

21. These replacement materials are referred to in the correspondence between the Pavilion authorities and Lilly Reich. Letter of the 5th of January, 1930, in the Mies van der Rohe Archive, MOMA.

22. See J. Bassegoda Nonell: «Historia y anécdota de una obra de Mies van der Rohe», in *La Vanguardia*, Barcelona, October 6th, 1979.

23. W. Blaser, *op. cit.*, note 1.

24. Report of July 8th, 1929, in the Mies van der Rohe Archive, MOMA.

Fig. 15. Detail of the meeting of the small pool with the wall and the paving.

Fig. 16. Detail of the metalwork.

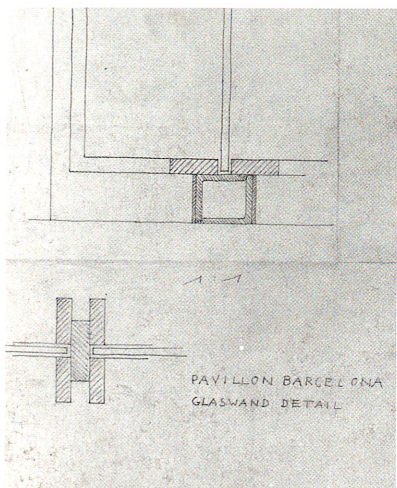
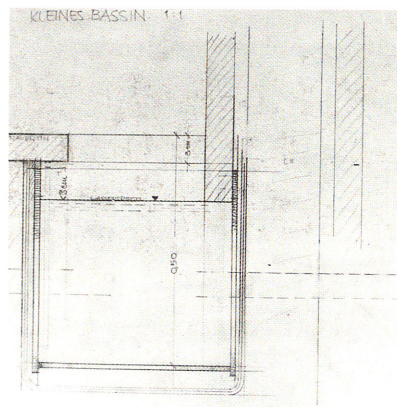


Fig. 17. Finishing the base slab.

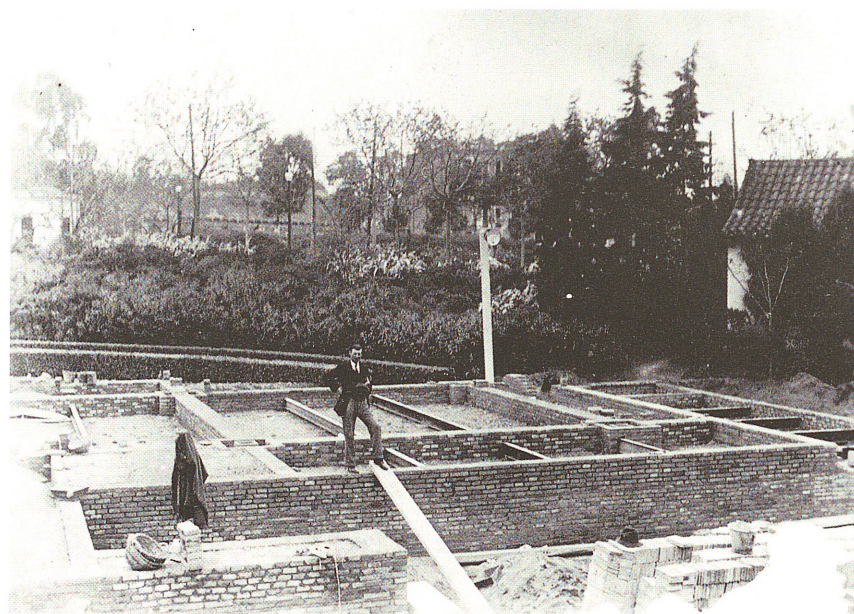
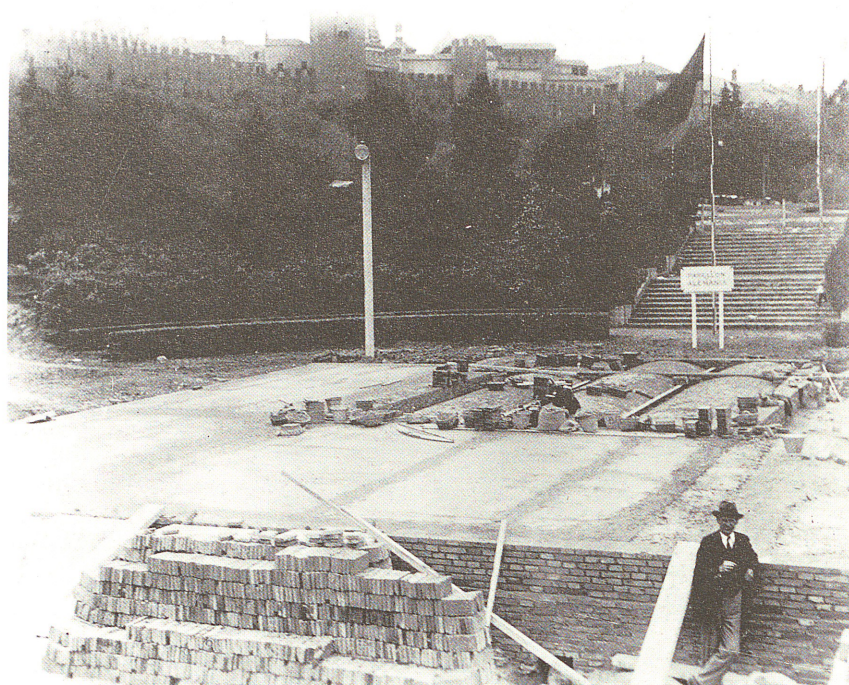


Fig. 19. Construction of the foundations.



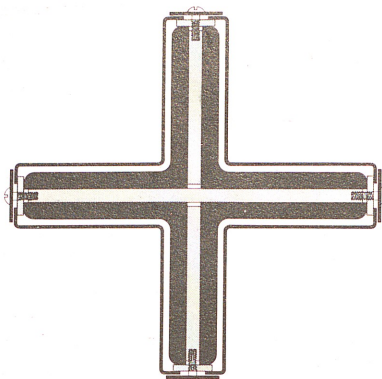
Fig. 18. Mies during the marking out of the Pavilion.

The figures produced by the onyx, its brilliant, diffuse coloration and its great dimensions—in slabs of $235 \times 155 \times 3$ cm—made this naturally rich material a gem which created, perhaps more powerfully than any sculpture, a centre of interest in the flow of circulation through the building's interior.

Together with the several types of stone, we have to consider the sheets of glass of different colours and grand dimensions used in the building's plate glass walls. Clear, bottle green, mouse grey and milky white or sand-buffed, the various transparent and translucent finishes established contrasts and interplays with one another as they enclosed the limits of a single space. If we add to this the gleam of the chromed steel detailing and the undersides of the cruciform columns, and the reflective capacity of the water in the pools (fig. 15 and 16), the smaller of the two with its black glazed lining, we begin to understand that the effect of modernity and pure technology consisted not so much in the newness of the materials as in the audacious manner of their combination and the technically radical way they were used for large surfaces and simple, elemental geometric forms.

We cannot conclude this description without noting that, no doubt for economic reasons, the catalogue of materials envisaged for the building was cut back, in some cases at the last minute. While on the one hand we know that in the case of the glass and the onyx, replacements were kept in hand to make good any breakages, in the case of the green Alpine marble and the travertine the quantities ordered were reduced, with the result that the exterior side walls and the rear part of the Pavilion were not clad with these, despite the obvious need for continuity of material, but were instead built of ordinary brick, plastered and painted green and yellow, producing only the vaguest resemblance to the intended materials.

Fig. 23. Section of the column, drawn by Dirk Lohan.



This is in all probability the reason why there are no extant photographs of the sides of the German Pavilion of 1929, and very few of the rear part. Mies himself, as well as the Exposition authorities, can have had no interest in revealing the limitations imposed by last-minute cuts in the budget on a building so admirable and so much admired by the vast majority of those who visited it.

With regard to the execution and construction techniques used on the building, we have a considerable quantity of technical details given on the plans and the descriptions and estimated costs contained in the correspondence and other documents held in the Mies van der Rohe Archive in New York.

The tradition-conscious architects of Barcelona took a certain pride in explaining that the construction of the podium base employed the time-honoured Catalan vault (fig. 17): small vaults built of brick, plastered on the narrower side, which allowed the construction of self-supporting surfaces with no need for scaffolding.²²

The foundation system was extremely simple and superficial, based on a perimeter ditch filled with solid concrete as

a support for a framework of standard-section laminated iron beams (fig. 19) on which the above-mentioned vaults rested longitudinally and to which the cruciform pillars were anchored at the appropriate points (fig. 20). The entire treatment of the podium was executed using technologies traditional to Catalonia, on a par with the construction of the roof space formed between the ceiling and roof terrace of the typical apartment building. A strong floor incorporating iron beams supports a lightweight brick structure of partition walls and a horizontal floor, also of ceramic elements, forms the so-called base on which the stone slabs rest. It is more than likely that the original construction drawings produced in Germany, of which we know nothing more than that they probably existed, proposed a different solution here, but the urgent need to complete the work in under two months, coupled with the training and resources of the Catalan builders, must have prompted the decision to proceed in this way. As far as the load-bearing structures of the walls and the two planes of the roof (fig. 21) are concerned, these were based on a framework of standard-section laminated steel beams (fig. 22). The four angles forming a cross, as in the drawing published years later in Blaser's book²³, constituted the system defining the eight pillars bearing up the roof of the Pavilion proper (fig. 23), so that instead of giving the walls a structural function, these are separated in order to show their role as purely those of enclosure and spatial division.

On top of the eight pillars there was a framework of steel beams with a depth of 210 mm which was to have formed the grid for the horizontal support of the roof. As a result of last-minute difficulties, this structure was manufactured in Barcelona²⁴ and its assembly (fig. 24) executed on the basis of a complex rivetting system that fixed the steel beams to the pillars by means of an octagonal plate which acted as a capital (fig. 21). There would certainly have been serious problems of sagging in the spans of more than 3 m all round the perimeter. This explains, on the one hand, the somewhat clumsy reinforcing of the cantilever section by doubling it, as well as the supplementing of the stretches adjoining the vertical supports with an extra beam with a depth of almost 300 mm. Even with these precautions, the flexibility of the structure precluded any loading of the roof, at the risk of the spans losing their horizontality and visibly increasing the sag, which explains the lightness of treatment and water-proofing of the roof. Careful scrutiny of

Fig. 20. Finishing the base slab.

Fig. 22. The metal structure of the roof during construction.

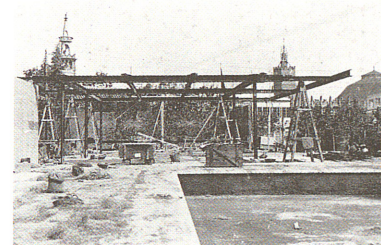


Fig. 20. Finishing the base slab.

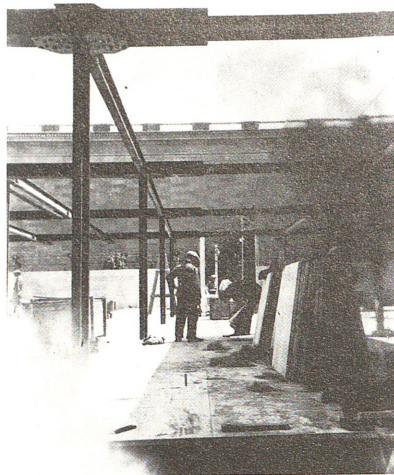


Fig. 24. Finishing the construction.

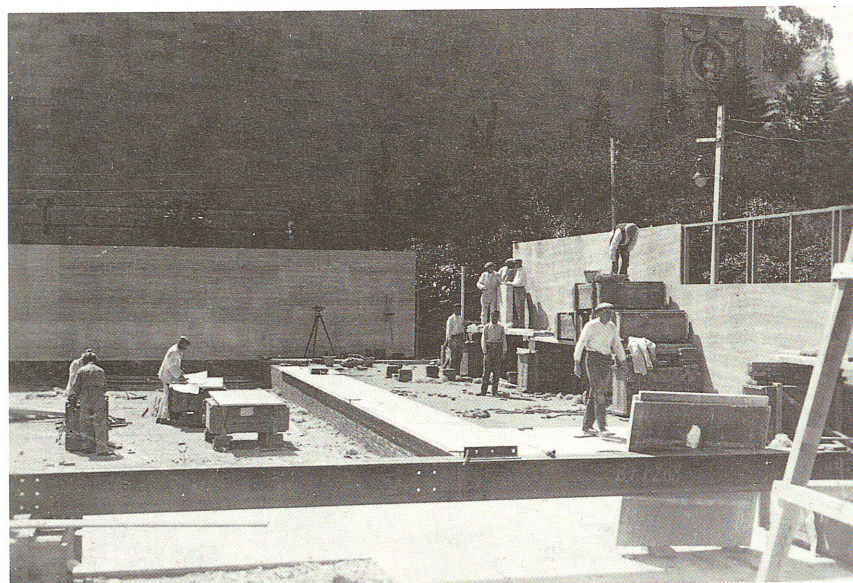


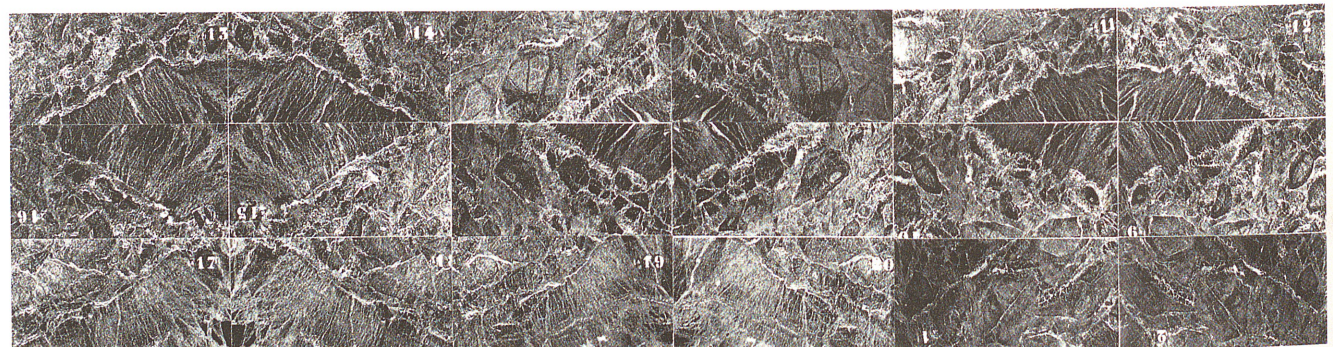
Fig. 26. Fixing the travertine panels to the metal structure of the walls.

the documents at our disposal allows us to deduce that the roof was waterproofed on the outside, by means of parallel strips of asphalt roofing felt laid over some lightweight distributing element supported on top of the framework of beams, forming a slight incline. On the lower part, a surface of plaster and lath suspended from the roof structure formed the basis for a continuous flat ceiling, painted white. The fragility of this solution, the absence of drainage, the unforeseen slope of the roof and the problem of the sagging spans noted by more than one observer all indicate the unsatisfactory resolution of the roof of the Pavilion, and not simply because this was a temporary building. After studying the question in detail and comparing our opinions with the proposals presented in the drawing recently published by Dr Ruegenberg, we are convinced that the structural problem posited by Mies van der Rohe of a flat pavilion roof held up by a small number of local supports was no more than tentatively formulated in the case of Barcelona, and that only in the course of the entire body of his work in America, returning time and again to the problem, did Mies van der Rohe arrive at a repertoire of aesthetically and technically congruent solutions²⁵.

With regard to the free-standing, non-load bearing walls, the approach adopted was both novel and effective. This consisted of a framework of metal supports (fig. 26) with the slabs of travertine, marble or onyx mounted on them by means of an appropriate system of fixings. Mies applied this system, which he was later to use extensively in the United States, for the first time in the German Pavilion: it facilitated the use of stone for cladding, thanks to an undeniably new technique which avoided the problems associated with cements and stone infills, providing solutions that were not only easily dismantled but lighter and permitted the use of both sides of the material. The dismantling of these costly claddings, such as was put into practice shortly afterwards, would have proved much more problematic using the traditional fixing techniques. Undoubtedly not all of the problems posed by the borders of the surfaces sealed by a double slab were resolved, given that while Mies' solution for the lateral walls was precise and logical, with solid elements forming the entire thickness of the wall, this approach was not applied to the base, where it was not absolutely necessary, nor to the crown, where the treatment for the closure of the «sandwich» formed by the two exterior slabs was clearly resolved neither in technological nor design terms.

As for the surfaces made not of stone but of glass, extending from floor to ceiling, their characteristics are known to us by way of the detail drawings at our

Fig. 25. Study for the positioning of the slabs of green marble on the wall over the interior pool.



25. On this generic question of the resolution of the question of the Pavilion during Mies' American period, see the stimulating article by Sandra Honey: «The Office of Mies van der Rohe in America. The Towers», in *International Architect*, U.I.A., n.° 3, 1983, pp. 43-54.

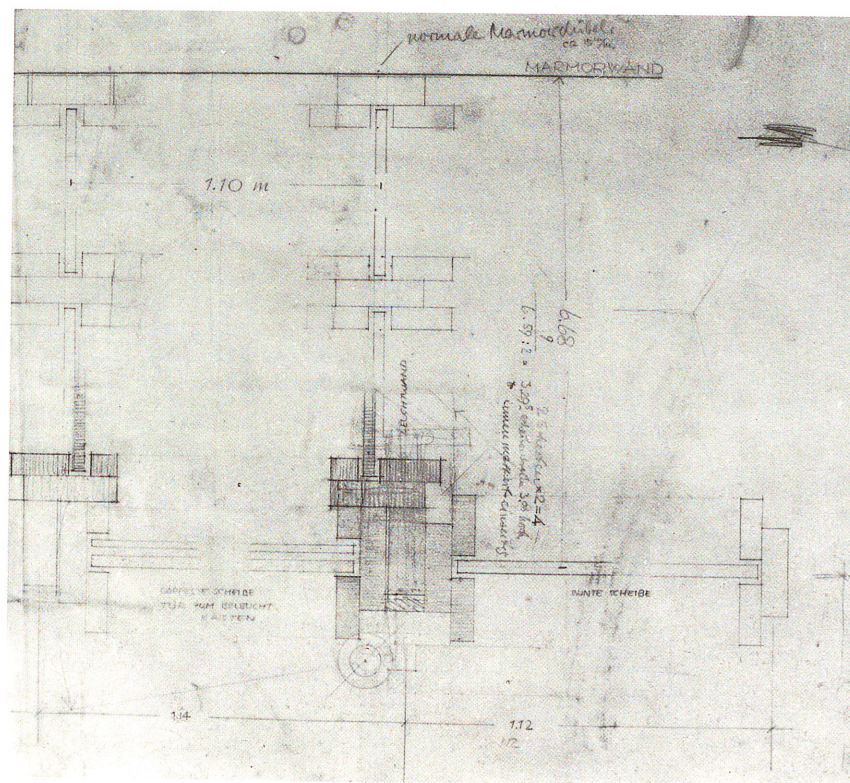
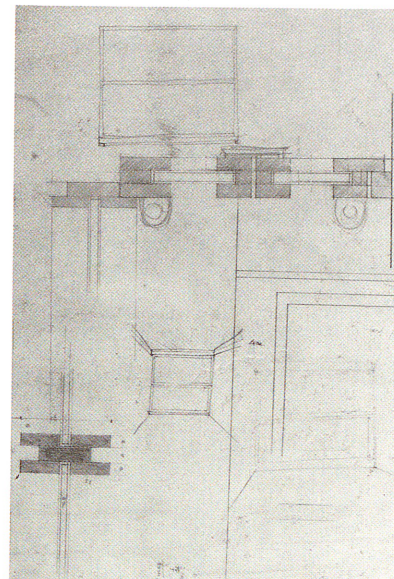
disposal (fig. 27). The general criterion here is the introduction of rigid vertical elements, sometimes of considerable depth in section, using standardized fixing. On the basis of these, which form the principal framework, a whole series of square or rectangular tubular elements are used to compose the walls, doors and windows.

Mies applied the same criterion to the design of the famous and controversial doors which served to close the building. These doors, as we can see in the relevant detail drawing (fig. 28), clearly follow the same type of division as the rest of the carpentry elements in metal, and it seems more than likely that, for all their evident necessity, they were not exactly amongst the architect's personal favourites (fig. 29). That these doors existed seems beyond question, and it takes no more than a close look at some of the period photographs to see them, or, if the doors have been removed, to discern on floor and ceiling the housings to support their upright members. It does seem to be the case that these doors could be removed without much difficulty, although it is also true that it was above all their weight and the sizeable storage space they needed that made their legendary removal each morning, only to be put back in place in the evening, so problematic...

5. Furniture

In spite of the profusion of images of the German Pavilion that have circulated since its construction, nothing has done so much to fix a lasting image of its design and ensure its continued renown as the furniture which Mies van der Rohe designed specifically for the occasion, now known by the name «Barcelona» (fig. 30).

Mies's interest in the design of furniture, and particularly of chairs, armchairs and stools, chaise-longues, etc., had intensified in the years prior to the Pavilion commission. Although he had occasionally worked on models for furniture during his apprenticeship in Berlin with Peter Behrens and Bruno Paul, it was only after the Weissenhof exhibition in Stuttgart that Mies joined in the widespread trend amongst avant-garde architects to design prototypes geared to possible industrial production. If the studios and workshops of the Bauhaus had for years been the focal point of these experiments, it is equally true that the explosion of design output from the Werkbund, Vuhthemas and Wiener Werkstätte schools provided a constant stimulus to innovation and the spread of new ideas.²⁶ Amongst these, none was to prove so successful as the application of the tubular metal structure to



26. See Christopher Wilk: *Marcel Breuer. Furniture and Interiors*, New York, 1981.

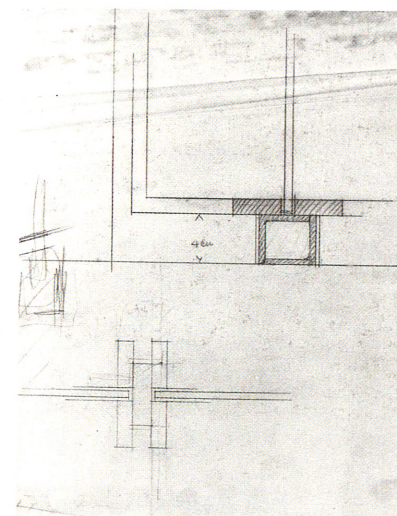


Fig. 27. Detail of the metalwork.

Figs. 28 and 29. Detail of the glass doors.

II. The reconstruction of the German Pavilion in Barcelona: 1981-1986

1. Antecedents

The idea of reconstructing the German Pavilion built for the Barcelona International Exposition of 1929 goes back quite a number of years.

We know that as early as 1959, Grup R, through its secretary, Oriol Bohigas, contacted the architect Mies van der Rohe to propose the rebuilding of the Pavilion. The correspondence relating to this initiative is still extant, as is the affirmative response of the Pavilion's architect accepting both the idea as such and the responsibility of taking charge of the work, without fee. However, the lack of support from official bodies for the proposal left the initiative in limbo.

Sometime in 1964 the architect Juan Bassegoda Nonell had a plan drawn up and a schematic model made, which he duly presented to José Maria de Porcioles, then mayor of Barcelona, with the intention of reconstructing the Pavilion, but this, too, proved fruitless.

In 1974, the architect Fernando Ramos organized a seminar in the Escola Tècnica Superior d'Arquitectura de Barcelona in order to study the construction problems presented by the building and to promote understanding and analysis both of the vanished monument and of the continually recurring idea of its possible reconstruction.

In 1978, in Barcelona itself, we were able to talk to Ludwig Glaeser, at that time curator of the Mies van der Rohe Archive of the Museum of Modern Art in New York, who was then preparing an exhibition for the following year, the fiftieth anniversary of the Pavilion. Ignasi de Solà-Morales had a series of meetings with Glaeser, the outcome of which was an agreement for the mutual exchange of documentary materials and the combining of his and our efforts.

Solà-Morales reciprocated by organizing a seminar at the Escola d'Arquitectura devoted to reviewing the entire body of data relating to the 1929 International Exposition, and this in turn re-

sulted in a series of publications and conferences, and an exhibition at the Fundació Miró in January 1980 which included as one of its elements the exhibition that Glaeser had been preparing for the United States, with original documentary material and a virtually exhaustive summary of the available information on the German Pavilion.

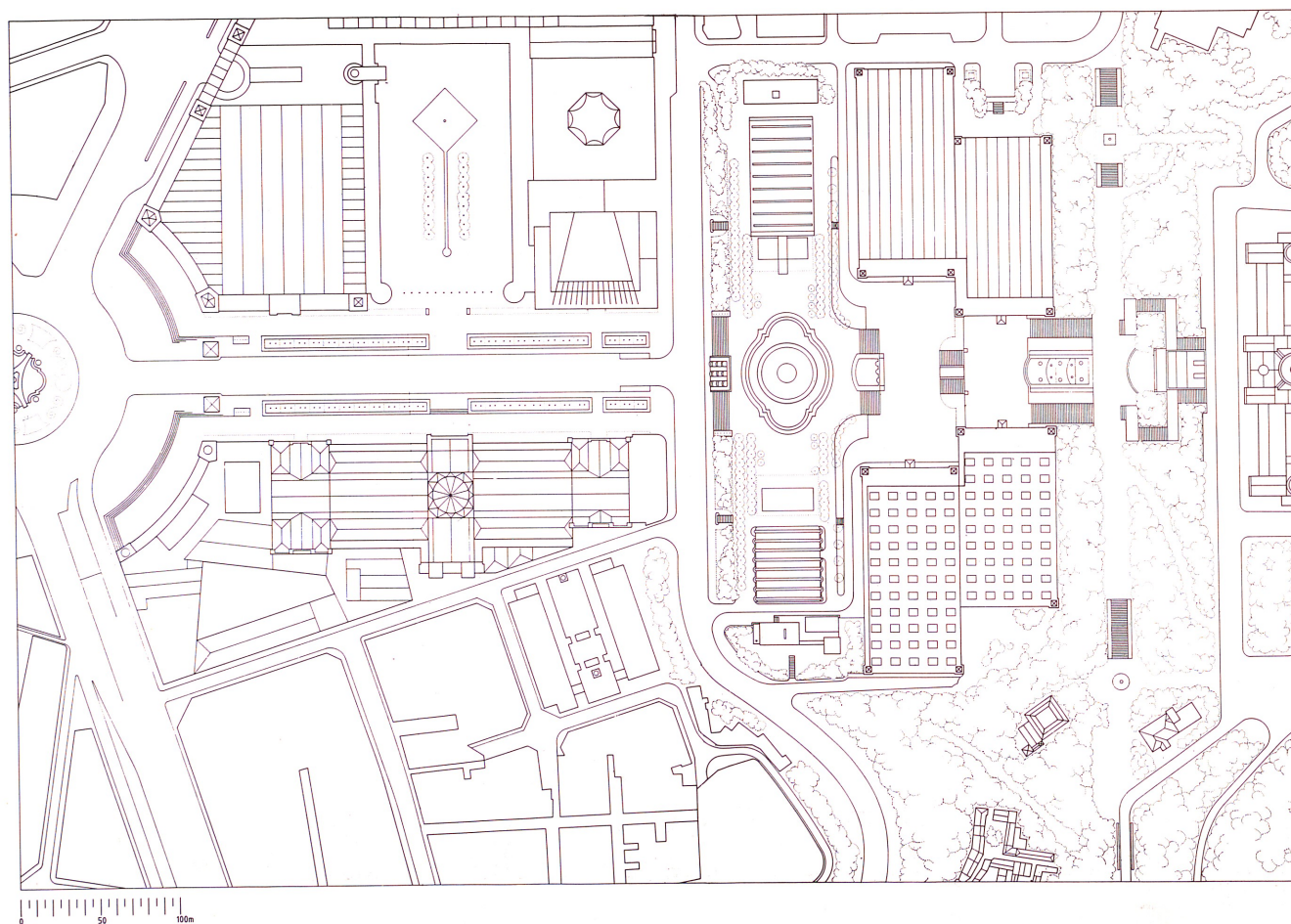
In 1981, the architect Oriol Bohigas, on being appointed to the post of director of Urbanism and Building by Barcelona City Council, revived the initiative with an agreement between the then mayor, Narcís Serra, and the president of the International Trades Fair, Josep Maria Figueras. The result of this was that we, the authors of this book, were commissioned to produce the scheme that was finally built, at the same time organizing contacts within Spain and internationally to ensure that the project was carried out with the greatest degree of scientific rigour and acceptance by informed opinion in the fields of architecture and contemporary art.

Perhaps one of Oriol Bohigas' most telling perceptions was the intuition that the reconstruction, the documentary and economic problems associated with which were of mythic status, could only be carried forward if a project was commissioned; that is, first of all a process of analysis, determining dimensions and techniques, which would let us know down to the last detail what was the true scale of the difficulties posed by the reconstruction.

The problem with the project was, of course, of a very special kind. As soon as we set to work we realized that the plans published up to then by biographers and scholars of Mies van der Rohe contained significant differences in dimensions and in detailing.

It proved necessary to reconstruct the entire process, beginning with the successive versions of the Pavilion in the plans in the possession of the various centres of documentation, above all the Mies van der Rohe Archive at the MOMA in New York, and going on to the different attempts at redrawing, in particular of the plan of the building, undertaken by a succession of Mies scho-

Fig. 49. The Pavilion in the context of the Fira de Barcelona precinct, during construction.



lars, such as Walter Genzmer (1929), Rubió i Tudurí (1929), Philip Johnson (1932, 1947), Bruno Zevi (1948), Ludwig Hilberseimer (1956), Arthur Drexler (1960), Werner Blaser (1965), Ludwig Glaeser (1969, 1977 and 1979), David A. Spaeth (1979) and Wolf Tegethoff (1981).

After consulting the most important archives, such as the MOMA, the Stiftung Preussischer Kulturbesitz in Berlin or the Institut Municipal d'Història de Barcelona, and establishing contacts with scholars such as Oriol Bohigas, Juan Bassegoda, Ludwig Glaeser, Arthur Drexler, Dirk Lohan, Sergius Ruegenberg and others, as well as with architects who had seen or had some relationship with the building, such as Josep Lluís Sert, Joan Baptista Subirana, Nicolau M.^a Rubió i Tudurí, Àngel Truñó and Buenaventura Bassegoda Musté, we were in a position to draw one or two conclusions.

The first was that the nonexistence, possibly absolute, of a *project* had been responsible for the differences between the sets of drawings published over a period of more than fifty years. Mies van der Rohe had produced a series of drawings that were transformed and adapted under the tremendous pressure of the haste with which the work had to be carried out. Changes in the budget, conditions imposed by the technology available in Barcelona at that time, hold-ups in the delivery of some of the materials and mistakes in the original survey of the topography obliged the architect to make adjustments and changes up to the very last moment, so that what constitutes the body of our knowledge today, with certain gaps and lacunae, are the process and the characteristics of the building at each stage of its evolution. In understanding this process, we also possess the knowledge needed to understand and appreciate the contributions made and, it must be said, the confusions created by most of the versions of the plan or of certain specific details published over the years.

In carrying out the brief for the project given us we were fortunate to have the assistance of the architects Virginia Figueras and Claudia Mann. For the calculation of quantities, dimensions and budgets, we had the help of the clerks of works J. Barrena and R. Ayala, who subsequently shared in the supervision on site, to which the young architect Isabel Bachs also made a valuable contribution.

The drawing up of the project and the quantifying of the budget, which initially came to 105,337,446 pesetas, made it possible to arrive at two definitive conclusions. The first was that reconstruction was feasible from the documentary point of view, that is, it was possible to work out exactly the characteristics of the building conceived and built by Mies van der Rohe. The second conclusion was that the cost of reconstruction was acceptable. Arthur Drexler, when he heard the estimated cost, exclaimed «It's a bargain!». Although it was a sizeable sum in terms of the public resources of the time, it was clearly un-

derstood that reconstruction was technically and economically viable. The design project had fixed the parameters of the problem. The next stage was to set up a procedure in order to carry out the construction work.

On the 10th of October, 1983, with Pasqual Maragall —the new mayor of Barcelona on Narcís Serra's appointment as Spain's Minister of Defence—as president, the Fundació Pública del Pabelló Alemany de Barcelona— Mies van der Rohe was formally constituted: invited onto the Fundació were the Ajuntament de Barcelona, the Fira de Mostres de Barcelona, the Museum of Modern Art of New York, the Stiftung Preussischer Kulturbesitz of Berlin and the Escola Tècnica Superior d'Arquitectura de Barcelona. The individuals who at that time represented these bodies were: for the Fira de Barcelona, Josep Maria Figueras, as president, with the members of the executive committee, Raimon Martínez Fraile and Germà Vidal; Arthur Drexler, as head of the Architecture and Design section of the

Fig. 50. The Pavilion in the context of the Fira de Barcelona precinct, from a proposal for the refurbishment of the area by Ignasi de Solà-Morales.

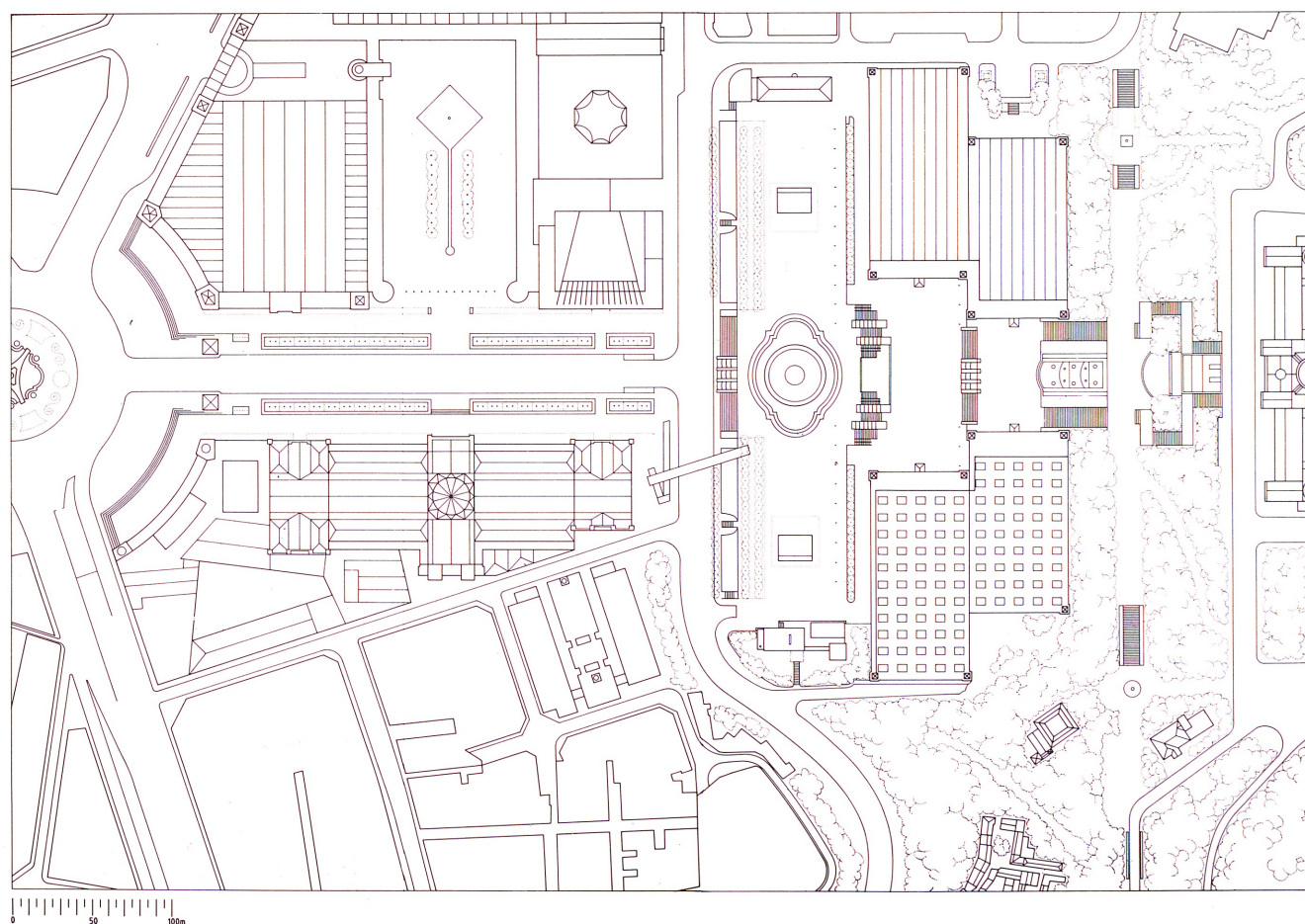




Fig. 51. Discovery of the foundations of the 1929 Pavilion. The anchoring of a metal pillar.

Fig. 52. Remains of a metal pillar found in the subsoil of the Pavilion. Its form and dimensions made it possible to determine the solution actually employed in 1929.

MOMA; Wolf Dietler-Dube, as director of Museums of the Stiftung Preussischer Kulturbesitz; Josep Muntanola, as director of the Escola d'Arquitectura de Barcelona; Jordi Parpal and Maria Aulèria Capmany, representing the Ajuntament. The Fundació was constituted in the Saló de Cròniques of the Ajuntament de Barcelona, and that same day saw the ceremonial laying of the first stone of the future reconstruction. At the same time the Fundació Mies van der Rohe appointed a Committee of Experts, whose task was to supervise the project and the execution of the building. This Committee was made up of Josep Maria Figueras, Oriol Bohigas, Richard Oldenburg, Arthur Drexler, Dirk Lohan, Julius Possener, Cristian Cirici, Fernando Ramos, Ignasi de Solà-Morales and Josep Miquel Abad.

2. The design process

The first question raised by the reconstruction was that of the location of the building.

There was a widely received idea, very much in line with the interpretation of Mies' architecture in the fifties, that saw the Barcelona Pavilion as a prototype; a perfect, autonomous spatial experiment capable of being considered as an object. Given the terms of this logic, it was by no means strange that for many people it made little or no difference whether it was rebuilt in Barcelona or in Bologna, Frankfurt or Berlin. A more detailed, more rigorous knowledge of the Pavilion clearly revealed to us the building's total relationship with the site that Mies himself had chosen for it. The relationship with the other buildings, the Gran Plaza, the ascent from this to the hill of the Pueblo Español, the topography, were all aspects of the basic premises of the project, without which the building was stripped of all its meaning. For this reason the

site chosen for the reconstruction of the German Pavilion was precisely the spot occupied by the original in 1929-1930. This was a plot of land, roughly in the shape of a half moon, bounded by a rectilinear road which ran as far as the north facade of the Palau de Victòria Eugènia, and by a second curving, ascending road which ran from the main avenue to give access to the rear, and higher, part of the Palau de Victòria Eugènia.

This plot comprises a relatively level space fronting the first of these roads, and a sloping area corresponding to the curving road to the rear.

The vegetation we found on the site was basically the same as had been there at the time of the Exposition, with the enormous difference of the tremendous growth of the trees in the intervening years.

It should be noted that the position of the Pavilion must be seen in relation to the layout of the intermediary platform as a whole, created by the system of steps ascending from the site of the 1929 Exposition to the crowning point of the Palau Nacional.

The esplanade on which the German Pavilion stood is centred on the great monumental fountain, with its changing jets of water and coloured lighting, designed by the engineer Carles Buigas. Alongside this there were two other, smaller, symmetrically placed fountains, and at the end of the esplanade, following the transverse axis, a group of free-standing Ionic columns which had formed the boundary between the Exposition area and the gardens. Behind these columns, positioned symmetrically, were the German Pavilion to the west and the Pavilion of the City of Barcelona, still standing today, on the opposite side.

The subsequent construction of a pavilion for the Instituto Nacional de Industria (INI) to the west, the removal of the colonnade and various changes to the landscaping and the fountains had all significantly altered the aspect of this

part of the site. It was evident that with the removal of the INI pavilion and the restoring of certain elements of the gardens to their original state, it would be fairly easy to recover the former appearance of this open space.

At the same time, a superficial excavation of the site laid bare the foundations of the 1929 building. Thus the discovery of the original situation, to say nothing of the obvious subjective value of these remains, provided us with an important source of information. In the first place, as a basis for determining the overall dimensions of the building, a factor intimately related to the modulation of its construction elements; and secondly, in reference to its precise position and its relationship to the Gran Plaza, the flight of steps to the rear, the Palau de Victòria Eugènia and the trees occupying the area to the back of the plot.

Nevertheless, the conditions presented by the site were not in themselves sufficient to guide the evolution of the project. As we have already noted, the information at our disposal inevitably led us to a process of interpretation of the data and the determining of a series of priority criteria.

No reconstruction can avoid acknowledging the existence of certain specific criteria, according to which the problems it poses are resolved. In the case of the reconstruction of the German Pavilion, the criteria were not drawn up in isolation, but in an attempt to balance the various different interests to be satisfied by the project as a whole. For this reason, we would like to explain these criteria, while making it clear that the order in which they are set out here does reflect in some way an order of priority.

There was never at any time any idea of a conceptual revision of the original project; rather, an undisputed premise here was the concept of a reconstruction that would interpret as faithfully as possible the idea and the material form of the 1929 Pavilion. If we have made a distinction between idea and material form, it is because the study of the materials used in the project, alongside other contemporary schemes by its architect, indicates that the physical execution of the building, for reasons of economy, haste or simple technological limitations, did not always come up to the level of its ideal character before, during and after construction.

Our fidelity to Mies van der Rohe's idea was by no means gratuitous or merely speculative, but was contrasted point by point with the available information on the concrete solutions employed in the original building.

The reconstruction was thus undertaken not in order to raise anew a building following exactly the same technical conditions of the 1929 Pavilion, but with a view to guaranteeing its permanence. Certain problems with the solidity of the roof, with rain water drainage, with services and security were approached in quite a different way in the light of the experience of the durability of the Pavilion constructed by Mies van der Rohe.

Accordingly, without presuming to change either the conception or the appearance of the building, it was to some extent necessary to redesign some of the detailing, and in those instances what we looked for was to achieve greater architectonic coherence and remain faithful to the design logic of the building itself.

The problem of durability is intimately related to the use to be made of the building, as a guarantee of its appearance and maintenance. Two significant measures have been adopted to this end, namely the setting up of a Board

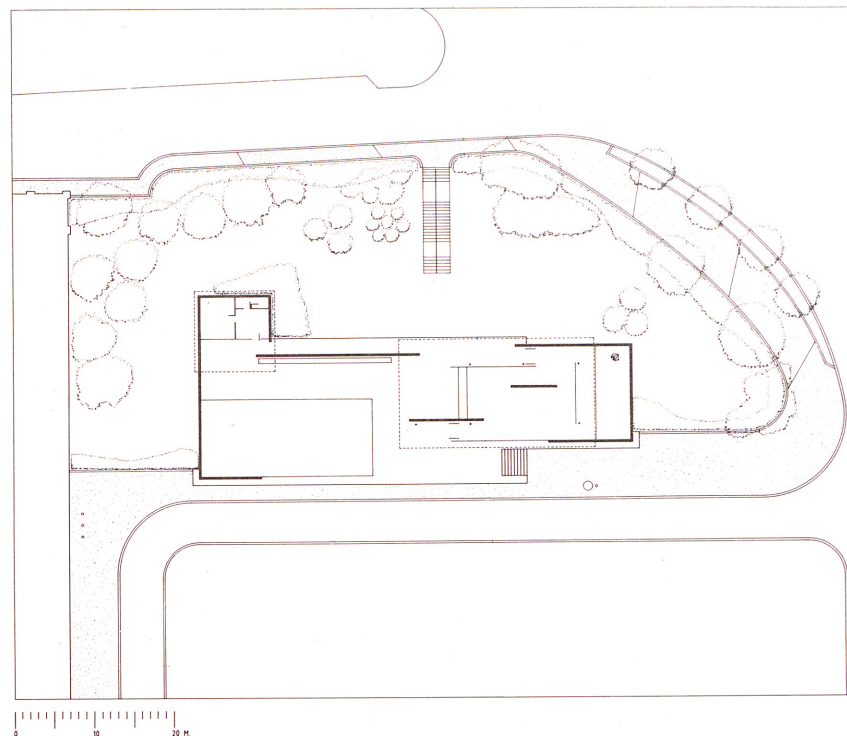


Fig. 53. General plan and landscaping.

of Trustees with direct responsibility for the administration and upkeep of the building, and its immediate classification as a monument; moreover, it should be pointed out that the building was designed for a function similar to that of the original. It is to be used as a representative space, for visiting and meeting in, where a number of people can gather to celebrate social or official occasions

For the Fira Internacional de Mostres de Barcelona or the City Council, the Pavilion can be used as a symbolic venue in which to hold openings, presentations and other formal social events. Thus the furnishing and fitting out of the building has been kept to a minimum, amounting to no more than the equipping of the interior of the smaller volume as an office.

Fig. 54. Plan of the reconstructed Pavilion.

Fig. 55. Roof plan.

