così la severa funzionalità che ha ispirato il lavoro di restauro e di rifunzionalizzazione da lui portato a compimento e grazie al quale un rudere dimenticato è stato trasformato in una elegante sala pubblica.

*1*
interno dell'aula della chiesa prima del bombardamento del 1944
internal hall of the church before the bombing in 1944

*2*
interno dell'aula e del presbiterio dopo il bombardamento del 1944
interior of the church hall and presbytery after the bombing in 1944

*3*
scavi archeologici all'interno dell'aula della chiesa di San Teonisto
archaeological digs inside the hall of the church of San Teonisto

*4*
la copertura della chiesa dopo la ricostruzione: le capriate di copertura e la passerella tecnica
the roof of the church after reconstruction: the roof trusses and the technical walkway

*5*
gli interventi di restauro sugli affreschi
intervention to salvage the frescos

*6*
verifica delle proporzioni dell'ordine architettonico della facciata nord. "Per stabilire le proporzioni d'un ordine compiuto si deve, secondo il Vignola, dividere sempre l'altezza data in 19 parti eguali, di cui 4 formeranno la altezza del piedistallo, 12 quella della colonna e 3 quella della trabeazione..."
checking of the proportions of the architectural order of the northern facade. "To determine the proportions of an order, according to Vignola one should always divide the given height into 19 equal parts, of which 4 will form the height of the pedestal, 12 that of the column, and 3 that of the trabeation..."
*7*
vista del fronte della chiesa da via San Nicolò prima del bombardamento del 1944
view of the front of the church from Via San Nicolò before the bombing in 1944
*8*
vista del fronte della chiesa da via San Nicolò prima dei lavori di restauro
view of the front of the church from Via San Nicolò before the restoration
*9*
vista del fronte della chiesa da via San Nicolò dopo l'intervento di restauro
view of the front of the church from Via San Nicolò after the restoration
*10*
pianta dell'aula della chiesa con le tribune sollevate, sezioni dell'aula della chiesa con le tribune abbassate e sollevate
plan of the church hall with the raised tribunes, sections of the church hall with the lowered and raised tribunes

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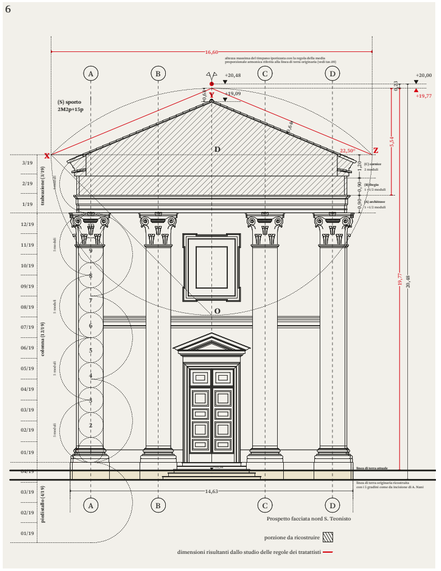


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STUDIO SCARPA

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ALBERTO VENDRAME



***Tobia Scarpa***
***Restauro conservativo e adeguamento funzionale della chiesa di San Teonisto, Treviso***

**dati del progetto**

*progetto architettonico*
Tobia Scarpa
*collaboratori*
Fabrizio Amoroso, Ilaria Cavallari, Alberto Vendrame
*progetto strutturale*
David Zannoner
*progetto impianti meccanici*
Adriano Lagrecacolonna
*progetto impianti elettrici*
Gianpiero Paparella
*direzione lavori*
Fabio Fregonese
*imprese*
Dottor Group, Saran Angelo, Tecnoelettra, Imsk, Rubner Holzbau, Larcher, CEV, Gino Ceolin, Merotto&Milani, Malvestio Diego D. e C., Sirecon, Glip by S.I.L.E.
*committente*
Fondazione Benetton Studi Ricerche
*principali enti competenti*
Comune di Treviso, Soprintendenza Archeologia, Belle Arti e Paesaggio per l'area metropolitana di Venezia e le province di Belluno, Padova e Treviso
*dati dimensionali*
340 mq superficie auditorium/sala espositiva
130 mq superficie locali annessi
130 mq superficie cortile
300 persone capienza auditorium
*cronologia*
dicembre 2014: inizio lavori
ottobre 2017: fine lavori
*localizzazione*
via San Nicolò 31, Treviso

*fotografie*
Nicoletta Boraso, Corrado Piccoli

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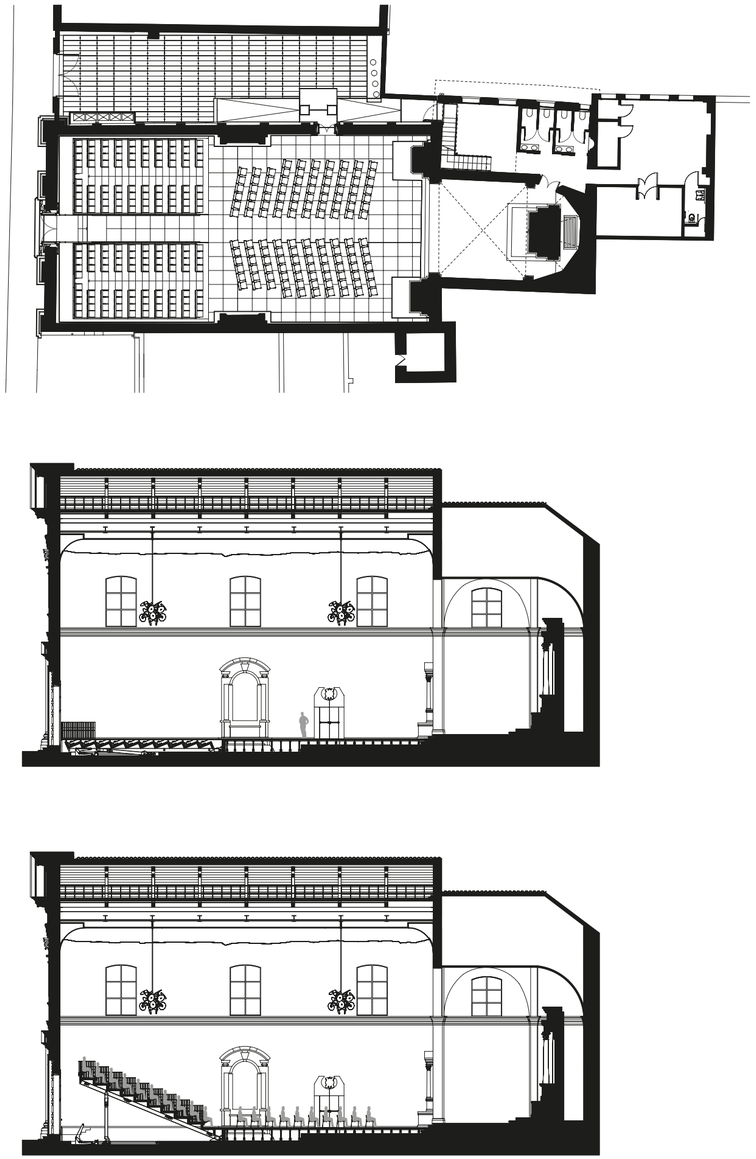
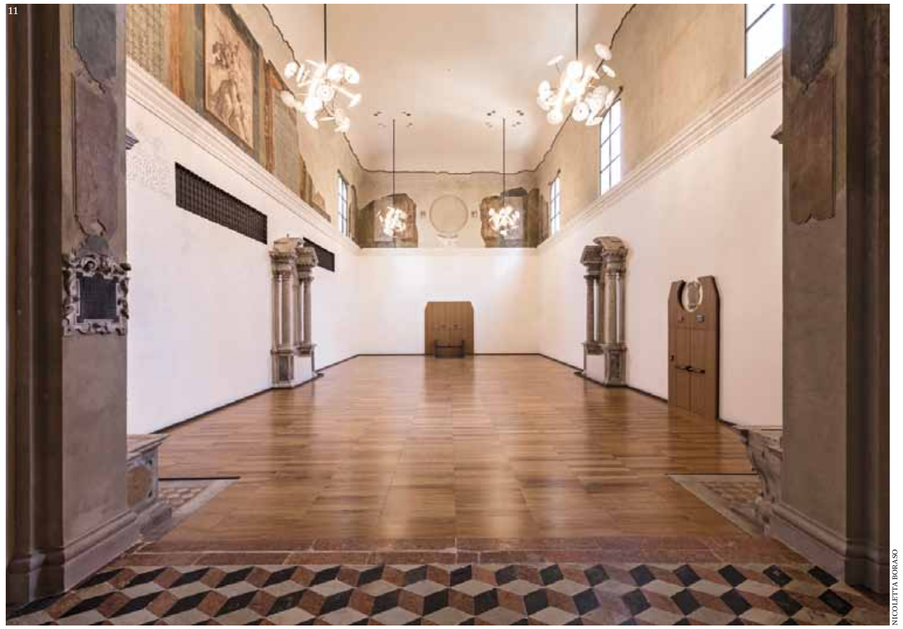


*11, 12*
veduta dell'aula con le tribune abbassate e sollevate
view of the hall with the lowered and raised tribunes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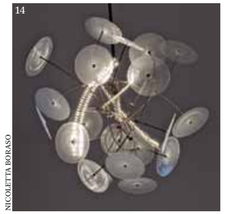
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*13, 14*
le lampade su disegno
custom lamps
*15, 16*
veduta dell'aula con le tribune abbassate e sollevate
view of the hall with the lowered and raised tribunes

*17, 18*
i percorsi di collegamento con la sagrestia e gli spazi di servizio
paths of connection with the sacristy and the service spaces
*19–22*
il sistema di aggancio tra le sedute realizzato su disegno e suo funzionamento
custom seating connection system and its functioning

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NICOLETTA BORASO

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NICOLETTA BORASO

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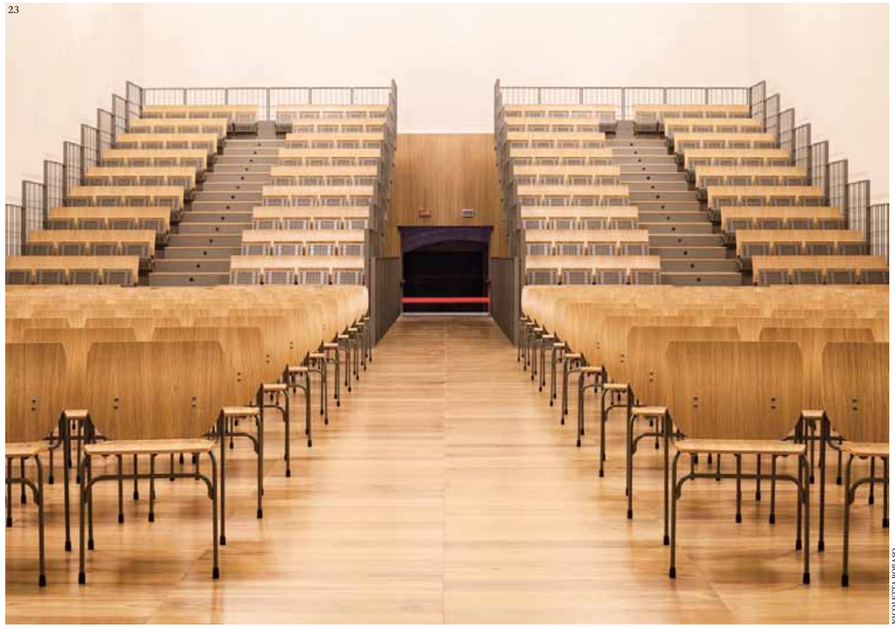

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*23, 24*
dettagli delle tribune e della distribuzione delle sedute
details of the tribunes and the seating layout

*25*
pianta della chiesa con in evidenza il cortile recuperato lungo il lato est
plan of the church showing the courtyard restored along the eastern side
*26*
la porta di collegamento tra l'aula e il cortile
the door connecting the hall and the courtyard
*27, 28*
il cortile dopo i restauri lungo il lato est
the courtyard along the eastern side after restoration
*29, 30*
campo e controcampo dell'aula con le tribune sollevate
view and reverse view of the hall with the raised tribunes

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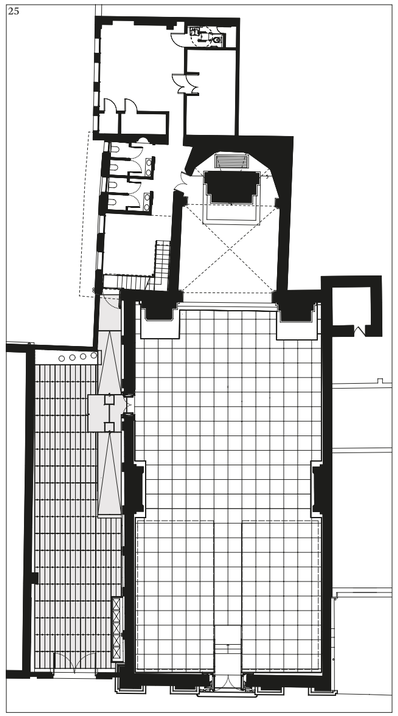

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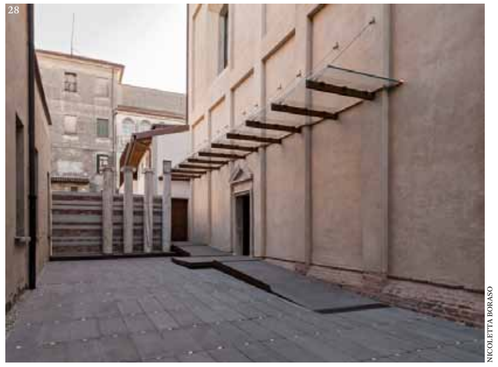

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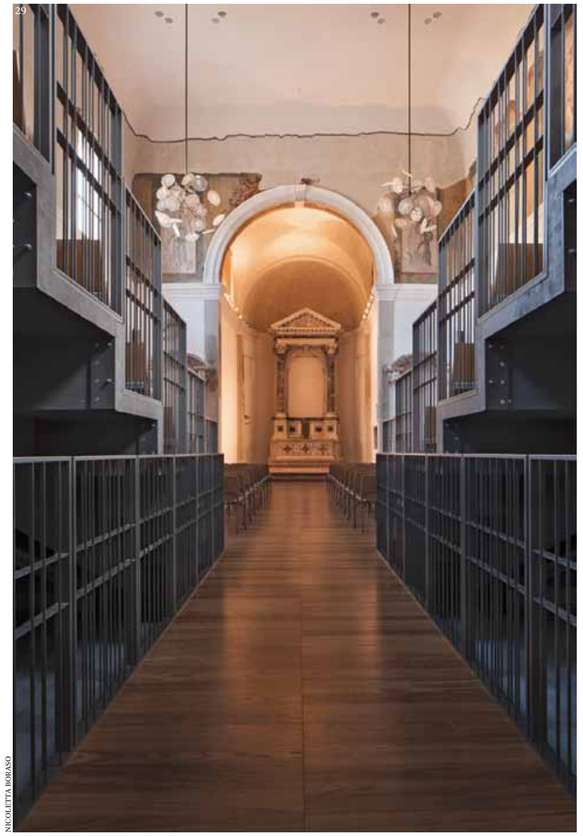

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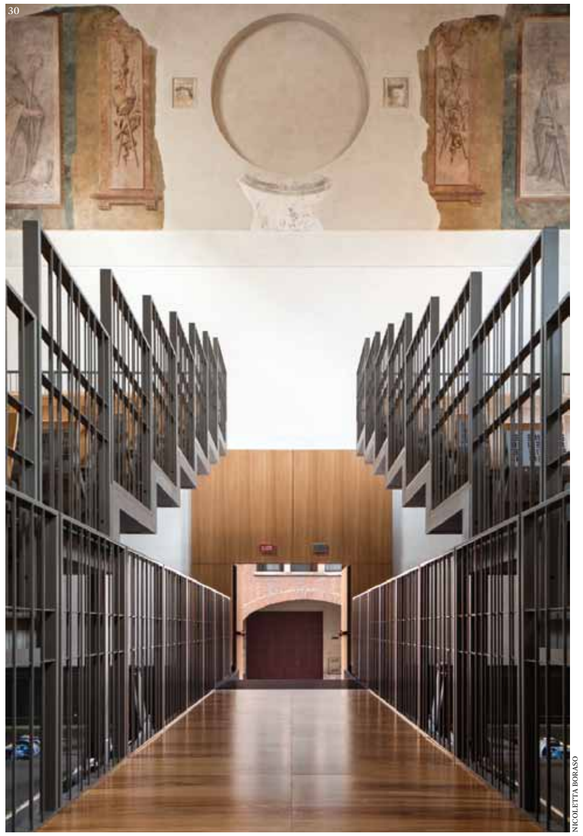

NICOLETTA BORASO

# ENGLISH TEXTS

## page 5

**Eero Saarinen**
**CBS Building, New York City, 1960-1965.**
**The Story of a Skyscraper**
**Chiara Baglione**

[…] A clear example of Saarinen's talent in response to the needs of big corporations, the CBS headquarters in New York was based on the design –shared by architect and client– to make a skyscraper that would stand out amidst a skyline of conventional, repetitive office buildings. This was achieved through a non-linear process studded with uncertainties, revisions and conflicts between the two leaders of the corporation, William Paley and his "second man" Frank Stanton.

The two leaders had opposing personalities: Paley was a man of great charm, impulsive, a lover of the social whirl; Stanton, president since 1946, was reserved, rational, methodical, a perfectionist, and very interested in architecture and modern design.

Created in 1928 by Paley, chairman of the board, starting with a small East Coast radio network, CBS grew enormously under his guidance, passing from the radio era to that of television. CBS had thus become one of the so-called Big Three in the broadcasting industry, in constant competition with NBC and ahead of ABC.

Since 1929 the CBS offices had been located in an anonymous tower at 485 Madison Avenue, a situation that became unsuitable for the needs of the company. An ambitious project for a new headquarters on Park Avenue, between 58th and 59th streets, developed by William Lescaze in 1935, had been abandoned at Paley's behest. Over the years CBS had to rent or buy many other facilities in Manhattan, to contain radio and television studios. Besides being undersized for the needs of the company, the building on Madison Avenue no longer met the standards required for offices at the end of the 1950s. Moreover, to wage commercial war against NBC, whose offices were located in the RCA Building at Rockefeller Center, CBS needed a facility that would reflect its image as the "Tiffany network".

The choice of the area was not a simple one: in an interview, Stanton recalls a long process in which various solutions were considered, until the purchase of the land on Sixth Avenue, between 52nd and 53rd streets, not far from the MoMA and Rockefeller Center –proposed to CBS by Webb & Knapp, the real estate company of William Zeckendorf– was approved by Paley, who liked the idea of being part of the «Time-Life, Rockefeller Center development».

After the removal in 1939 of the elevated railway, Sixth Avenue was going through a building boom in the second half of the 1950s, above all between 46th and 57th streets, where the low urban fabric was gradually being replaced by the headquarters of large corporations or by the speculative office buildings.

An important step in this sense was that of the construction, starting in 1957 and terminated in December 1959, of the headquarters of the publishing house Time & Life, designed by Harrison, Abramovitz & Harris, a major real estate investment of the Rockefeller family that had launched the renewal of this part of Sixth Avenue and the transformation of the western area of Midtown.

### «The best man»

As Stanton recalls, the land purchased by CBS stood idle for about two years, because he and Paley were not able to agree on the architect, and on how to proceed. The selection of the designer involved long discussions, but in Paley's autobiography there is no mention of names of other architects, as he simply informs us that the idea of the skyscraper by Saarinen arose for the first time during a luncheon on 21 November 1958. This was probably a preliminary conversation, given the fact that it was not until July 1960 that an official announcement was made of Saarinen's commission.

While Paley leant towards assigning the job to Wallace Harrison, Stanton thought that Harrison was "mired terribly in the design of the Metropolitan Opera building" at Lincoln Center, and that he had not designed any "great building" after the United Nations headquarters.

Stanton was well informed of the progress of Lincoln Center, as he was a member of its building committee, a position that had enabled him to get to know the gifts of Eero Saarinen, engaged in the project of the Vivian Beaumont Theater since September 1958.

The fact that he had never made a skyscraper and never built anything in the heart of Manhattan was to Eero's favor, giving him an advantage over other architects like Gordon Bunshaft, in spite of the friendship between the partner of the firm SOM and Stanton.

Saarinen's career was taking off: in July 1956 his portrait appeared on the cover of *Time Magazine*, with an article that praised him as one of the leading architects of his generation. The success of the General Motors Technical Center at Warren, near Detroit, opened in May that same year, had allowed him to become the architect of the big corporations, including IBM, Bell Telephone, Deere and Company. In June 1959 work had begun on the TWA terminal at Idlewild Airport in New York, which received widespread media coverage well before its construction. In 1957 the project for the arch in Saint Louis, after remaining blocked for many years, was also revived, another daring creation that demonstrated Saarinen's talent for spectacular and innovative forms.

Stanton could thus count on the fact that the architect of Finnish origin would be able to create a building that would stand out in the context of Manhattan, an objective he shared with Paley. «I was tired –Stanton said– of the repetitive post-war style of New York office buildings. Their excessive exposure, their glass and tinkling metal, their frequent sameness and dullness. I wanted CBS to break with the stereotype of the curtain wall and, at the same time, have a distinguished home. I wanted CBS to be on the leading edge of a new period of New York office building design, and the best man I knew for the assignment was Eero Saarinen».

In the summer and fall of 1960 Saarinen's studio examined various solutions for the tower on Sixth Avenue and its position on the lot, based on assessment of the volume permitted by law in relation to the economic feasibility of the investment, with the help of real estate consultants called in by CBS.

During this period a process of modification of the New York Zoning Code was under way –triggered by the Seagram Building and the Lever House– to introduce the principles of the FAR (floor area ratio), which would vary from district to district, and of bonuses for the inclusion of plazas and arcades, to get beyond the prevalent model of the skyscraper with a silhouette based on setbacks. Oriented towards the design of an isolated tower, Saarinen –also thanks to discussions with Gordon Bunshaft and Ed Mathews, partners of SOM– reached the conclusion that about 1800 square meters per floor would be needed to make the skyscraper economically feasible. Having contacts with the Planning Commission, he took part in the negotiation process that accompanied the definition of the new Zoning Code, obtaining a formula that would permit that floor area. The CBS Building was thus one of the first skyscrapers in New York built in keeping with the new law enacted on 15 December 1961, which permitted towers with a constant section from the base to the top to occupy 60% of the lot.

### First ideas: the solution as the result of a selection process

In the preliminary studies by Saarinen for the CBS Building, the idea of a sunken plaza constantly returns, perhaps due to a specific request on the part of the client. One clue to this is represented by the project never built for Astor Plaza, at 399 Park Avenue, between 53rd and 54th streets, developed in 1956 by the studio Carson & Lundin in association with Kahn & Jacobs, promoted by Stanton and Paley as a large-scale real estate operation in which they had involved Vincent Astor, Paley's ex-brother-in-law. The complex, which was also supposed to contain the CBS headquarters, was formed by a tower set back from Park Avenue, and a sunken plaza surrounded by shops, restaurants and a bank. As has already been noted, the proposal was probably inspired by the original project for Rockefeller Center, a reference that would be consistent with the desire of the CBS management to compete with NBC, which, as we have seen, had its offices in the RCA Building.

The model of Rockefeller Center is evoked in an even clearer way than in the Astor Plaza project by some plan sketches conserved in Saarinen's archives, without dates, that show a public space lower than street level created under the skyscraper, surrounded by shops and adorned with a fountain at the center or, in other studies, placed up against the lobby.

Following his usual design method, Saarinen began by exploring many very different hypotheses. In some sketches he shows a regular orthogonal grid of pillars, while in others he reduces the supports, connecting them with shaped beams or arches to form a diagonal pattern.

Some quick perspective and plan sketches show a structure of great sculptural impact, almost biomorphic, a skyscraper on "legs" with a rectangular, square or T-shaped plan. The concept of the building raised on pillars seems to be a response to the presence of the subway line, which in fact is always shown in the plans. This is the idea of «straddling the subway» mentioned by Aline Saarinen among the preliminary solutions examined by Eero.

In January and February 1961 the project was developed in drawings on a scale of about 1:200, showing different versions regarding the form and layout of the pylons, the position and configuration of the core containing the elevators, and the shaping of the sunken plaza.

A perspective drawing dated 30 January 1961 shows a 31-story tower in which a beam with a height of about 6 m transfers the loads onto 10 inclined pillars, 5 per side, and a V-shaped pillar. Another solution shown in the elevation dated 24 January 1961 is also shown in an intriguing perspective view of the sunken plaza with escalators and staircases, a large pool with a fountain, trees and hedges.

Saarinen's studies can be compared to those of other architects who in that period were working on similar themes, especially Marcel Breuer, who in March 1960 submitted a competition project for an office tower in the Charles Center of Baltimore, similar to Saarinen's studies, also for the shared reference to the matrix of Le Corbusier.

The simplification and rationalization of Saarinen's ideas probably involved the contribution of the structural engineer Paul Weidlinger, first of all thanks to the identification of a solution to the problem of the subway. In the definitive version, a series of steel beams, about 3 m high and almost 13 m long, spans the tunnel, supporting most of the core and a part of the perimeter pillars. Saarinen's initial proposal of raising the building on pylons was thus abandoned, like that of the plaza at a level of about –4 m surrounded by shops, also perhaps in the wake of a change of orientation on the part of the clients.

Therefore the architect developed the idea of a tower with a constant section from the earth to the summit, which he described in a letter to the clients on 31 March 1961: «I think I now have a really good scheme for CBS. The design is the simplest conceivable rectangular free-standing sheer tower. The verticality of the tower is emphasized by the relief made by the triangular piers between windows. These piers start at the pavement and soar up 424 feet. Its beauty will be, I believe, that it will be the simplest skyscraper statement in New York».

In an initial phase, after having seen a mock-up of part of the facade, Paley did not like Saarinen's proposal. Furthermore, the relationship between the two had its moments of friction, especially when the architect, faced with Paley's rejection of his suggestion to purchase another lot, accused the latter of wanting a «chintzy building,» running the risk of losing the commission. Stanton engaged in delicate persuasion until Paley –also thanks to a compromise that called for the exclusion of Saarinen from the design of the interiors– gave the go-ahead for the project with a telegram sent in July 1961, while he was traveling in Spain.

### The architect-engineer collaboration: structural logic and form

Sketches and drawings of the preliminary versions show that Saarinen immediately thought about a structure in reinforced concrete, associating it –as recalled by his collaborator Kevin Roche– with the idea of stone facing.

The choice of the engineer was probably based precisely on the orientation towards a skyscraper with a reinforced concrete structure. Saarinen had turned to Amman and Whitney on many occasions, and for the arch of St. Louis he was working with the engineer Fred Severud, whose contribution was also decisive for the David Ingalls Hockey Rink at Yale.

In this case, however, Eero contacted Paul Weidlinger instead, an engineer born in Hungary, who after studying in Brno and at the Zurich Polytechnic had worked with Moholy-Nagy in London, and for some months in 1938 in the studio of Le Corbusier in Paris. In 1949 he founded his studio in Washington, which was moved to New York in 1951. Weidlinger worked successfully with talented designers like Antonin Raymond, Konrad Wachsmann, Josep Lluís Sert, Wallace K. Harrison, Gordon Bunshaft and Marcel Breuer.

A collaborator of Weidlinger since 1956, Matthis Levy has explained that tall office buildings with reinforced concrete structures were more common in Washington, meaning that Weidlinger gained "a reputation in concrete" not shared by the engineers active in New York.

Thanks to his teaching positions at MIT and Harvard –according to Levy, who took part in the structural design of the CBS Building, especially the calculation of the floor slabs– Weidlinger had relationships with certain architects in Boston who had recommended him to Saarinen. We can guess that they were two professors at MIT, Lawrence B. Anderson and Herbert L. Beckwith, who had worked with Eero on the project of the auditorium and chapel of the MIT campus.

The engineer from Hungary had worked as a consultant for the structural engineer William LeMessurier in the project for an office building in Boston designed by Paul Rudolph starting in 1956, precisely in collaboration with Anderson, Beckwith and Haible. Completed in 1960, the Blue Cross and Blue Shield Building has a structure in reinforced concrete formed by perimeter pillars set in pairs, which converge on Y-shaped pillars at the ground floor, with the air conditioning conduits contained in prefabricated concrete channels that run along the facade, placed against the load-bearing pillars.

Precisely this integration of structural and physical plant elements is reprised and perfected in the CBS Building: in this case the air conditioning conduits are contained in the pillars, whose hollow section remains constant on the outside, but is reduced as the building rises, making more room for progressively larger channels.

The comparison between the two buildings is interesting for other reasons as well. The Blue Cross and Blue Shield Building has in fact been interpreted as an emblematic episode in the research on an alternative to the "monotony of the curtain wall" conducted by several architects in the second half of the 1950s, including Bunshaft, who relied precisely on the consulting of Weidlinger.

Perhaps also recalling the famous project submitted in 1922 by his father in the competition for the Chicago Tribune, Saarinen was interested in underlining the vertical character of the structure on the facade, in a search for "expressivity" shared with Rudolph. But while in the building in Boston this was achieved by bringing the physical plant systems to the outside, in the CBS Building Saarinen decided to emphasize the load-bearing members. On the other hand, the emphasis on verticality and the forceful continuity of the pillars can be seen as a kind of reinterpretation of the skyscrapers of Adler and Sullivan, to which Saarinen made explicit reference, citing the idea of the tall building as a «soaring thing».

One substantial difference between the Blue Cross and Blue Shield Building and the CBS is the height –13 stories for the first, as opposed to 38 for the second, for a total of 150 m– an aspect that should be considered in the light of the question of efficiency of tall buildings with a structure in reinforced concrete. In the late 1950s and early 1960s this question had reached a turning point, also because reinforced concrete was becoming less costly while the price of steel was increasing.

In 1967 Fazlur Khan –the SOM engineer who made a substantial contribution to the development of the theory and practice of design of skyscrapers in the 1960s and 1970s– discussed the fact that, starting at the end of the 1940s, there was a spread of tall residential buildings, considered efficient up to about 30 stories, in which lateral stability was supplied by reinforced concrete shear walls that contained staircases and elevators. Kahn pointed out that since they required no suspended ceilings, the apartment buildings could have lower floors than office buildings. If they were made as simple buildings with concrete shear walls, the latter could be considered efficient only up to 20 stories.

So the idea of making a 38-story office building in Manhattan with a reinforced concrete structure was seen as a challenge by Weidlinger. In an explanatory text, Weidlinger describes the structural system as the first example of economical use of concrete in a type of building traditionally constructed with steel, a choice consistent with the "architectural concept" which was suited to implementation in reinforced concrete. The structure is formed by a core with shear walls and by pillars on the facades, spaced 304 cm on center. The floor slabs –whose analysis was done with the help of a computer, which was just starting to be used for this type of calculation– are formed by a system of one-way ribs ("joists"), two-way at the corners ("waffles"). The core resists a substantial percentage of wind shear, but an important part is transferred to the foundation through the closely spaced exterior columns, which act in the manner of shear walls.

The structural principle is therefore based on the interaction of the core and the facades, similar to that of the shear wall and frame analyzed by Khan during the design process of the Brunswick Building and later developed in the concept of the "tube in tube." The 38-story tower completed in Chicago in 1965 has a structural conception similar to that of the CBS. Here again, the outer walls are formed by a series of closely placed pillars (spaced 284 cm on center), while the inner tube is the core formed by shear walls. The floor slabs have a combination of joists and waffles at the corners.

In an article published in "Architectural Record" in July 1962, William LeMessurier explained that the appearance in previous years of tall buildings with "stressed-skin walls" or "load bearing mullions" was not just an "anti-curtain wall" reaction, but also responded to a clear structural logic that could be seen as a reinterpretation in a new way of the "masonry bearing walls" used at the start of the history of skyscrapers. Regarding the use of concrete, LeMessurier cited the examples of the Blue Cross and Blue Shield Building in Boston, the CBS and the Brunswick.

While the structural conception is in some ways similar, the architectural outcome is actually very different. In the building by SOM the conditions of the ground made it necessary to transfer the loads of the bearing facades on massive pillars, which permitted the creation of a lobby that is very permeable to the outside. This result was achieved by inserting a perimeter beam on each side, with a height of 731 cm.

Saarinen and Weidlinger, on the other hand, chose to keep the pace of the pillars the same all the way to the ground. The width of the openings, equal to that of the pillars (152 cm) is thus determined by structural and functional needs at the same time, corresponding to the minimum space for insertion of a revolving door.

In the Brunswick Building, moreover, the facades are made with a frame of reinforced concrete in which the "expression" of the structure is obtained simply by recessing the glass.

In the CBS Building, on the other hand, everything is based on the effective but also visual force of the triangular pillars, outside the line of the slabs, whose section remains constant from the base to the top of the building, which stands out with its characteristic zigzag form against the sky, in a formal solution already proposed by Saarinen in other buildings.

With a rhombus form on the ground floor and on the first floor, the pillars have a triangular section on the upper levels so as not to create obstacles inside the areas for the offices. Responding to a logic of structural efficiency, the shape of the pillars makes it possible to have sculptural, monumental facades, while preventing the supports from seeming too cumbersome when seen from the inside. Furthermore, the diagonal arrangement of the pillars, as has been observed by most of the critics, makes the perception of the facade change depending on the viewing angle: from a frontal view in which the windows in gray glass and the pillars alternate with the same rhythm, one shifts to the image of a wall without openings, that seems to respond to the client's request for a reduction of the glass surfaces.

This perception is encouraged by the lack of an entrance on the main facade towards Sixth Avenue, where in any case there are steps for access to the lowered plaza, so that those who enter the building from the main artery will have a chance to appreciate this angled view.

The tower thus has the appearance of a "pure" monument on Sixth Avenue, while the form of the vertical supports contributes to the "dramatizing" of the idea of the solid skyscraper whose glass surfaces have been reduced to a minimum. With a similar approach, Saarinen had "exaggerated" and "dramatized" the slope of the pillars of the Dulles International Airport at Chantilly, Virginia. This is also evident in the treatment of the corner of the CBS, featuring two juxtaposed pillars and responding to a logic of form rather than structural necessity. But the architect was not so much interested in the "truth" of the structure as in the coherent integration of all the aspects of the building, and the expression of that coherence. «I'm excited –he said in this regard– about the CBS Building. I think that everything –siting, planning, structural, mechanical systems, spirit– has been brought to its logical conclusion. They are clearly expressed and locked into one thing».

In the CBS Building, therefore, the formal and structural logic coincided, as the result of a design process that must have also satisfied the engineer.

If Weidlinger had expressed a negative judgment on the structural conception of some of Saarinen's buildings in 1958, interviewed by John Peter many years later, in 1989, he had positive memories of his relationship with Gordon Bunshaft, and added: «I felt the same way about Saarinen. I was incredibly impressed by the seriousness that he had, this feeling that he was doing something which was life and death». […]

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**In the belly of a grain silo**
**Matteo Vercelloni**

The Zeitz MOCAA Museum opened in September on the Victor & Alfred Waterfront in Cape Town is a large facility for African contemporary art and its diaspora, a cultural reference point and educational platform on an international level. The result of close collaboration between the entrepreneur Jochen Zeitz, a collector of African contemporary art and the force behind the V&A Waterfront (a mixed public-private initiative that manages the real estate development and regeneration of the port area of the city, now with 25 million visitors per year), the MOCAA has been created inside the monumental grain silo complex, a famous landmark of the city built in the early decades of the 20th century and abandoned since 1990; an industrial building that was once the tallest in South Africa, 60 meters high, against the backdrop of the famous Table Mountain massif. The transformation of the building for reutilization responds to the logic of operating on constructed artifacts in a contemporary way, taking existing urban features as an opportunity and a resource to activate processes of conservation, regeneration and reinvention. The case of the MOCAA in Cape Town seems to indicate one path, among many possible paths, of approach to an industrial structure where restoration necessarily has to involve reuse and redesign, the transformation of spaces by means of additions, extrusions, elisions. The grain silo complex has a very limiting reinforced concrete structure, composed of a grid of 42 silos arranged in six rows of seven. At the top, the series of cylinders concludes in a functional crown, a level of offices with a double pitched roof and perimeter windows. This first volume facing the docks is joined, to complete the imposing figure of the silos, by a second volume on the side facing the city, taller and formed by a regular parallelepiped with an impenetrable, compact base, extending up to the same height as the adjacent silos. The upper band had a series of floors marked by a regular structural weave that stood out on the facade as a sequence of light pilaster strips and string courses. At the base, a small shed with a jagged roof and metal structure served as a warehouse and an access filter for the silos. The project by Heatherwick Studio comes to terms with all this, conserving the overall figure and the characteristic profile, which remains as a memory in the skyline of the city, while reinventing the interior through the arrangement and creation of spaces, and redesigning the upper levels with their windows. Having transformed the small shed into an entrance portico and having conserved the sequence of the silos forming the external facades of the smaller volume, the project took a more radical approach to the interior, transforming its layout and its spaces. The silos have been demolished to a great extent to create the exhibition spaces; nevertheless, in the zone adjacent to the vertical volume Thomas Heatherwick has managed to reinvent the imposing image of the grain cylinders, exploiting their scale and underlining their monumental presence, shaping a large full-height space that becomes the lobby of the new museum. The lobby has been obtained by making a curved cut into the existing volumes, as if a great ellipse penetrating the forest of reinforced concrete cylinders had eroded them, removing the portion of its bulk with surgical precision, and obtaining an empty, plastic, sculptural opening which from the foundation rises to the level of the roof, where large horizontal skylights have been placed. The lobby is a perfectly sculpted space to form an environment that suggests the vault of a cathedral belonging to a possible future, or a freely reinvented "Gothic" image. The cuts on the cylinders have created openings in them with borders that range from sloping circumferences (at the roof) to supple ellipses of different sizes (on the perimeter), all united in a single harmonious, convincing summary. The partially opened cylinders contain panoramic elevators and spiral staircases. As a whole, inside the two volumes of the grain silo complex, there are 80 galleries for an overall area of 6.000 square meters, flanked by offices, a cafe and a sculpture terrace. While the strong portions of the compact facades have been conserved, with only some openings at street level, the project intervenes in a more radical way on the upper floors, which already had windows. Here the "Silo Hotel" breaks free of the infill, revealing the regular orthogonal structural framework, exploited in the design of new openings, like modular bow windows based on the honeycomb glass textures of traditional Venetian lanterns, whose surfaces marked by a reticular metal enclosure become convex to create an effect of three-dimensional extrusion, governed by a preset geometric figure. This approach of mixing disciplines and encouraging contaminations and stimuli on different scales belonging to different worlds of design reflects the modus operandi of Thomas Heatherwick, a designer who works on architecture, inventor of new furnishing typologies, a tireless researcher who ranges freely across different scales and types to activate constant connections and analogies.

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**Between memory and document: the restoration of Forte San Biagio**
**Marco Mulazzani**

Built from 1884 to 1890, the Werk Colle delle Benne (or Forte San Biagio) belongs to the generation of Austrian mountain fortifications, a typology developed over the last two decades of the 1800s to respond to the requirements of new defensive systems. Constructions with a compact form, the Gebirgsforts are composed of precisely defined elements (the casemates for soldiers and artillery, the devices of control and defense of the moats and trenches, etc.) that could be adapted to different environmental conditions –also in terms, for example, of the feasibility of their construction with materials found at the site. Forte San Biagio, positioned on a natural terraced area facing the city, Lake Levico and Forte Tenna (the "twin" fort together with which access to Trento from the Alta Valsugana could be controlled), fully reflects the characteristics of this type of fort, also because in spite of projects of "modernization" during the first decade of the 20th century, the fort was never involved in battles of any kind. "Disarmed" in the spring of 1915, during World War I the fort was used as a lookout point and storage facility; after being closed, the slow decay did not irreparably damage the powerful stone construction, nor did it erase a relationship with the surrounding territory that was based on its particular geographical position – one of the reasons behind the renovation operation, due to its clear landscape value.
The plan of the fort is an irregular pentagon, entirely surrounded by a moat

and composed of two volumes organized on multiple levels. The western part contains the casemate for the troops and officers (slightly less than 140 men), with the entrance, the kitchen, the infirmary, the storerooms and lodgings; to the southeast, it hosts the armored casemate for the cannons and munitions. At the center of the plan, connecting the two volumes, there is a single internal staircase with two ramps; on the northeastern side, at the first floor, a triangular courtyard offered access to the roof. On the northern corner of the fort a caponier on two levels provided defense for the northern and western segments of the moat; the portions to the southeast and southwest were instead guarded by the gallery of the fusiliers created in the counterscarp to the south, with access from the internal corridor that served as a munitions depot and an exit on the southwest side. The various uses corresponded to different shaping of the roof: as a pavilion, for the casemate of the soldiers; partially sloped and partially flat for the front with the positions of the four cannons – not perfectly straight, but bent by a few degrees to extend the circular range of the artillery. On the roof, behind this line of guns, stood two armored swiveling mortar cupolas (later replaced by howitzers). The thick walls of the fort were essentially made with a shaly stone cut into irregular blocks; the lowered barrel vaults of the casemates of the soldiers were insulated by a layer of beaten earth, in turn protected by a metal roof, while the intermediate slabs of the internal spaces (removed over time) were in wood. The sloping surface of the cannon housing was equipped with iron shields and armored by masonry in hewn granite blocks; slabs of granite were used for some of the cornices and the tympanum over the entrance, while the platbands of the large openings of the western facade of the fort, the dripstones and other details of the facades, were in porphyry.
The images of the abandoned fort partially covered by vegetation, with large blocks of stone scattered on the ground, but still perfectly legible in comparison to the original design drawings in its architectural arrangement and constructive characteristics, oriented the project of "typological and functional conservation" in terms of analogy: the reconstruction of the collapsed masonry, supplemented for lost parts with blocks reproduced in the same material, and the reprofiling of the embankment in front of the armored facade for the cannons, was joined in other parts of the fort by a more subtle operation of interpretation. This is the case, for example, of the new metal roof made in laminated titanium-zinc sheets installed over a ventilated layered "packet" of limited thickness, shaped to reproduce an interpretation of the various slopes of the original roof and indicating with panes of glass the exit of the posts previously protected by armored cupolas; likewise, for the reflector station or the chimneys the choice was to restore an evocative image, while the new metal staircase made in the courtyard has been extended with a route on the roof concluding in a lookout point. Similarly, the compartment for exit from the gallery of the fusiliers in the southwestern portion of the fort has been protected by a "turret" designed from scratch but "as it could have been," with the form of a truncated cone with a steel structure, wooden infill and external sheet metal cladding. In the interiors, accessed by means of a new bridge crossing the moat, the stone masonry has been restored, reinforced and cleaned, but the plaster has not been replaced, leaving the force and beauty of the structure visible. The cannon stations, closed by glass and steel frames, can become observation points for the landscape, thanks to spyglasses. Finally, the reconstruction of the missing wooden floor slabs, necessary in certain points to permit movement through the spaces of the fort, has become a factor for the installations. In some spaces of the soldier's casemate the slabs occupy only half the room, revealing their section like a visible but inaccessible "theater." In other cases the slabs have been cut to permit observation from above of the objects exhibited on the lower level.
"A reasonable, sensible restoration," the designer says, who beyond generic ideologies or regulatory constraints sticks to the theory of "case by case," coming to terms with the building to develop the project strategy; an intelligent, successful intervention that grants us a document of the military defensive techniques of the time, while offering a glimpse of the everyday life of the soldiers who were stationed in the fort.

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**Po Valley architecture**
**Matteo Agnoletto**

*Artifex et aedificator* of Po Valley monuments, Paolo Zermani has demonstrated, in Novara, that the conservation of memory and evidence of history are materials that can still be utilized by contemporary design. A complex theme, that of the restoration of the castle in this city, for a worksite that lasted over ten years and, as the architect emphasizes, has been «an excavation and a project, where the latter has been continuously modified to adapt to archaeological finds.» The remains at the site and the age-old vestiges have determined the weave of the design effort, making the connection between existing features and new reconstructed blocks the criterion of correlation between the spaces and the rooms of the new museum of the city.
The Castle of Novara is a fortress of medieval origin, expanded by the Visconti in the 14th century, and then by the Spanish in the 1500s; it was used as a prison until 1973, and has now become part of a public cultural center after years of neglect. Before the recent renovation the ruin of the fort was without its original formal characteristics, with portions that were partially or completely damaged, with clear alteration of the original morphology.
The surviving ruins, stratifications of very different historical periods, from the fragments of the Roman *castrum* to the Napoleonic revisions, appeared as an indefinite intersection of different signs. In the search for an identity, Zermani has conducted two basic operations: in the plan, the mending of the quad obtained with very simple stereometric volumes designed to reshape the castle layout; in the elevation, the insertion of the civic tower, incorporated in the wing facing the frontal plaza, becomes a device to gauge and measure the profile of the city. The completed operation is that of a new foundation entrusted to specific interventions on the four sides of the castle. To quote Tarkovsky, one of Zermani's favorite filmmakers, we might say that in the reconnection of relations the editing between new and old pursues "the essence of unity," the integration of those distinct moments to which the rediscovered architectural structures trace back. The project thus consists of the restoration of existing elements, especially the north and south wings, of the underground spaces set aside for the archaeological collections, and of the corner tower to the southwest, which can be attributed to the Roman era.
Likewise, the project has reconstructed demolished and missing parts, making specific fundamental additions: from the complete reconstruction of the western wing to make a contemporary art gallery, on two levels to conserve and display the remains of the Roman wall, to the buttressed south wall erected as a monolithic boundary enclosing the courtyard. A similar solution had already been applied, several decades earlier, by Giorgio Grassi for the Sforza castle of Abbiategrasso, but here it takes the form of a paradigmatic, conscious repetition of ordered forms, through a compositional process that submits personal initiative to the unavoidable confirmation of a continuity, and the principle of belonging to these places in the plains, as happens in the works of Giorgio Morandi and Claudio Parmiggiani, Luigi Ghirri and Sebastiano Vassalli.
The rugged state typical of Zermani's architecture, always evident in the brick surfaces of the constructed volumes, is the result of total attunement to the Po Valley landscape, reinterpreted as the expression of a sequence of events, knowledge, attitudes, where the superfluous and the useless are erased before the consistent logic of the choices. The construction of the tower is the part that reassembles the whole. The compositional and geometric center of the project in Novara thus reveals itself around an absence. The rejection of the void triggered by the erasure of the emblematic symbol of the Visconti castles, coinciding with the turreted stronghold at the center of the main front, is a necessary operation in Novara for the reconfiguration of the entire complex. An imprint that can be detected in the masonry conserved over the vaulted entrance is the signature from which the elevation of the two existing ribs departs, extending the facade line in precise correspondence of measure. The tower thus re-establishes the lost original unity. The ascent to the top concludes with a seat and a brick balustrade. Up there, with the surprise of the sudden view of the cupola of Antonelli, the nook created with the large cut that penetrates the tower to determine the rectangle of the loggia, immediately transforming it into a new ruin, welcomes the visitor to again admire the surrounding landscape and its history. In an unprecedented experience, for Novara, though not unusual in the works of Zermani, from the Marsascala church in Malta (1989) to the "Casa della Finestra" in the monastery of San Salvatore in Florence (1999) or the chapel-museum of the *Madonna del Parto* of Piero della Francesca at Monterchi (2000), the framing of the landscape is the final result of the project. The tower, however, also conveys the same image of incompleteness from which it came. Rather than a lookout point or belvedere, its summit is the depiction of a ruined "Po Valley interior": a roofless room where only the perimeter walls remain. The tower is also a connection between earth and sky, which can be interpreted as an interrupted celestial ascension, revealing the spiritual and sacred character found in many of the projects by the master from Varano. In this undoubtedly erudite compositional narrative we can glimpse not only a synthesis between the distant historical times of the architecture or a clear position taken on the meaning of the forms, simultaneously justified by and derived from a tradition and a present time in disintegration, but also a will to resist the superficiality of much of contemporary architecture. It would be deceptive to see these bodies grafted onto the medieval structure as a forced interference or a counterfeiting of the truth. They represent the free, unique situation of the present that allows architecture to rise up «over the ruins of a previous plan, to replace it and renew it without hiding it.»

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**The work at the Castle of Novara**
**Marco Pretelli**

In the small book entitled *How to Read Castles*, Malcolm Hislop, the well-known British archaeologist and expert on historical fortifications, suggests keys of interpretation to approach this architectural phenomenon. Discussing *Grammar* and *Characteristics*, he reviews the main aspects of these works of architecture, marked by similar rules of construction, at least in the same time periods, for defense against successive generations of siege engines and, later, artillery and other weapons.
Towers, moats, walled enclosures, windows, merlons, barbacans… all elements that set apart each generation of castles from those that came before or after it.
If we try to read the Castle of Novara on the basis of these suggestions, after the works designed by Paolo Zermani, we gain little benefit. Which on its own says very little about the character and quality of the project and the related works, but simply indicates that the architect, with his intervention, has brought about significant variations that are not consistent, on a historical plane, with what the castle was prior to this effort. Among all the envisioned and implemented interventions, that of the reconstruction (actually new construction, given the lack of reliable historical documentation to indicate not only its consistency, but even its existence) of the tower in the north wing over the main entrance to the castle from Piazza Martiri della Libertà represents the most striking *grammatical detour*, at least according to the rules listed by Hislop: the closure typical of a defensive structure, especially an element like a tower, a feature precisely designed for the defense of the inhabitants of the castle and its treasures, now becomes an opening towards the city and the cupola of San Gaudenzio, as Zermani states in his project description. An architectural gesture of great pertinence and courage; at the same time, a denial of the rules of construction of an artifact that was first of all intended to offer shelter against the enemy and the risks that threatened the inhabitants of the castle.
The main criticism that can be addressed to this undoubtedly interesting project by Paolo Zermani, on the part of the field of restoration, is precisely the compositional reinterpretation he has made of the monument: a reinterpretation following which the castle has totally changed its meaning, forever casting off its image as a closed, defensive place, a refuge, in favor of the explicit image as a gathering place for the city, a place destined to welcome and to host people, exhibitions and events. A change that is undoubtedly legitimate, as has come to light in the controversy that has raged around the episode; but, at the same time, one that cannot honestly be ascribed to the disciplinary field of restoration.
The other criticisms that could be made of this project have to do with certain details – significant, at times, but nevertheless details: the structural frame that cuts into the historic material, rather than remaining beside it; the continuity of the masonry, built in some cases over what existed, in a seamless manner; the slabs of the new wing that skirting the historic wall, rather than supporting it in a reversible way (a widely accepted criterion of contemporary restoration, today, but one that seems to be unknown to Zermani), penetrate it with embedded anchors; the use of finishes that do not seem to match the ambitions of the project, such as the earthenware floors; the yielding to the image of the white box, which also brings uniformity to the remains of the walls inside the new space; the reinforced repairs at the corners, discussed in the overall technical report.
Nevertheless, it is the desire to add something that is dissonant, speaking a language that can in no way be traced back to restoration, certainly not conservative restoration, as indicated by the plaques placed at the entrance to the castle. If one of the objectives of the discipline – to which all the many formulated definitions make reference, from Viollet-le-Duc to the present, with the constant use of the prefix *re*- is to retrace the historical existence of the object on which to operate, making it legible, either by conserving its material evidence –as is considered proper today– or by reconstructing what we suppose once existed, with the aim of facilitating the reading and understanding of the work of architecture and its history, it is clear that Zermani's project cannot be defined as "restoration."
Instead, it seems necessary to emphasize the fact that also in this case a project – subject to criticism, like all projects– that has nevertheless brought new life to the complex, is flanked by certain localized situations of truly worrying decay, for which no solutions have been provided, such as the water presumably arriving from the sewer system that reaches the base of the masonry or the gaps that are still forming at the corners, raising the specter of none-too-distant collapse. Because of these factors, we believe the Castle of Novara still demands care, even after the echo of the criticism of the work of Paolo Zermani has died away.



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**An example of good manners**
**Francesco Dal Co**

We do not have reliable information about St. Theonistus, bishop and martyr, and after 1000 patron saint of the episcopal see of Treviso. The church built in the monastery of the same name at the start of the 1400s, then suppressed in 1810, was also named for this saint.
«Laudable reform of the architect Count Giordano Riccati,» the renowned scientist who lived from 1709 to 1790, editor among other works of the 1780 edition of *Elementi di Architettura* by Francesco Maria Presti and a scholar of the relationships between music and architecture, the church of San Teonisto contained, among other things, a canvas by Jacopo da Ponte and «the copy of the *Wedding at Cana* of Paolo Veronese, excellently made,» as we read in the *Corografia* of Attilio Zuccagni Orlandini (1844). After bombing in the area, in 1944 the monastery was razed to the ground, and the church of San Teonisto was also badly damaged, including the roof, the decorations and the elevation, now awaiting replacement of its lost parts and the tympanum, in particular, proof of the construction methods developed by Riccati. In the church, as confirmed by finds made during the restoration work, there are still traces of the most ancient history of Treviso, while the construction bears witness to the Venetian Enlightenment culture of which Riccati and his family were among the finest exponents. After the war, the remains of the church were used in various ways, and then abandoned.
In 2009 Luciano Benetton acquired the church, taking part in an auction held by the municipal government of Treviso. His intention was to salvage it, for the reasons stated above, and then to transform it into a space for cultural events of various kinds, organized with the help of the Foundation that bears his family name.
The job of designing the restoration of the church was assigned to Tobia Scarpa, the architect who for decades has most assiduously accompanied the growth of the entrepreneurial initiatives of the Benetton group, also working closely with several members of the family from Treviso. The work began in 2013, and on 8 September 2017, with a concert, perhaps an unintentional tribute to Riccati's studies of harmony and eurhythmics, the church was reopened. Tobia Scarpa has intelligently operated on a dual register: on the one hand, he has replaced the roof that was lost in 1944, taking the main space back to its original configuration, namely that of a church with a single nave; on the other, he has designed the furnishings in such a way as to make the place lend itself to different cultural events, including exhibitions, conferences and concerts.
Working on their connections, Scarpa has addressed the intervals in situations of this type that separate the work of restoration from that of a program of reuse. In a decisive way, he has repaired the roof in keeping with its original configuration thanks to the use of a metal intrados, while indicating the different nature with respect to the existing masonry by means of a light, continuous colored line; he has raised the new wooden floor, extending a sort of protective interspace over the archaeological finds that emerged during the restoration; he has freely designed the service spaces connected to the apse and then put painstaking work into the recovery of the surviving traces of the decorations, sizeable ones that now stand out from the delicate monochrome used for large portions of restored or repaired walls. The stone altars and cornices that have survived the collapses along the walls have been restored, and only a few specific carpentry interventions have been inserted, as in the case of the frame made for the entrance from the lateral courtyard, now elegantly refurbished, in the masonry surfaces. The latter have also been treated to welcome, in the near future, the paintings on canvas present in the church until 1944 and how kept at the Civic Museum of Santa Caterina, thus contributing in this way too, as will happen when the work on the elevation is complete, to regenerate a historical document after the amputations it has undergone in the past.
Furnishing the nave to make it ready for events of different kinds, Tobia Scarpa offers new proof of his ingenious creativity. The room is now lit by four large chandeliers resembling interlocks of metal bars, like "brambles" one might say, which support light sources reflected by glass disks, broadcasting mutable, pervasive light. These lamps are the only presences that elude the strict rigor of the style of the furnishings designed for the space, resting on the wooden floating floor. In about half the area there are two inclined planes on which to attach rows of wooden seats, supported by perforated metal planes. Moved by hydraulic hoists, the planes can be raised, while the seats keep their correct position thanks to joints. The two seating segments, when their planes reach maximum height, form a corridor defined by two triangular wings that frame the main entrance and face –overlooking it– the area occupied by coplanar seating in front of the raised apse of the church. This area has simple wooden seats that can be arranged in continuous rows thanks to an ingenious and very simple attachment mechanism designed by Scarpa to join the metal supports together. But this is not the only restrained divertissement we can observe in the church, where it is easy to sense the pleasure of seeing the many erudite and imaginative details Scarpa has scattered, as is his wont, throughout the decor, tempering the severe functional approach behind the restoration and the functional conversion he has accomplished, thanks to which a forgotten ruin has been transformed into an elegant public facility.

## page 73

**Birdwatching**
**Matteo Vercelloni**

Created in the context of a careful environmental transformation of a trash dump on the outskirts of the city of Sharjah, the seaside capital of the emirate of the same name between Dubai and Umm al-Qaywayn, the Wasit Natural Reserve has an area of about 4.5 square kilometers, offering wetlands that can welcome migrating birds (over 30,000 during the course of a year) and host a birdwatching and research facility, whose core is the Visitor Centre shown on these pages. To understand the design solution utilized by the studio X-Architects, bringing visitors into a long protected glass path from which to observe a hundred species of birds left "free" in a vast outdoor space protected by awnings and a screen which become part of the forceful geometry of the design, we can think about certain aspects of the history of man's domestication of animals, and specifically the development of the typology that can be traced back through the various phases of the history of the zoological garden. This is the history of one particular aspect of domestication, connected with scientific curiosity and the pursuit of the marvelous, emerging from antiquity to the present day in different forms of collecting and display. From the menageries of princes to public zoos, what is interesting to notice for an understanding of the Wasit Visitor Centre is the type of solution of "display" and observation of the animals –birds, in this case– living inside the structure. The historic menageries held animals in cages, enclosures of all kinds, applying various architectural solutions. The visitor followed a more or less outdoor itinerary, a voyage through small pavilions and works of architecture with imaginative, eclectic figures, in which the animals were always trapped behind bars. The transformation of animals in captivity from a collection for the exclusive enjoyment of royals to a public zoo can be identified with the relocation in 1793 of the *ménagerie* of Versailles created by Louis XIV to the *Jardin des Plantes* in Paris. By order of Robespierre, the royal collection of animals, which had formed the basis of the observations of Buffon and Daubenton published in the monumental 30-volume work *Histoire naturelle, générale et particulière, avec la description du Cabinet du Roi (1749-1789)*, became for the first time the nucleus of a nature center at the service of education for the populace. During the course of the 19th century the zoological garden was formulated as a subordinate part of the larger theme of the public park, becoming an added component of it, and reflecting the progress of theories on the classification of animals and species in its typological layout and logic of display. For example, the French landscape designer Édouard André, in his *Traité Général de la Composition des parcs et jardins* (Paris, 1879), put the zoo inside the category of *Jardins publics d'utilité*, alongside botanical gardens, expositions, institutions and hospitals. The modern zoo thus developed, from the French Revolution onward, as an urban service driven by the quantitative expansion of the ruling class from an aristocratic microcosm to the complexity of a new bourgeois class connected with the production of new forms of trade and the dimension of the new science expressed by the culture of positivism. The change in the way animals were "displayed" in captivity happened in a significant way in 1907, with the new conception of Carl Hagenbeck, a German trader in wild animals, formulated in a programmatic way in the zoo of Stellingen, near Hamburg. Here the rows of cages and pavilions were replaced by a zoo "without bars" where the animals were lodged in landscaped areas that attempted to reconstruct their habitats of origin. Trenches, artificial rocks, waterways, large aviaries separated the visitors from the animals, putting both on virtually equal footing, both with a certain freedom of movement. This "zoogeographical" concept, widely followed by all contemporary zoos, has led in some cases to solutions that force visitors into closed, protected paths for observation, through glass, of animals that apparently run free, inverting the old relationship between caged animals and freely strolling visitors.
The project of the Wasit Natural Reserve Visitor Centre brings all this to mind, as part of a program of reclamation of an area that was once a dump on the outskirts of Sharjah. After the removal of 40,000 cubic meters of refuse, the area has been redesigned in terms of landscape, creating wetlands with small salt water marshes, and inserting 35,000 trees and shrubs. Since 2006 this area is a nature reserve at the border of the city. The regular rectangular form of the area suggested the layout solution of a Visitor Centre conceived as a strong, recognizable geometric sign composed of two long, narrow volumes diagonally intersecting in the first part of their extension, one of which concludes with an orthogonal volume facing the natural oasis made available to the migrating birds.
The entire complex spreads out on a single level, following the topography of the zone, with the level of the extrados of the roof corresponding to that of the surrounding land and streets. The two main rectilinear volumes have their own specific functions; the longer one, in the middle of the lot, contains the public entrance and the long sheltered observation itinerary, flanked by the large aviaries shaded by triangular awnings placed above the containment screen to form an effective geometric pattern. The volume of the public observation gallery is long and straight, opening with large glazings on both sides to the outdoor setting populated by birds of 100 different species, held in captivity in a reconstructed landscape of sand and vegetation. Along the entire linear path a central display partition offers information, on both sides, regarding the zones of origin of the birds and their particular characteristics, accompanying visitors to the final part which also contains the cafe. This portion is organized in a wider volume, placed perpendicular to the "hammer" at the end of the overall layout. The cafe, with an overhanging perforated sheet metal sunscreen, has a long, seamless glass front facing the wet zone set aside for the influx of migrating birds, as the most extensive area of the site. In the smaller rectilinear volume, reached by the pedestrian entrance tunnel that connects the space of the Visitor Centre to street level, an entrance portico is created in the interlock with that of the observation gallery. At the two ends of the portico there are offices, spaces for conferences and lectures, technical rooms, restrooms and the gift shop.
A project that takes its place in the history of zoological gardens in a contemporary way, reinterpreting the zoogeographical tradition, surrounding visitors channeled along an obligatory, protected route with landscape zones inhabited by birds of different species, in an apparent condition of freedom.

## page 82

**The evocative power of geometric forms**
**Augusta Man**

Hangzhou, a very ancient city located at the end of the Grand Canal, 1794 kilometers long, that connects it to Beijing, whose construction began in the 6th century AD, famous for the presence of the West Lake and the constructions standing on its inner islands, is a cultural center that since the end of the 1200s has had a population of over one million inhabitants: it was the biggest city in the world, according to Marco Polo. Today Hangzhou, with a population of 21 million, is the fourth most populous metropolitan area in China, and since the start of the 1990s it has gone through exponential industrial development, earning it the nickname of the "Chinese Silicon Valley."
Near Hangzhou, the municipality of Liangzhu developed from 3400 to 2250 BC, as the last major center of the culture of jade. To gather together and organize the archaeological finds of extreme importance taken particularly from the burial grounds of this area, in 2007 a museum was opened, designed by David Chipperfield.
At the time of the opening, Tadao Ando was assigned the task of designing the Liangzhu Village Cultural Center, leading to the results seen on these pages. The commission called for the construction of a complex that could host different cultural events and any other activities related to the initiatives organized by the local community. This function has been interpreted by Ando through the creation of a vast unified shelter, stabilized by pitches at different angles, a bent plane in reinforced concrete resting on free pillars and underlying volumes, covering a large part of the approximately 5000 square meters of the constructed area. The roof has a trapezoidal form, and at the portions where the large circulation areas are positioned in the layout it is perforated by triangular skylights.
Having again made use of fair-face reinforced concrete for this construction –an essential characteristic of his work– Ando has arranged three different volumes under the roof. The narrower of the three, placed along a reflecting pool, is connected to two larger spaces that contain exhibition spaces, rooms for meetings and educational activities, and an auditorium.
The footprint of the two larger parallelepipeds makes it possible to create varied paths and open spaces under the roof, connected to the reflecting pool that surrounds them.
The presence of water from the river flowing nearby suggests the particular character of ancient Hangzhou, as described above. The particular care Ando has put into the landscaped context of the work gives it evocative force, making it resemble a sort of island where the water is like a memory of the West Lake in Hangzhou. This similarity is the result of the dialogue Ando has developed with the setting, once again without yielding to any temptation of mimesis, but wagering on the evocative power possessed by the geometric precision and simplicity of his language.

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