PIER LUIGI NERVI
l'architettura come sfida

a cura di
Carlo Olmo e Cristiana Chiorino

con la collaborazione di
Christophe Pourtois, Marcelle Rabinowicz
e Elisabetta Margiotta Nervi

SilvanaEditoriale

The Palazzo del Lavoro
1959–61

Turin (Italy)
The Palazzo del Lavoro
1959–61
with Antonio Nervi and Gino Covre for the metal structures
built by the firm Nervi et Bartoli
and Antonio Badoni of Lecco

The tender competition for the construction of the Palazzo del Lavoro was published on 4 July 1959.[1] It was a pavilion to be built in Turin for the 1961 celebrations of the centenary of Italian Unification and intended to host the great exhibition dedicated to work which was to be directed by Giovanni Agnelli[2] and staged by Gio Ponti. Based on a preliminary plan by Ludovico Quaroni, it required construction of a symmetrical pavilion along two principal axes at right angles to each other, able to offer 47,000 sqm of usable surface area for exhibitions and a range of services, to be used subsequently as a National Centre for Professional Education.[3] The tender announcement,[4] which put the emphasis on low construction costs and the "expressive" use of construction techniques and materials, allowed three months for the development of a working plan, including structural calculations, estimated bill of quantities and financial quotation. The panel of judges was chaired by Vittorio Bonadè Bottino, head engineer of the Construction and Systems division at FIAT, and the panel members were Lodovico Barbiano di Belgiojoso, Luigi Carlo Daneri, Franco Albini, Adalberto Libera, Giovanni Michelucci and Roberto Pane. Six companies, with their associated architects and engineers, presented tenders: Borini and Padana with Roberto Gabetti, Aimaro Isola and Riccardo Morandi, Dalmine with Sergio Nicola and Aldo Rizzotti, Guerrini with Carlo Mollino, Carlo Bordogna and Sergio Musmeci, Guffanti with Piero Locatelli, Nervi e Bartoli with Pier Luigi Nervi, his sons Antonio and Mario, and Gino Covre, and Recchi with Gino Levi Montalcini, Aristide Antoldi and Angelo Frisa.[5] On 20 October 1959, the jury judged that only Nervi e Bartoli's proposal was entirely suitable. Although it failed to meet a number of the tender requirements, for example having the unified surface broken up by pillars, which Carlo Mollino attacked in an eventually unsuccessful appeal, Nervi's proposal was convincing in its simplicity and structural legibility. Moreover, it embodied a symbol of typological precision and constructional coherence which enhanced the rhetoric of swift construction, a key value of the entire Italia 61 exhibition and of Turin itself, which was preparing to celebrate not only the centenary of national unification but also engineering as an indispensable instrument for achieving the economic miracle.
The Nervi design,[6] the only one capable of meeting the very tight deadlines, revolved around the subdivision of the square roof into sixteen independent umbrella-style elements with sides of 40 metres, separated by continuous strips of skylights and consisting of a central pillar with a cross-section varying continuously from the cruciform shape at the base to the circular shape at the top, and radiating steel beams. Initially intended to be in reinforced concrete, the steel structure was created by Covre,[7] one of the principal Italian engineers of metallic structures and the author of the design for the 1937 aluminium monumental arch project for the EUR in Rome, never constructed, who made use of the experience of the Badoni company in Lecco.
The modular solution and the differentiation of the materials would allow the almost simultaneous progress of creating the structure and the finishing, managing the problem of the casting and hardening times for the reinforced concrete.[8] The consensus of opinion between the designer and the company also worked in favour of efficiency and speed of execution, as had been the case in previous designs that Nervi had completed in Turin and carried out with Bonadè Bottino: the halls of the Turin Exhibition Centre (1947–50), the FIAT factory buildings (1955) and the public tram depot (1954).
From the point of view of functional organization, the project envisaged the creation of two exhibition levels: one on the ground floor, below ground level, and the other about 10 metres above, supported on a mass of pillars and crossed by perimeter pillars with a square opening at the centre; on the intermediate floor there was a continuous perimeter gallery, the outside entrance and the services.
In May 1960, the Nervi studio developed the definitive solution with some modifications,[9] strongly requested by Ponti:[10] the basement floor was raised to ground level, the perimeter gallery remained intact and was constructed with isostatic ribbed floors, while the second level was deferred until after the celebrations and a basement floor was added for service areas, technical rooms, warehouses, toilets and two projection rooms. The independence of the individual "umbrellas", taken as the inspirational motif, has continued to be the symbol of the building. The configuration of the pillars in variable cross-section, apart from its indubitable value in terms of form, above all dispensed with stability and construction issues. The variable geometry of the support structures is a recurrent feature in Nervi's work (Sports Complex, Rome, 1959; Corso Francia viaduct, Rome 1960; Savona railway station, 1959–60) and is also to be found in the vault of the San Francisco cathedral (1970). The elaborate external wall, 19 metres high and divided in two by an opaque strip of the same thickness as the floor to be completed later, which was completely independent from the structure and was left undefined for the tender competition,[11] was worked out later by Covre:[12] it is composed of a curtain wall constructed from the inside, a brise soleil at angles that vary according to their exposure to the heat of the sun, and sheet-metal shafts that, fixed at the bottom on cardan joint supports and at the top on piston rods, serve as a double frame, absorbing horizontal movement and expansion.
In the promotional emphasis that was given to the large numbers and dimensions of the construction site and building, Italia 61 resembled the great international exhibitions from Crystal Palace onwards. Apart from the technical or purely quantitative data – 158 metres long by 26 metres high with 650,000 cubic metres of volume – the construction site and its organization constituted the most innovative aspect. The management of the site was the responsibility of the Nervi company, while supervision of works was provided by the Fiat

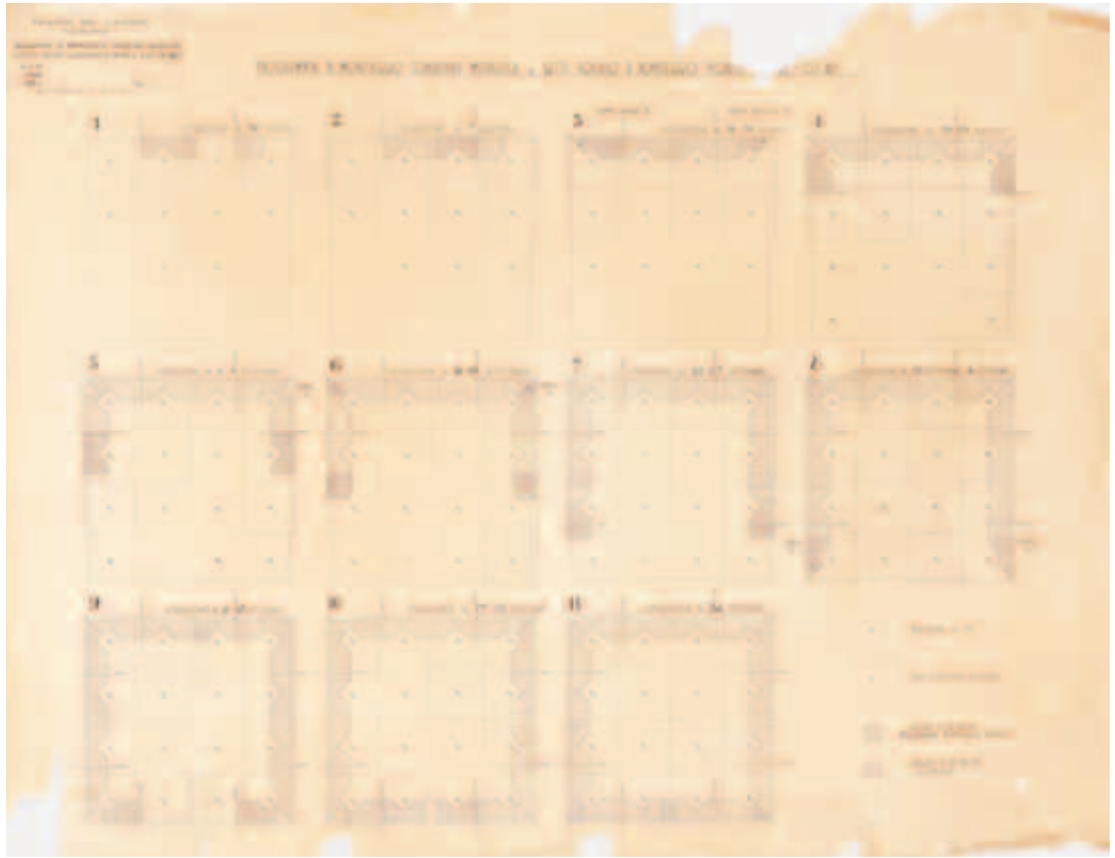
Plan for tender competition, view of interior
with two tiers of galleries, 10 October 1959.
Turin, Archivio ex FIAT Engineering

Final plan, perspective section with only one gallery
level, 18 January 1960. Parma, CSAC

Plan for tender competition, detail of pillars supporting the roof, 10 October 1959. Parma, CSAC

Final plan, plan at + 226.20 cm, 1 May 1960
Parma, CSAC

Programme for assembly of metal covering and casting of floor slab with cradle scaffold at + 231.40 cm, 13 June 1960. Parma, CSAC



Working plan, piers, reinforcement on vertical section, 24 March 1960. Parma, CSAC

Constructions and Systems division. The site data[13] reveal that the pillars and roof were constructed over a period of a month: each pillar corresponded to construction of one unit of roofing. Precedence was given to the perimeter pillars on the construction programme to reduce time further and to be able to continue simultaneously with the vertical buffer structure. When the type mould had been set up, divided into six independently stable and self-centring shafts with a weight such that it could be raised with a crane and a volume that allowed casting to be concluded in a day, the action plans set the pace of completion at ten days for each pillar. At the same time, the roof beams were being constructed in the workshops and transported to the site by the Badoni company. At the top of the pillars was a truncated cone capital, anchored to the concrete structure by means of fastening screws, and a polyhedral corona joined to the fixed joint drum of the 20 cantilevered I-beams connected by a perimeter beam that served as a strengthening element for the entire system. The isostatic ribbed floor was constructed with mobile ferro-cement formwork, using a procedure that Nervi had already widely experimented with in various buildings including the Gatti wool factory (1951–53), for example. The building works started in February 1960 and ended at the end of December. The mounting of the exhibition, coordinated by Ponti but with the involvement of the most advanced architects and artists of the day, from Ettore Sottsass to Marco Zanuso, and from Lucio Fontana to Bruno Munari, was strongly influenced by the imposing structure of the building, "rejecting any solution that did not leave all the columns visible":[14] it consisted of extremely light, ephemeral partitions in aluminium, and panels clad in translucent, reflecting stainless steel.

Seen as a symbol of the integration of structural and architectural invention and publicized by the principal national and particularly international journals,[15] the Palazzo del Lavoro has fascinated entire generations.[16] By emphasizing, with a sort of mannerism, the way in which the structure is almost flaunted, it marks the transition to the third phase of Nervi's design activities, that of the great international commissions in which the "Nervi style" became a repertoire of solutions to be adopted around the world.

After the celebrations ended, the building initially became the Turin branch of the International Training Centre for the UN International Labour Organization,[17] which then moved out in the mid-1970s. Despite various ideas for re-use of the building proposed by Nervi himself in the 1959 competition, including a sports centre, years passed amid an absence of strategy, with the building being used for various unsuitable purposes, until in 2007 the Demanio (State Property Office) sold it to a property developer to be turned into a shopping centre. Its future, however, with its burden of management and maintenance costs, remains uncertain.

Cristiana Chiorino
Politecnico di Torino

1. On Italia 61 cf. C. Chiorino, S. Pace and M. Rosso, *Italia 61. Identità e miti nelle celebrazioni per il centenario dell'Unità d'Italia* (Turin: Allemandi Editore, 2005).
2. Correspondence between Nervi and Giovanni Agnelli, Filiberto Guala and Vittorino Chiusano, Rome, MAXXI, Archivio Pier Luigi Nervi, folder Palazzo del Lavoro and Archivio Storico FIAT, Turin.
3. The proposed future uses ranged from the Egyptian museum to an exhibition centre for products of Turin industries, and from a centre for shows and sports events to a supermarket. *Verbali Giunta esecutiva*, 24 March 1959, Archivio Storico della Città di Torino (ASCT), Fondo Comitato Torino 61 (FCTO61).
4. ASCT, FCTO61 Competition and tendering documents, *Appalto – Concorso per la costruzione in Torino del Palazzo del Lavoro, 4 July 1959.*
5. Ibid., *Giudizio della Commissione di esame*, 26 October 1959 and *Notizie illustrative dei sei progetti*, 28 October 1959; "I progetti vincitori del concorso per il Palazzo del Lavoro a Torino", in *Casabella continuità*, no. 235 (1960); B. Zevi, "Degni seguaci di Guarini e Antonelli", in *Cronache di architettura*, Vol. 6, no. 288 (Bari: Laterza, 1978).
6. All the plans are preserved at the Centro Studi e Archivio della Comunicazione, Parma (CSAC), Archivio Pier Luigi Nervi. Cart. 275/2.
7. G. Covre, "Il Palazzo del Lavoro all'Esposizione Italia 61 di Torino", in *Costruzioni metalliche*, no. 2–3, March–April and May–June 1961.
8. P. L. Nervi, "Architettura strutturale con riferimento al Palazzo del Lavoro", in *Atti e rassegna tecnica della Società degli ingegneri e degli architetti in Torino*, n. s., XV, no. 6 (June 1961), pp. 165–78.
9. Nervi had won with a bid of 1.64 billion lire, excluding heating and systems, which later reached 1.88 billion. The total cost came to 2.72 billion plus 648 million for the works following the celebrations. See Archivio Servizio Costruzioni e Impianti FIAT and Archivio FIAT Engineering (today Tecnimont, Turin), rag. 0084, opera 004, *Palazzo del Lavoro*, Esecutivi costruzione, computi e relazioni.
10. Letter from Nervi to Ponti, 14 November 1960; Letter from Ponti to Nervi, 2 December 1960; letter from Ponti to Cesare Merzagora, President of the Senate, 7 June 1961, Rome, MAXXI, Archivio Pier Luigi Nervi.
11. "The only worrying thing about this excellent design," wrote Bruno Zevi the day after the competition, "is the inconsistency of the shell. From what one may deduce from the model, Nervi has not yet dealt with this topic; the glass that forms the covering is vague and anonymous, while the corner strengthening slab is weak and dissociated from the context."
12. Letter from Nervi to Covre, 20 November 1959, Rome, MAXXI, Archivio Pier Luigi Nervi.
13. The site is documented in images preserved at the MAXXI, Archivio Pier Luigi Nervi and at the Archivio di Stato di Torino (AST), *Fondo Comitato Italia 61* (FCIT61) and in reports and correspondence at the Archivio FIAT Engineering (AFE)
14. Letter from Gio Ponti to Nervi, 12 November 1960 and 28 November 1960
15. "Italia 61", in *L'architettura, cronache e storia*, no. 70 (August 1961); "Il Palazzo del Lavoro", in *The Architectural Record*, no. 3 (September 1961); "Il Palazzo del Lavoro", in *Progressive Architecture*, no. 11 (November 1960); "Il Palazzo del Lavoro", in *The Architectural Review*, no. 765 (November 1960); "Dentro l'immane struttura", in *Domus*, no. 374 (February 1961).
16. Letter from Le Corbusier to Nervi, postcard, 25 May 1961 and reply 1 June 1961, Rome, MAXXI, Archivio Pier Luigi Nervi.
17. Nervi was also to design the main headquarters of the International Labour Organization in Geneva (1966–75).