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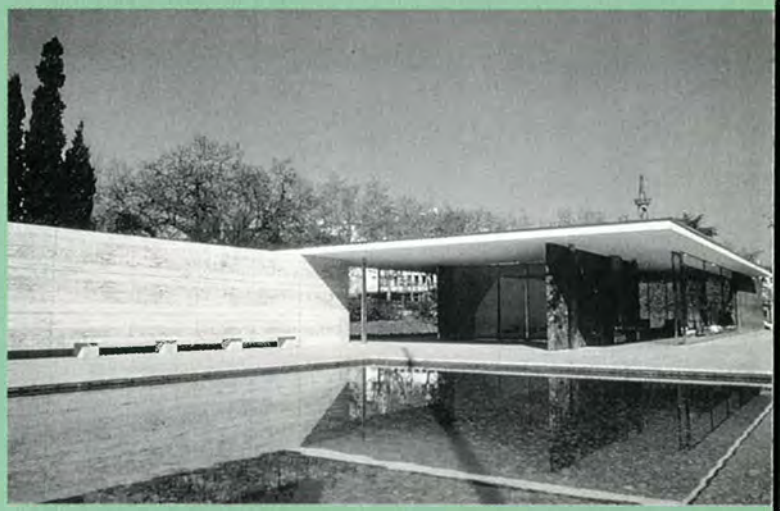

Conference Proceedings

THIRD INTERNATIONAL CONFERENCE

SEPTEMBER 16TH-19TH, 1994

DOCOMOMO INTERNATIONAL

IBERIAN DOCOMOMO

FUNDACIÓ MIES VAN DER ROHE

BARCELONA

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BARCELONA

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DIRECTOR FUNDACIÓ MIES VAN DER ROHE
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Preface

The Fundació Mies van der Rohe-Barcelona and Iberian DOCOMOMO, organizers of the Third International DOCOMOMO Conference which was held in Barcelona from September 14 to 17 1994, are pleased to present the Proceedings of the Conference, which brought together 250 participants from twenty-five countries.

The first part of the Proceedings includes the lectures by the seven keynote speakers: Juan Antonio Cortés, Kenneth Frampton, Antonio Monestiroli, Gérard Monnier, Bruno Reichlin, Dennis Sharp and Ignasi de Solà-Morales.

The second part contains the papers delivered by the conference participants, grouped together in the following thematic groups in accordance with the programme:

- Registers
- Technology
- Architectural History
- Education

The monographic session about modern-movement architecture on the Iberian Peninsula closes this section with the valuable contributions of the architects Fernando Agrasar Quiroga, Isabel Bachs, Mario Corea, José Manuel Fernandes, María Luisa González García, José A. Sosa Díaz Saavedra, María Isabel Navarro Segura and Jaume Sanmartí.

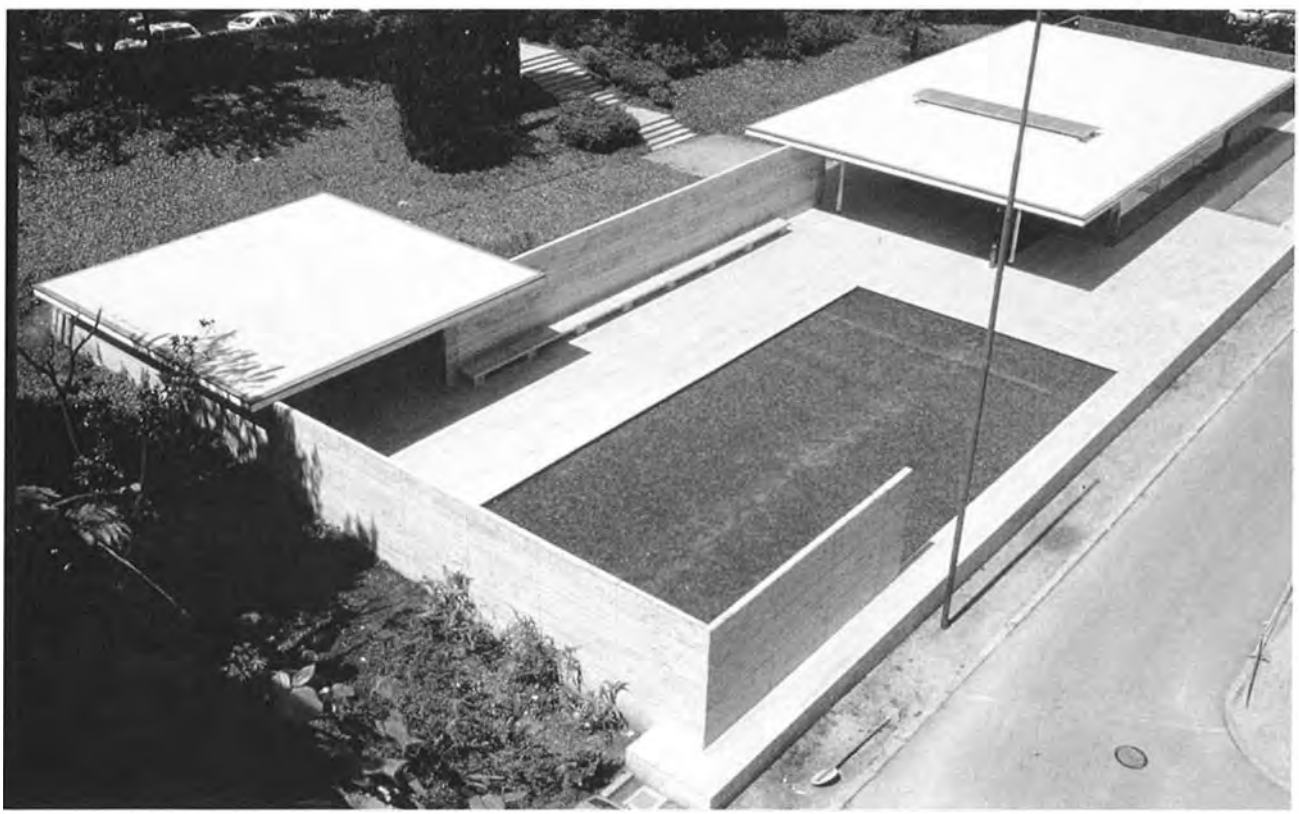
For Iberian DOCOMOMO the organization of the Third Conference meant a great effort amply rewarded by the satisfaction of having welcomed our friends and colleagues of DOCOMOMO International in Barcelona.

This experience also afforded us the opportunity to consolidate our Iberian Working Party and to make major advances in the preparation of our register of modern-movement architecture on the Iberian Peninsula, of which a first version was presented at the Conference together with registers of: Argentina, Brazil, Bulgaria, Canada-Ontario, Canada-Québec, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Lithuania, The Netherlands, Norway, Portugal, Russia, Scotland, Slovakia, Slovenia, Sweden, Switzerland and the United Kingdom.

The Fundació Mies van der Rohe prepared CD-ROM presentations of this important documentation for the Conference and plans to make available the production and distribution of these compact discs during 1996.

We hope that, following the tradition of previous conferences, the Barcelona 1994 Proceedings will constitute an efficacious instrument for the dissemination of our work in common and for the reinforcement of the activities of all DOCOMOMO groups.

On behalf of Iberian DOCOMOMO I thank you for your participation and look forward to seeing you again soon in Bratislava.



German Pavilion, Ludwig Mies van der Rohe, Barcelona, 1929 (reconstructed 1986). (Iberian DOCOMOMO Register)

German Pavilion, Ludwig Mies van der Rohe, Barcelona 1929 (reconsructed 1986). (Iberian DOCOMOMO Register)

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Hubert-Jan Henket

CHAIRMAN DOCOMOMO INTERNATIONAL

Introduction

The main theme of the Third International Conference as presented by the Iberian DOCOMOMO Working Party was an experiment to combine both the conservationist part of DOCOMOMO's interest and its parallel task of documentation. As the title suggests, the most important question addressed during the conference was what aspects of the cultural legacy of the Modern Movement might be of value in terms of the development of contemporary architecture.

Seven invited key-note speakers presented their papers during the first two days of the Conference, which was held in the decorous Palau Macaya, designed by modernist architect Josep Puig i Cadafalch in 1898-1900. Almost 250 representatives from thirty countries formed the audience and discussed the intentions and results of the national and international registers of modern-movement buildings and sites and decided on a list of organizational matters concerning the operation of DOCOMOMO in the next two years.

Intensive activity by the working parties of Argentina, Brazil, Bulgaria, Canada-Ontario, Canada-Québec, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Lithuania, The Netherlands, Norway, Portugal, Russia, Scotland, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom resulted in a provisional international register of 534 (to date) modern-movement buildings which are stored on standardized fiches and CD-ROM. This provisional register was ceremoniously presented to Leo van Nispen, Director of ICOMOS.

As many questions remained about the purpose and criteria regarding a national register, an international register and the formal proposal for the shortlist of modern-movement buildings and sites to the World Heritage Committee, it was decided to organize a special conference in Paris in December of 1994 for a selected group of representatives, to arrive at an accepted set of criteria.

Of the thirty countries present, the representatives of the twenty-four countries mentioned above had voting power at the Council meeting, as a result of the decisions taken at the Bauhaus Conference in 1992. Sometimes heated debates regarding the DOCOMOMO organization and future activities took place. The most important decisions are as follows:

1. The Fourth International DOCOMOMO Conference in 1996

Both the United Kingdom and Slovakia presented well documented proposals for the next conference. Via a secret ballot the Council decided that the next conference will be held from September 18-22, 1996 in Bratislava, Slovakia. The main theme of the Conference will be "Universality and Heterogeneity: International Style and its Regional Reflections".

2. Executive Committee

The International Secretariat will remain in Eindhoven, The Netherlands. The Executive Committee is extended with one member who is responsible for coordinating the International Specialist Committees. The Council voted for Maristella Casciato of Italy to take this position. Klára Kubicková of Slovakia replaced Lluís Hortet of Spain as the Executive Committee member for the next Conference. Hortet received very warm applause for all the work he and his staff of the Fundació Mies van der Rohe did for the Conference. Wessel de Jonge was re-elected as International Secretary and Hubert-Jan Henket as Chairman of the Executive Committee.

3. Working parties

After some debate the Council accepted the following for the establishment of a new DOCOMOMO working party (either national or regional):

- the working party has to accept the constitution of DOCOMOMO International;
- the working party has to submit a plan of action showing both its aims and its organization as well as its activities for the next two years;
- if the working party wants to represent a region rather than a country (as accepted by the UN Charter), it must state its cultural and/or communicative reasons for not joining or forming a national working party;
- the working party needs the support of the representatives of four DOCOMOMO working parties for its conception;
- the working party needs a minimum of ten future members of DOCOMOMO International. In special cases the Executive Committee can make exceptions upon request;
- the application for membership should be submitted to the DOCOMOMO Executive Committee at least three months before the next Council meeting;
- if and when the Executive Committee agrees with the application, it will submit the application to the DOCOMOMO Council. The applicant needs a majority of 51% in the Council.

For existing working parties (either national or regional) it was agreed that each working party has to have at least ten members of DOCOMOMO International by September 1995. Exceptions to this rule need the approval of the Executive Committee.

4. Membership

This item seems an endless affair ever since the idea of a membership fee was introduced in Dessau. For many countries the Executive Committee proposal was debatable. Every working party was invited to send a short report to the International Secretariat before March 15, 1995, about how they solve their membership to date and how they propose this for the future.

An International Specialist Committee was formed, consisting of Jorge Gazaneo (Argentina), France Vanlaethem (Québec) and Dennis Sharp (United Kingdom), to propose a workable system for membership

and fees for DOCOMOMO International. The proposals of this Committee should be ready to be sent for approval and vote (by mail) to the Council before September 1, 1995. In the meantime, the old membership system will remain.

5. International Specialist Committees (ISCs)

As a general item it was accepted that all members of the Executive Committee and all members of the ISCs are up for re-election every two years.

5.1. ISC on Registers

An enormous amount of work done by the various working parties has obviously created many new challenges. As mentioned above, a limited special conference will be dedicated to these questions in December 1994. The results will be announced to all working parties.

The Council was unanimously in favour of provisionally approving the national registers as presented and commented on by the ISC/R. The homework for the working parties for the period 1994-1995 is as follows:

-those working parties which have not made their register as yet have to start on phase one, that is, make their national or regional register. The result has to be sent to the ISC/R before January 1, 1996;

-those working parties which have made their register have to perfect this in accordance with recommendations of the ISC/R. Their recommendations will be distributed by May 1, 1995. These revisions must be completed and sent to the ISC/R before January 1, 1996;

- all working parties who have made accepted registers should present them to the legal institutions that are in charge of protecting the architectural heritage in their country. In situations where this is not possible due to local circumstances, the register should be published extensively in the general and professional press. The ISC/R has to be informed about progress before January 1, 1996;

- the ISC/R will recommend to the Executive Committee which countries have done sufficient work to have the right to vote, before July 1, 1996;

- Alan Powers (United Kingdom), Luc Verpoest (Belgium)

and Dirk Baalman (The Netherlands) stepped back as members of the ISC/R. Gérard Monnier (France, Chair), Maristella Casciato (Italy) and Xavier Costa (Spain) were re-elected. France Vanlaethem (Québec) and David Whitham (Scotland) were elected as new members. Marieke Kuipers (The Netherlands) mentioned her interest in joining and was invited to send her curriculum vitae to Gérard Monnier.

5.2. ISC on Education

Mabel Scarone (Argentina) took over the chair of this provisional ISC from Catherine Cooke. She will propose a working programme in the year to come. To date, several educational activities between members in different countries have been developed at an informal level.

5.3. ISC on Technology

Wessel de Jonge will remain chairman for the time being and it appeared that several members will dedicate time to start collaboration soon.

5.4. A new preliminary ISC on Gardens and Landscapes

Franco Panzini (Italy) proposed the creation of a new ISC, dealing with modern gardens and landscapes and their protection. The Council approved this and appointed Panzini as preliminary chairman. It is his intention to establish a fiche for the registration of important modern gardens and to have a session on gardens in the programme of the next DOCOMOMO Conference. All those interested are invited to contact Franco Panzini.

5.5 A new preliminary ISC on Urbanism

Anna Beatriz Galvão (Brazil) presented a proposal for a more detailed study of urban developments both in new cities, or interventions in existing cities, and the preservation of these works in consideration of their dynamic nature as part of an ongoing functional organism.

The Council approved this proposal and Anna Beatriz Galvao was appointed provisional chairwoman. She will present the basis for a formal ISC defining guidelines, priorities, active members, and so on, at the next Conference.

6. Miscellaneous

Several activites as proposed at the Council Meeting in Dessau, such as the WUWA Estate or the DOCOMOMO Award were skipped, because no significant progress had been made on these items.

The end of the conference was devoted to a fascinating excursion. The obvious highlights were the beautifully detailed Casa Bloc designed by GATCPAC architects Sert, Torres-Clavé and Subirana, currently undergoing restoration by Jaume Sanmartí and Raimon Torres and the Villa La Ricarda by Antonio Bonet near the sea. The Gomis family was very kind to open the house and garden specially for us. Its unique atmosphere gave us an intense awareness of the timeless quality genuine modern-movement architecture can bring about. As such, it formed a meaningful end to the main theme of the conference and a beautiful stimulation to us all to enhance high quality in architecture for everyone.

OPENING

German Pavilion, Ludwig Mies van der Rohe. Barcelona, 1929 (reconstructed 1986). (Iberian DOCOMOMO Register)

Hubert-Jan Henket

CHAIRMAN DOCOMOMO INTERNATIONAL

Opening Address

Exerpts

DOCOMOMO is the international organization for the documentation and conservation of modern-movement buildings, sites and urban districts. Created in 1988, the organization was officially established by representatives of fourteen national working parties at the First International DOCOMOMO Conference in Eindhoven in 1990. Today there are thirty national, three regional and one supranational working parties, forming a vast network of hundreds of architects, architecture historians, policy makers and lay people motivated by their interest in and love for the Modern Movement. Knowledge and ideas are exchanged via the DOCOMOMO Journal, meetings and symposia and the organization acts as a worldwide watchdog to protect modern-movement buildings threatened by unacceptable change or demolition. The organization strives, moreover, to persuade those in power to assume responsibility for and inform the public at large about the crucial importance of the modern-movement heritage.

Since the Second International Conference held at the Bauhaus in 1992, many tasks have been undertaken by DOCOMOMO working parties and specialist committees, including symposia and conferences in Europe and South America; two itinerant DOCOMOMO exhibitions and three exhibitions by DOCOMOMO Russia; the now famous DOCOMOMO open lectures in London; watchdog campaigns throughout Europe and research and consultancy for television documentaries about the Modern Movement, urban design and architecture. Best of all, however, is the fact that between 1992 and 1994 twenty national working parties put tremendous effort into the realization of the first phase in the compilation of national and sometimes regional registers of major modern-movement buildings and neighbourhoods. This means that by 1994 some 450 of the most important buildings worldwide had been registered and documented.

At the Bauhaus conference we took up the invitation on the part of ICOMOS, the International Council on Monuments and Sites, to prepare a report for examples of 20th-century architecture to be included in the UNESCO World Heritage list, a project which is now nearing completion. The fact that many important buildings and neighbourhoods worldwide are either disappearing or being changed beyond recognition makes this form of acknowledgement of the Modern Movement extremely necessary. Due to many rapidly changing performance requirements, economic speculation or political decisions, buildings nowadays may change or disappear within the space of a few years.

Furthermore, the appalling fact is that over two thirds of the 450 registered modern-movement buildings mentioned above enjoy absolutely no form of legal protection in their own country.

It is essential, therefore, that DOCOMOMO should continue with its watchdog activities, undaunted by occasional failures, and that the working parties do all they can to secure legal protection for hitherto defenceless buildings. This, I believe, will be one of our most important tasks over the coming years.

Central Dispensary for Tuberculosis Treatment, GATCPAC: J.Ll. Sert, J. Torres-Clavé, J.B. Subirana, Barcelona 1935. (Iberian DOCOMOMO Register)

Carles Martí

CONFERENCE DIRECTOR, PROFESSOR ESCOLA D'ARQUITECTURA DE BARCELONA

Presentation of the Third International DOCOMOMO Conference

One of the main issues facing those of us who are, today, involved in planning and creating architecture is that of defining a point of view with regard to the history of our discipline; in other words, of placing ourselves in a position from which we can establish relationships from one perspective or another with the history of architecture. If this positioning in relation to history is important in general terms it becomes critical when what is examined, interpreted and judged is recent history, the immediate past, in our case architecture of the Modern Movement.

As Lucién Febvre so aptly stated, "history is written for the present". Consequently the manner in which we write recent history must necessarily and decisively condition our understanding of the current situation. History, therefore, ceases to be an intransitive issue, a somewhat academic subject for specialists and becomes a burning and transitive question of concern to whoever aims to base his or her action on reasoned thought.

In my opinion these reflections point to the very essence of DOCOMOMO, of its reason for existence and give particular weight to its role as a springboard for research and debate on the subject of modern culture. Likewise, they shed light on the reasons we chose, as the main theme for this Third International Conference in Barcelona, the exploration of relationships - sometimes conflictive but always alive - existent between the Modern Movement's cultural legacy and the blueprints of contemporary architecture.

I would like to focus my talk on this subject, but shall move into it in a roundabout way by calling up the image of the demolition of Les Halles Market in Paris in June 1971. I remember clearly the photographs published at the time: some fragments of the metal structure built by Baltard around the middle of the 19th century were still standing, dramatically set off by the surrounding mass of felled rubble and twisted metal, a reflection of their imminent ruin and the irreversible and unstoppable nature of the demolition process under way.

Not only did an architectural masterpiece disappear with Paris' Les Halles, but with it went a whole part of a city, an urban monument which formed a significant part of the modern cultural heritage. The razing of Les Halles was certainly not an isolated event: in the preceding and subsequent years speculation and ignorance took an enormous toll on the cultural patrimony of the city and the area. But, perhaps because of its extreme barbarity, the case of Les Halles left a special imprint on the collective consciousness. This was especially true for the architects of my generation; that is to say, for those of us who were finishing our architectural studies at the time or had recently graduated, the images of the Les Halles demolition served as proof positive that the cultural crisis that had been gestating and incubating during the 60s had hit bottom. It then became clear that we had to work on developing an architectural alternative capable of squaring off against this uncivilized and arrogant attitude which was leaving our cities in irreparable ruin.

This is not the time to go into detail about the vicissitudes of those years. I only wish to stress that the architectural culture that emerged in the 70s was based, among other things, on an awareness of these problems and gained strength with the resurgence of a new consciousness of architecture and the city due in part to episodes such as the destruction of Les Halles. Here I might add that twenty-five years later the situation, on some levels, is not so different; the methods applied in the outrages committed against buildings and land may have changed, but the effects are very similar, which is to say that some of the motivating factors underlying the cultural movements of the 70s are still valid today.

In any case there is no doubt that the debate which took place in the 70s prompted a more respectful attitude towards the architectural heritage of the past and a better understanding of the idea of the city as a historical depository and as a collective work born from the dialectic layering of various contributions. At the same time, however, that this renewed attention to the history of the discipline of architecture was taking shape, there was a growing suspicion that precisely because of its supposed contempt towards history, the postulates of modern architecture implicitly held the seed of destruction of the legacy of the past which had been steadily undermined over the course of the century.

What could be termed an anti-modern front was thus created. Starting with sweeping accusations regarding modern culture's contempt for and ignorance of history, it even reached the point of placing the blame for all of the ills of the contemporary city on the architecture of the Modern Movement.

From here a climate was created of indiscriminate rejection of the modern experience which some tried to entirely cancel out or place in parenthesis as they attempted to recover the thread of architectural and urban tradition by reverting back to that mythical fork in the road where the 'straying souls of modernity' chose the wrong path. This is a strange way of censuring an attitude of supposed contempt for history, by trying to eliminate in one fell swoop the dense and complex artistic experience of modernity as though it were possible to ignore recent history and act as though all of the cultural vicissitudes of the 20th century had never taken place.

Although I do not want to place undue importance on these positions which I have labelled anti-modern - positions which have been largely discredited by their own actions - I would like to stay with the subject a bit longer and attempt to refute them at a theoretical level because I believe this critical analysis can shed some light on the problem which interests us: that is, the relationships which can be established, from our present perspective, between the Modern Movement and contemporary architecture.

In my opinion the anti-modern front has committed two serious errors of evaluation: the first, and the most serious, is that of confusing modern culture with the speculative adulterations it has suffered or the cheap caricatures which have been drawn of it while failing to confront its ideas and the works of the architects that embody, in all respects, the values of modernity. The second, more subtle, error is that of associating modern culture with a disdain for and an ignorance of the history of architecture when, in fact, close analysis shows to what point the modern architects were receptive to the legacy of tradition and the great examples of the past (for confirmation of this one need only study the travel sketches of some masters of the Modern Movement or observe the singular importance given by modern culture to the vernacular architecture of the various regions).

I would like to examine this second point in greater depth, as I feel the first needs no further comment. In my opinion, what has been labelled as contempt for history could be better understood as a particular interpretation of history which emerges as a radical criticism of the interpretation of history which was prevalent in the late 19th century. Modernity did not reject history as a whole but rather rejected eclecticism's specific approach to understanding history. (It is understood that whenever the word history is used within this context it is a reference to the history of architecture).

The relationship of 19th-century eclecticism to history is not unlike that of the shopper who enters a big department store prepared to buy what he needs but with no forethought as to what exactly it is he is going to purchase, certain that by browsing he will find just the object he needs to solve his problem. The eclectic perspective turns the history of architecture into one great depository of materials, perfectly ordered and catalogued, which can be used at discretion as long as certain rules are followed as to how they are to be assembled.

Eclectic thought is based on the neutralization of historical materials. In order to be recovered and profitably reused they must be stripped of their valences and made neutral, separated from the value system which links them to a concrete material culture; they must be reduced to the condition of figures or emblems which will allow them to be conventionally used. The idea of character becomes key in the eclectic process. The choice of the historical material must necessarily be made according to the character of the work in question (solemn, severe, lively, mysterious, energetic and so on). It is through character that the historical materials can be translated into the language of pure convention, giving them, through that language, a specific meaning.

While the eclectic interpretation presents history as a neutral depository of materials, modernity offers an opposing interpretation which we shall refer to as teleological. Through the latter, history appears as a 'meaningful story', that is, a succession of periods which flow naturally one into the other in keeping with a determinism whose laws are revealed by listening to the rhythms and constants which steer historical evolution itself.

The teleological position views history as a diachronic flow heading towards a predictable destination with the modern artist responsible for helping it reach that place. One possible metaphor for this idea of history is that of a river which winds in and out of different places (the historical periods), a river which steadily grows and moves along an inevitable path marked by the mountainous slopes (the evolutionary line of progress). Thus, with modernity comes a view of history as a process of constant forging ahead as well as unlimited trust in progress and the prophetic tone of some of its proclamations. The idea of *zeitgeist*, or spirit of the times, is key to the teleological construct. It is the spirit of the time which gives congruity to each historical period, reflected equally in social, political and cultural reality. That is precisely why it becomes the main criterion in judging all artistic work. All proud works must be true expressions of the spirit of the times, and only with a knowlege of past and present history can our actions be granted this fitting inclusion in the course of human evolution.

Therefore, far from being contemptuous and ignorant of history the modern point of view is instead attentive and knowledgeable. (One need only consider an author like Siegfred Giedion whose explicit teleological position does not belie the importance of his historical research work).

It is just that this is a point of view with an end in sight which, because it considers the historical process as a continuous progression towards an objective, tends to accentuate the viewing of the different historical periods as sealed compartments. And so, just as the teleological position, in the manner in which it was adopted by modern thinking, emerges from a criticism of 19th-century eclecticism, we too take a critical stance with regard to the former and develop our own interpretation of history. The outcome of this criticism would be, without a doubt, a far cry from that resulting from a simple negation or a sweeping repudiation of modern culture. In my opinion taking this critical stance towards the postulates of modernity is the best path available to us today to embark on an in-depth study of the recent history of architecture. Critical thinking involves knowledge of that which is being assessed and, at the

same time, implies a will to correct those errors that have been brought to light by the very criticism.
In contrast, a broad, indiscriminate rejection of what modernity represented tends to catapult us back, unequivocally, to the world of eclecticism or, at most, to that version of eclecticism camouflaged by the inclusion of fragments extracted from the 'modern repertoire'. The latter is characteristic of certain postmodern positions which resort to the device of surreptitiously slipping the modern experience into the same package with eclectic thought and then, once neutralized, presenting it as a new and expanded depository of available materials which history carries on producing.
Following the path I mentioned earlier, I would like to devote the last part of my talk to outlining some of the critical arguments against the postulates of modernity with the purpose of identifying which aspects of the Modern Movement continue acting as fermenting agents in contemporary culture and which other aspects have been left behind or, simply, are not applicable from a current perspective.
However, in order to more precisely define the rules of the game implicit in our approach, two points must be clarified. The first is about the time frame of this scheme of events which has come to be known as the Modern Movement. The second is about the degree of homogeneity, or orthodoxy, to be applied in deciding what does and does not fit within this movement. In both cases I propose adopting broad and unrestrictive criteria.
As to the question of timing, the Modern Movement in architecture can be considered to have begun around the time of World War I and continued, in varying shapes and forms, until well into the 60s.
The cultural crisis of the late 60s interrupted the relative continuity of this long process, causing a significant change in its course. The situation was altered and - apart from the link established in looking back, from the perspective of these later years, to the preceding experience - the Modern Movement was viewed with a certain distance, not involved in the here and now and, therefore, able to be objectively analyzed.
As to the degree of homogeneity, I believe that the Modern Movement must be understood in the broadest possible manner including within it all of those architectural works which, in one way or another, tied in with modern culture. This criterion seeks to break the identification of the Modern Movement with certain figurative style-devices the mere presence of which is enough to qualify a work as belonging to this movement and, conversely, the absence of which automatically leaves it out of the movement or, at least, on the periphery of the orthodox vein.
As opposed to seeing the Modern Movement as a homogeneous whole or, if you will, a uniform and disciplined army, we choose to present a view of it as a confluence of varying concerns and contributions, that is to say like varied and complex terrain which has a clear identity as a whole but which is made up of multiple elements and ingredients.
We are, therefore, aware that an attempt to formulate a broad critique of theoretical positions in the Modern Movement is inevitably a simplification of the truth, but we have to accept that fact becuse it is a necessary step from a methodological point of view.
As we have seen, in modern thought the idea of continuous and unlimited progress in the field of art joins with the idea that this progress is made and guaranteed by expressing the spirit of the times through the work. Together these two ideas lead to a worshipping of the new as a value in and of itself and thus interpose an ontological break between the present and the preceding experience. The legacy of the past is seen as a completed event and the different historical periods are seen as necessary and valuable stages, though stages definitely left behind and, as such, incapable of providing us, beyond being an historical truth, with operating information applicable to current problems. The spirit of the times, then, acts like a jealous guardian of the current terrain which is clearly demarcated.
We find this same *modus operandi* in certain contemporary neo-avantgarde lines of thought which are seemingly very different from the postulates of modern thought but which, in fact, are faithful to them as regards the worship of the new and unexpected, the division of historical evolution into syncopated periods and the anxious search now, not for the spirit of the times, but rather for the spirit of the upcoming season.
This position should be contrasted with the concept of historical legacy understood as a potentiality which can be updated at any time through our imagination. It is not about imitating or reproducing the past or using it as some pre-established solution but rather conjecturing about the capacity to transform the past into a possibility for the present. While the eclectic position views history as even and neutral, directionless and yet able to go in all directions, and the teleological position sees it as a clearly linear space, focused on and moveable in only one direction, I suggest another option: viewing history as topographically complex terrain which, in large part, remains hidden from our sight but which can be explored and traversed following numerous different itineraries and which offers the possibility of blazing new trails which join previously separate and unconnected points.
This view of history involves, paradoxically, a distant and relativistic attitude as regards the capacity to sum it all up which is sometimes associated with historical knowledge and its application in understanding certain phenomena. This understanding requires, as a counterpoint to a historical analysis, what we could call synchronic thinking. Synchronic thinking, by creating a momentary suspension of chronological time, understood as pure evolution, puts us in a position to look at history as

present. As Claude Lévi-Strauss put it so well, it is not a case of "the search for intelligibility culminating in history as its destination" but rather of history serving as "the point of departure for all searches for intelligibility".

There are two basic concepts connected with the synchronic viewpoint: place and memory. All of the many historical layers of sediment deposited by time are superimposed one on another and coexist. The concept of place allows one to simultaneously experience the presence of all these layers. Architecture consists, then, of adding new elements to this previously formed structure in such a way that the pre-existing elements, rather than being cancelled out or distorted, become part of the new composition. If place is the condensing of history in objective space, we could say that memory is a condensing of history in personal experience. Thus it is the mechanism which allows us to activate our imagination and travel through the history of architecture creating analogies between objects and events separated in space and in time.

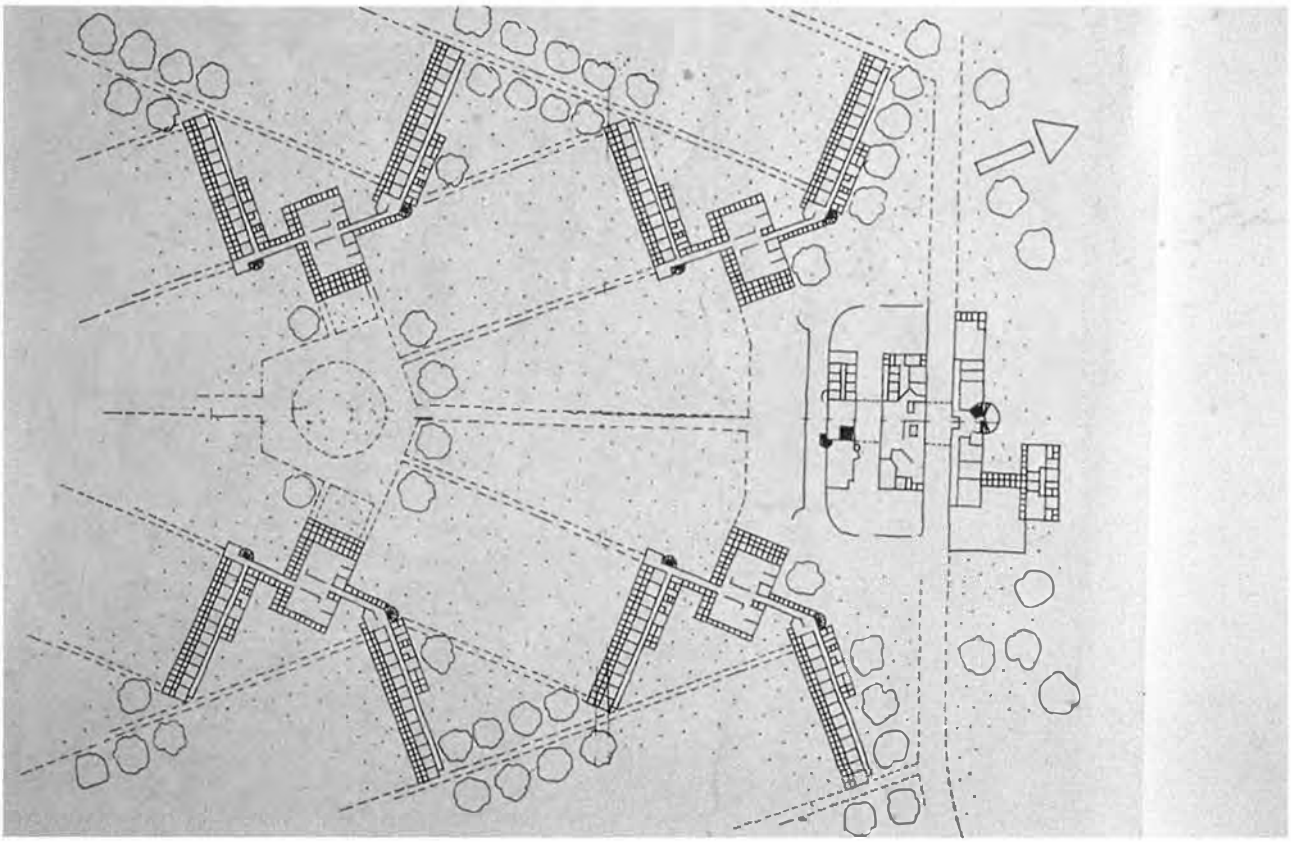
When the architecture of the Modern Movement adopts this teleological interpretation of history, through which the idea of progress inevitably brings with it the obsolescence of the earlier periods, It tends to promote the total substitution of the human scenario and to rebuild physical reality from its own foundations defining a completely new rule of action which shuns the constrictions of that which already exists. In this case the physical strata of the past become obstacles or impediments to attaining new values.

Contrasted with this attempt to wipe the slate clean, or a global supplanting of reality, are the concepts of place and memory through which the project is understood as a new layer of sediment able to superimpose itself on the preceding ones, coexisting and sharing dialogue with them. Synchronic thought, faced with the legacy of the past neither tries to ignore it nor revere it but rather unveil its presence, making it an important part of its project. I believe that this way of approaching the relationship with history can provide some important keys to the problem of how to give recognizable shape to the city in these times; this is a problem which is perhaps the most pressing, the most obvious and the least resolved following the decisive experience of the Modern Movement.

We will, surely, have occasion to discuss all of these subjects in the coming days. I am certain the talks and papers will offer many valuable contributions. What I have attempted here is to touch on certain general questions and, also, to present a point of view which can serve as a springboard for discussion.

Casa Bloc, GATCPAC: J.Ll. Sert, J. Torres-Clavé, J.B. Subirana, Barcelona, 1932-1936. (Iberian DOCOMOMO Register)

KEYNOTE LECTURES



Zonnestraal Sanatorium, J. Duiker, B. Bijvoet, Hilversum, The Netherlands, 1926-1928.

Juan Antonio Cortés

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Artistic Autonomy or Functional Determinism: The Dilemma of Form in Modern Architecture

There was a wonderful moment in modern architecture when it seemed possible that architectural form could emerge directly from the functional arrangement. At that moment of programmatic euphoria architecture was considered a strictly technical response to the needs of structure and use - functional order translated into the order of form' - thus eliminating all subjective elements and all aesthetic mediation from the building process.

This is the position taken by those architects from the 20s and early 30s who could be labelled radical rationalists: Hannes Meyer, Hans Wittwer, Otto Haesler, Hans Schmidt, Mart Stam, J.A. Brinkman, L.C. van der Vlugt, Willem van Tijen and Johannes Duiker, among others. Some of these architects put forth their ideas and theoretical studies in what have become today mythified publications and all of them produced some projects and buildings which are considered among the best examples of modern-movement architecture. Various reflections can be made around these simple, well known facts.

Firstly, although it is valid to view the issue from this perspective, a close look at each of the architects, and even at the work produced by each at different points in their careers, reveals a diversity in formal structure due to the subjective and arbitrary personal factor which plays a role in every process of definition of formal composition, including architecture. Without wishing to categorize or place too much importance on terms, we can talk of personal poetics within this group of radical Rationalists. Hans Schmidt and Otto Haesler are two of the purest representatives of this strict Rationalism or Functionalism; Schmidt by virtue of his rigorous typological investigations resulting in a series of plans for dwellings - some which were actually built, others not - and projects such as the Basel Museum of Art, the school in Lenzburg and the women's residence in Basel; and Haesler with his more strictly rationalist buildings such as the Siedlung Georgsgarten, the school in Celle and the home for the elderly in Kassel. The extreme Rationalism of some of Hannes Meyer's buildings, such as the German trade union school in Bernau or the project for the Worker's Bank in Berlin, is tempered by a certain romanticism in others of his works such as the Petersschule project in Basel or the Palace of the Society of Nations in Geneva. The Dutch rationalist architects share certain characteristics yet at the same time differ among themselves. Mart Stam, the enthusiastic champion, internationally, of modern architecture, aimed to achieve a severe impersonal style and, in keeping with that, usually worked in collaboration with other architects with results such as his three houses in Stuttgart's Weissenhof Siedlung, and both the home for the elderly and the Siedlung Hellerhof in Frankfurt-am-Main.

The projects designed by L.C. van der Vlugt, working in collaboration with J.A. Brinkman, reflect an exquisite command of composition and a taste for the less rationalist circular plans as evidenced in the tea room of the Van Nelle factory or the circular staircase and the design of the carpets and furniture of the also magnificent Van der Leeuw solarium/house. Willem van Tijen exemplifies typological brilliance and subtlety in his treatment of the exteriors of the Bergpolder and Plaslaan housing blocks in Rotterdam. Lastly, Johannes Duiker supports the concept of strict Functionalism in his writings. However, his fine works - counted among the landmarks of modern-movement architecture - are testimony to the fact that form in architecture cannot be the direct, immediate result of the functions which the structure must fulfil, but rather requires certain mediatory elements.

In Duiker's work the two mediating factors in the definition of the form are the abstract tool of geometry and the concrete element of the solid structure. Throughout the course of his career as an architect Duiker used geometry to structure his projects, designing the floor plan according to a specific geometric formula. Some of Duiker's most important projects are based on the 45º angle: in the Zonnestraal sanatorium in Hilversum it is the angle of the relationship among the pieces, in the open air school in Amsterdam it is the determinant in the layout of the building as a whole and in the Nirvana apartment building in The Hague it is applied in the corner finishings. In other works he uses different geometric figures as the matrix of the layout of the parts: the hexagon in the plan for the residential apartment buildings published in the book *Hoogbouw* and the octagon in the open air school project in Zonnestraal, Hilversum; the servants' residency in Zonnestraal is designed as a twelve-sided polygon, and a circle, pentagon and rectangle are used together in the competition project for a health resort in Salesel del Elba. Other less rigid, less simple geometric formulas were used in plans for theatres, in the Cineac building in Amsterdam and in the Gand-Hotel, restaurant and the Goiland theatre in Hilversum.

In any case, in Duiker's work geometry is not just an underlying mechanism ordering the formal elements but rather an expressly chosen solution determining the compositional configuration. In addition, in his best works Duiker achieves a powerful architectural form, not only without undermining his functionalist

convictions but precisely as a result of those convictions. In effect, in his search for maximum functional economy Duiker creates the form and substance of the building from what is invariably a strong structure - in the case of these works, of cement - which hardly needs more than a few finishing elements of glass to be complete. The structure - in keeping with the geometry of the plan and strictly articulated through changes in the sections of the columns, the hang of the beams, corbels, overhanging flagstones, and so on - fully defines the form of the building: the structure becomes the building. This link between geometry, strong structure and final form makes the end result of overall composition seem evident; there are two, apparently fixed, configurations in play: the geometric for the functional organization and the structural for the distribution of forces. The problem of form seems not to exist as a personal or stylistic option, however. As we see in the case of Duiker, it makes its presence doubly known when it moves into the arena of what are, in the end, two personal compositional choices - one geometrical, the other structural - which are at the very root of what the building is.

In spite of the observable individual differences among the rationalist architects, their works reflect a certain overlapping of ideas and, in general terms, of results. However, if we consider architecture not on its own but rather in relation to the artistic-cultural panorama of its period, we must recognize the contrast between rationalist architecture and that which characterized avant-garde at the turn of the century: the inorganic, fragmentary, disintegrative concept of the traditional unit underlying modern art in general and manifested in various ways in the different movements. Fragmentation as the artistic principle of a period implied the rupture of the whole unit with its parts, both from a syntactic and a semantic point of view: there is both a separation of the parts from each other and from the whole and a dissolution of the relationship established between that which gives meaning and that to which meaning is given, ambiguous meaning or an empty sign.

The flip side of the priniciple of fragmentation is the principle of *montage*, another key term in understanding modern art[3]. From cubist collage, to dada collage, assemblage and relief, or constructivist collage, relief and counter-relief to dada or constructivist environmental installations and Man Ray and Moholy-Nagy's "painting with lights", photomontages, photograms and light shows[4], modern art is filled with this principle of montage which visibly displays the fragments resulting from modern disintegration.

The term montage, as assembly, can also be applied in a different sense from that used by the most radical avant-garde movements. Moholy-Nagy, for example, refers to "engineering assembly as the economic work principle"[5]. The term here, connected with the concept of assembly line, implies mass production and mechanization, that is, those features that rationalist architecture pursued for itself in its search for the most rational, exact and economical solution.

The early decades of this century offered two artistic alternatives: there was the fragmentation and montage of the avant-garde movements such as Cubism, Elementalism, Constructivism and Dadaism and there were the radical Rationalists or strict Functionalists who repressed that artistic impulse associated with modernity by denying any connection with art and all figurative influences and treated the creation of buildings as a mere construction problem, as the most appropriate technical response to a specific issue of function.

Caught in this double bind, Le Corbusier - with his wish to personalize issues and to be a leader in the architectural vanguard - offered a third alternative in suggesting that the organic/renaissance principle be substituted by a new mechanical/biological principle: one which is neither an attempt to recover the classical 'whole' nor a whole-hearted acceptance of modern fragmentation but rather an alternative which goes beyond both. He proposed a new unit which is the result of a dialectic among the parts - not arbitrary fragments - into which the building has been broken up, the subsystems of functions which are at once relatively autonomous and yet play a role in the function of the building as a whole.

Le Corbusier defines a series of subsystems - that of the structure, of exterior walls, of interior walls, of elements of circulation, of roofing, of sunlight control, of geometry or proportions, etc.[6] - shapes them with the addition of pictorial elements and integrates them into a new unit: the functioning unit of the building. Thus Le Corbusier claimed to have found a solution to all the questions: to the impulse of fragmentation in modern art and to the unity of classical architecture, to the artistry of pictorial and sculptural representations and to the functionality of rationalist architecture. The building emerged from separate parts, but parts which were tied to a function, not arbitrary fragments. The building finally achieved unity but not the classical unity among the parts of the architectural body, rather a freer unity that functions as a whole.

Finally architecture found its link with functionalist ideas substituting, however, the concept of function with the idea of functioning or operation, and replacing the functionalist desire for immediacy with the inclusion of figurative elements in the creation of form.

One could say that with this brilliant compromise solution Le Corbusier falsely closed the gap between the most radically modern art and the most radically modern architecture, two irreconcilable concepts. In keeping with functionalist ideas, his architecture searched for its model in technology and in the work of the engineer but it betrayed the functionalist spirit by including contemporary artistic elements and traditional compositional tools. Unlike

functionalist architecture, his was perceived as art and willingly linked to modern art although, in comparison to more genuinely modern works, its artistry was strongly contained.
Le Corbusier's architectural system gave and continues giving rise to splendid buildings - though in general, today lighter material has substituted the concrete structure and exterior walls- as well as to broadly applied Mannerism in the separation and expressive presentation of the structure, fittings, walls, roof, circulation elements, and so on. Archigram in the 70s and the integration of this approach into today's high-tech aesthetic and production system are the two most extreme examples of the mark it left.
The extraordinary momentum of avant-garde art, particularly painting, affected architecture only to an extent. On the one hand the only concession the functionalist architects, who explicitly rejected artistic expression, made to this new sensibility was simplicity of volume, lightness of material and absence of decoration. On the other hand, though Le Corbusier included modern artistic concepts in his architecture, they were confined within the volumetric parameters of the shell, the governing plans and a system of proportional measurements which controlled those pictorial elements which had already been tempered in his own painting (from Cubism to Purism). Finally, it is important to add that even in those cases where architecture drew directly on one of the avant-garde movements in art, the very nature of architecture itself kept it from being treated in the same terms as painting.
Modern architecture was greatly influenced by Neoplasticism (for example, Le Corbusier's Maison La Roche), however, there is, perhaps, only one work which could be considered truly neoplastic: the Schroeder house by Rietveld. Even there, however, the Neoplasticism is reflected at the level of appearance more than on any in-depth level and is the result of the exceptional client-architect relationship informing the commissioning and building of the house. Van Doesburg and Van Eesteren's attractive proposals demonstrated, in reality, the impossibility of applying Mondrian's neoplastic principles or Van Doesburg's own Elementalism to architecture.
Malevich's Suprematism, the other important avant-garde art movement with architectural possibilities, produced the attractive axonometric volumes of his *Planitas* and the pilot homes and carefully worked sculptures of his plaster *Architectones*, but never generated truly architectural proposals.
It was El Lissitzky who most rigorously explored the question of the step from planes to volume in his *Proun* paintings and who, in addition to Iván Leonidov, proposed the most radical suprematist-based architectural ideas. In effect, El Lissitzky's horizontal skyscraper project (misunderstood in Mart Stam's version, who introduced the leaning supports) is, together with the projects from Leonidov's early period such as the Lenin Institute project and the project for the Centrosoyuz, the most important contribution to the idea of architecture not subject to the laws of gravity. Together with the exceptional case of the Schroeder house and El Lissitzky's and Leonidov's projects which were never executed, the closest thing to a work of architectural scale which avant-garde art left us are certain installations such as El Lissitzky's *Proun* space or Kurt Schwitters' *Merz* constructions.
Modern architecture, caught between impossibility and repression, remained on the fringe of the great artistic explosion of the avant-garde movements. But the artistic will of a period cannot be denied or completely suppressed, not even in a discipline such as architecture, so limited by its own conditions and so marked by its specific needs and technical requirements. Given Functionalism's reductionist approach to form and architecture's exclusion from the world of art, modern architecture, as it evolved, had only indirect means to express something more than its own utilitarian functions. Over the course of decades, architects of the modern tradition aimed for subtle symbolism, deforming the building in the attempt to achieve artistic expression through the building's very form as Robert Venturi criticized many years ago in his book *Learning from Las Vegas: The Forgotten Symbolism of Architectural Form*.
In the last twenty-five years a rapid succession of events has taken place. On one hand, following Venturi's own criteria, the architectural shell and the decoration applied to it were considered as two separate concepts which opened the way to false façades, superimposed elements, etc. On the other hand, in keeping with the ideas of Aldo Rossi and other members of the Italian *Tendenza*, the reutilization of traditional architectural models in new contexts resulted in a certain sense of dislocation and rupture. Some time later came the disintegration and breaking up of what was considered as collage architecture, a collision of fragments, old and modern, a good example of which is Stirling and Wilford's New State Gallery of Stuttgart and other projects, either urban or simply architectural which were conceived as collages within so-called postmodern Classicism.
This latter term gave way to another, almost as unfortunate one, which was Deconstruction and to which architects of very diverse tendencies subscribed; some of these, however, readopted in their architecture the processes of free fragmentation and montage associated with the avant-garde Cubists, Suprematists, Constructivists and Dadaists. Frank Gehry, Zaha Hadid, Daniel Libeskind and Coop Himmelblau connected with these avant-garde movements and brought to architecture, almost three quarters of a century later in some cases, the most characteristic features of avant-garde art which modern architecture had not allowed to filter into its own works.
Having reached this point we can ask ourselves: is this the end of the history of contemporary

architecture? Is this how the cycle, set in motion by the Modern Movement, comes to a close? Far from it, I believe there is a great wealth of ideas in modern architecture which remains to be tapped.
The blossoming of artistry and the neo-avantgarde's transposition of the methods applied by the avant-garde artists of the turn of the century, together with the influence of later movements such as Pop Art, is a reality in current architecture which I not only consider inevitable but healthy as well; in the first place, all repression should be done away with, and secondly a new enriching field of experimentation has been opened to contemporary architecture, though I think that many of these works assume, to a fault, architecture's artistic autonomy.
Nonetheless, having demonstrated the impossibility of setting and maintaining architecture apart from the art movements, and being convinced that the technical and cultural complexity of life today makes a direct correspondence between functional order - utilitarian and strong functions - and formal order impossible as well, I should like to position architecture at a poetic level which is less dependent on other artistic movements and supported by some of the postulates championed by our admired functionalist architects.
In his reflections in a work entitled *Dr. Berlage and the 'New Objectivity'*, Johannes Duiker sheds light on his ideas about architecture which can be followed in this and other of his writings published in the magazine *De 8 en Opbow*[8]. In qualifying the statements Berlage makes in a magazine piece, Duiker upholds an idea he later reiterates which is the law of economy, though economy understood not simply as material economy but also as what he calls spiritual economy. The law of economy implies, in the first place, a process of dematerialization which aims for spaciousness, opening, sun, light and air and tends towards delicateness of materials and lightness.
As Duiker writes: "If the principle of Functionalism in Berlage's work has any cultural validity it is not because of its financial economy but rather its spiritual economy. This spiritual economy leads to the construction, which is possible or not depending on the material used and it grows as the work moves towards a state of dematerialization and spiritualization.[9]"
However, what is most interesting, precisely because it is unexpected, is that in order to refute Berlage's statement that "Art begins where technology leaves off", Duiker writes: "Inspiration, intuition, sentiment, artistry or whatever you wish to call it, led Berlage to the greatest technical solutions and thus he defined the spriritual validity of the resulting architecture....since inspiration, etc., as the initial driving force precedes the material decision throughout technical history. Nonetheless, the development of the driving force is only culturally valid if it follows the law of economy.[10]"
The statement that inspiration or intuition is the initial driving force not only in science and technology but in all cultural expression is surprising coming from an architect who is a partisan of strict Functionalism and radical Rationalism and it reveals a richness of thought which is reflected in the richness of his architectural work and which goes beyond the limits of mere functional determinism.
In his comments on a theatre set designed by Moholy-Nagy, Duiker states: "What turns the set into 'new functionalism' is Moholy-Nagy's spirit which created this set, understanding that the ideal of Functionalism can be found only through the extreme economy of materials and an extreme focusing of tensions."[11] These two ideas of economy of materials (and also of compositional solutions in general) and focusing of tensions could be taken as a 'walker's guide' through the territory which modern architecture has had to traverse until now and could even be considered a wager for the future. To give an example, I believe that the current team of Swiss architects, Herzog and de Meuron, could be considered a good example of car-rying on Duiker's idea.
However, if I may I would like to talk briefly, not about them, but about Alejandro de la Sota, an architect from the city of my birth, Madrid.
I believe de la Sota expresses through his works the best functionalist tradition whereby the building emerges as an inspired response to the basic conditions of the problem to be resolved and it achieves a poetic level through both the preciseness and, at the same time, imaginativeness of that solution. Essential elements of this poetic level are the economy of materials and focus of tensions which Duiker propounded. In effect we can speak of spiritual economy in the work of de la Sota as well, or what he called on one occasion, "simple simplicity"[12], together with a functional and technological choice: use of the new techniques and new materials which confer precision and lightness on the work without actually displaying the technical elements or solutions applied.
In each project, functionality is the search for the most efficient, economical and simplest solution possible. This simplicity to which de la Sota aspires and which, in fact, he achieves in his works is by no means easily attained or obvious, in spite of the fact that it seems to be a natural outcome of the application of certain technical solutions to resolve a concrete problem.
Modern architecture fluctuated between the breaking down of the building into a series of differentiated volumes, each corresponding to a functional unit, and the compact form, reducing the building to a single, simple volume. The three buildings by Alejandro de la Sota which I am going to discuss fall into a tightly balanced middle point between the volumetric composition of works by the functionalist architects and the pure prism of the houses designed by Le Corbusier in the 20s or Mies' American works. Each of the three examples by de la Sota is an exercise in balance in the superimposition or layering of a series of functions, a series of spaces each with a certain function. Layering and interconnecting a series of

materials, defining spaces and achieving a stable result is the foremost task in constructing. Making the layering seem light and effortless and achieving an ultimate balance, neither forcing the form, positioning and dimensions needed by each space nor putting constraints on its natural way of being and of being part of the whole, are features of good construction, Of what could perhaps be called architecture.

The first project which I will discuss, though the most recent chronologically, is a small house constructed in Galicia in 1976. In explaining the idea of the house the architect refers to a text by Eero Saarinen, according to which "Man's dwelling can be represented by a sphere cut at the equator by a ground plane. The lower semisphere is used for rest, inactivity, revival of energy and thought; the semisphere above the 0 plane is where man carries out his activity, where he acts on what he has thought. The former is of stony, earthy materials, the latter transparent, of glass."[13]

The idea of a building elevated above the ground natually calls to mind Le Corbusier's Villa Savoye, but its separation into two parts, one semi-buried, opaque, heavy, stony, intended for nocturnal functions and another, aerial, transparent, light, crystalline, in which daytime activities are carried out, may have found its inspiration in the Robert Wiley house in New Canaan, Connecticut, built in 1953 by Philip Johnson. This project, from Johnson's Mies period, is enormously attractive as a compositional display reflecting the idea, a perfect glass box - truly immaterial - set over a base which is neutral as a result of the homogeneous treatment of the masonry and the regularity of its spaces. Apart from the marked difference between the materials used, the key decision for the success of the project was the differentiation between one part and the other by a 90º turn.

De la Sota's project is less radical, less programmatic, more realistic and more focused on responding to a set of normal domestic circumstances and taking the best advantage of the small plot of land. The underground floor with the bedrooms is very tightly arranged both in terms of the connection between the bedrooms and in terms of the compactness of each type of bedroom: one features two beds end to end in order to leave as much open space as possible for opening and closing the windows and closet and the other features two cabin/bedrooms which open on a shared common space where, in the area which would otherwise be taken up by doors, the closets are located. The bathrooms are tightly arranged as well with solutions providing a separation of functions within the bathroom according to varying degrees of privacy required. In spite of its compactness, this floor is not one uniform mass but rather extends along one entire side of the site and is arranged in ascending half-floors connected by a strategically placed staircase.

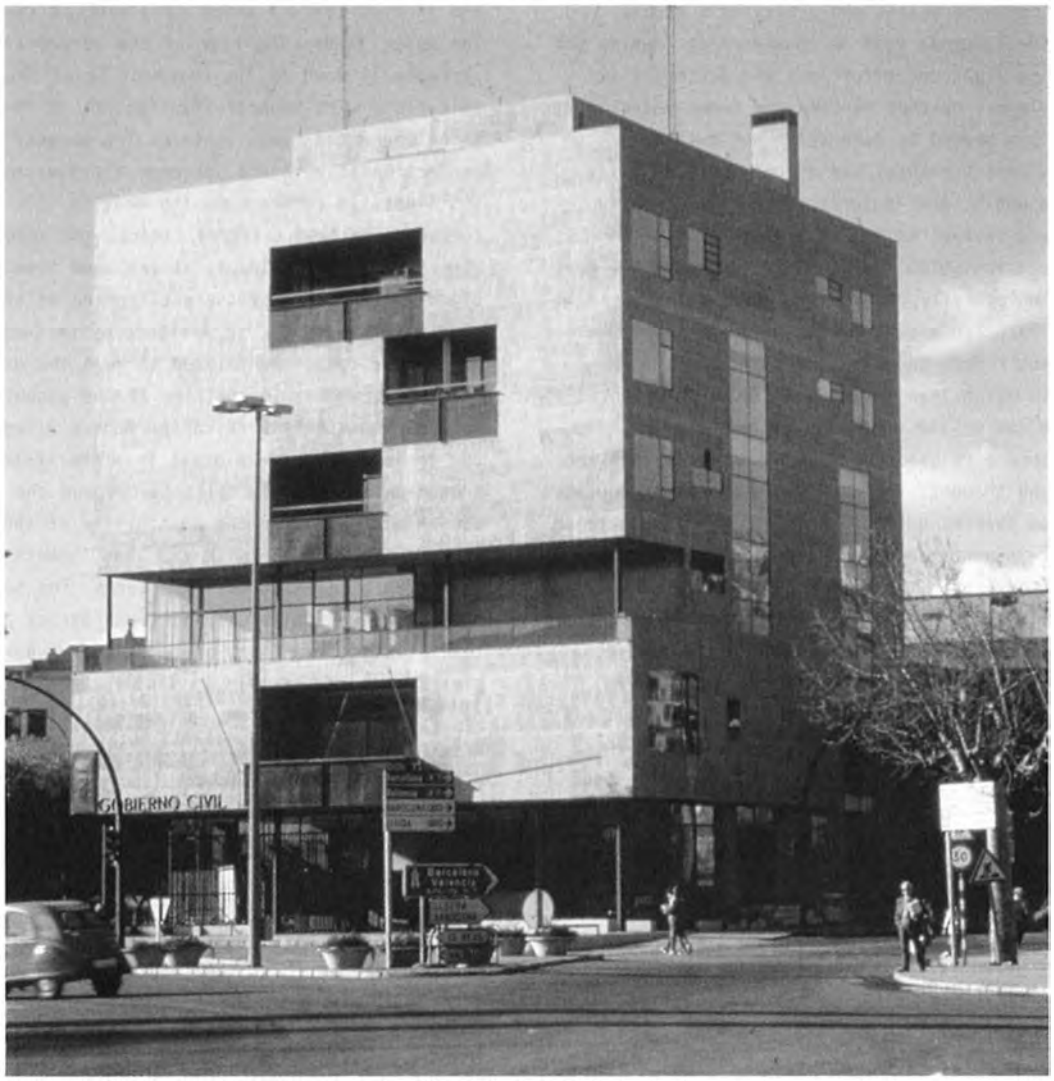
At the same time the land around the house is terraced, starting at sea level - the level at which the entrance to the house is located - and leading to the highest terrace which is almost at the level of the upper floor. The rear of the garden slopes irregularly down to the basement level thus providing this floor with natural lighting. It is in the upper floor where the house achieves the geometric perfection of a square, becomes a prism: pure, white and light. In contrast to the heavily compartmentalized basement floors, the upper floor is almost diaphanous though, at the same time, it is clearly structured by the positioning of the staircase - as was the Cook house designed by Le Corbusier - and can be compartmentalized through the use of sliding elements. In addition to the probable references in this work to the Robert Wiley house, the de la Sota project draws from the lessons of the French-Swiss master's Villa Savoye and the Cook house, but he also explores the possibility of interweaving part of the building with the land, something unthinkable in Le Corbusier's terms. The building, in fact, does not faithfully follow a strict stylistic tradition, neither that of Le Corbusier nor that of Mies, as is the case in the Philip Johnson project; de la Sota's project emerges more freely from the original idea and from the specific conditions of its placement and surroundings.

The building for the Gobierno Civil (Civil Government) of Tarragona, dated 1957, began with an apperently naive drawing, apparently simple, of the façade facing onto the square on which it stands. The idea was to layer a series of different floors, one on top of the other, which would each maintain its independence and functional hierarchy while, at the same time, forming a single outer shell which, as I have mentioned, is characteristic of these works by de la Sota.

This building can be compared to one of Le Corbusier's projects, the Governor's Palace of Chandigarh, dated 1951-1953. There is the similar monumental building front, as there is the hierarchically differentiated layering of the floors. However, while Le Corbusier opts for simplicity rather than figurative detail in the outer structure, de la Sota maintains both, creating a single image which can be broken down into parts, one which is synthetic and instantaneous but full of content.

In spite of a certain affinity with Terragni's work, as Juan Navarro states: "We are very far from an abstract complexity born purely from the visual arts. The abstraction of the Gobierno Civil is direct, an instantly formulated image - closer to Malevich's spontaneity than Mondrian's deliberations. It would be difficult to find as precise, as hypnotic, an icon in another work of contemporary architecture."[14]

The design of the Gobierno Civil building is based on two superimposed bodies, the office area and the private living quarters, so that, as the architect explains in his plans, it is two buildings, one on top of the other with a single façade which is one of the key achievements of the project. The other accomplishment was finding the appropriate scale for the building. The façade facing the square is the



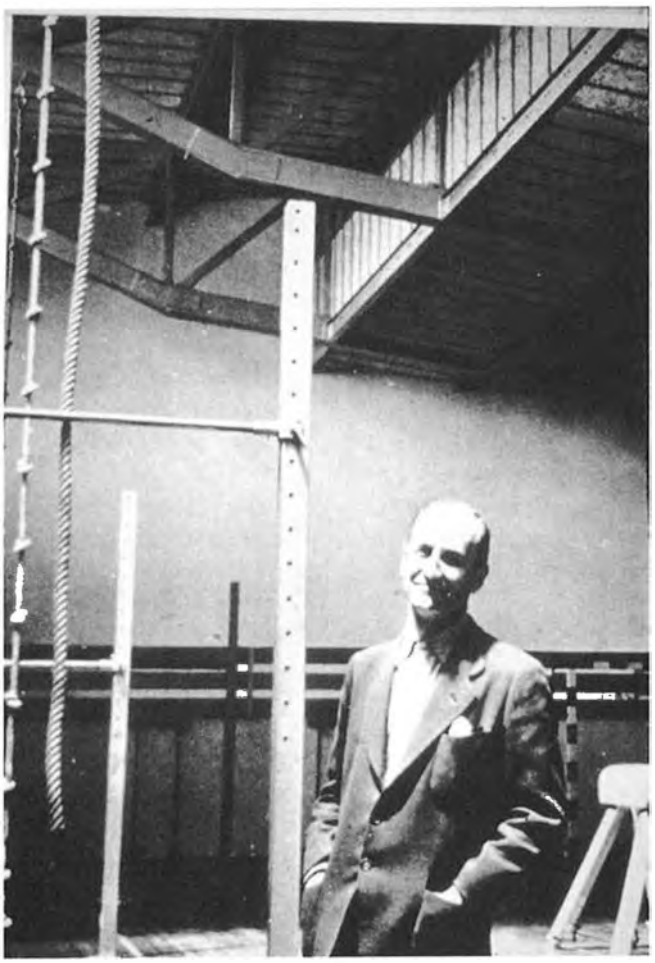
Gobierno Civil, A. de la Sota, Tarragona, 1957.(Iberian DOCOMOMO Register)

focus of intensity. There are two structures on columns, placed one on top of the other and almost meshed together both on the frontal and lateral planes of the building. The second floor, where the office spaces are located, projects slightly out towards the front and the sides. The subtle relationship of the structure to the exterior walls is essential to the differentiation between one floor and another; the two central columns of the structure on the front of the ground floor and the second floor suggest a gentle curve reflecting the curvature of the square while the wall of the building is consistently flat, though situated at varying depths.

What is dominant in the façade is the emblematic, almost totemic overall effect of the empty spaces opening on it. The depth, the impressive size, the clean cut and the individuality of the façade give the face of the building its representative features.

As author of this project, de la Sota shows himself to be a marvelous architectural acrobat by breaking the axis of symmetry only to reinstate it in the upper empty space and, above all, through the placement of the two off-centered windows meeting at an incorporeal geometric point. It is the marvel of acrobats who, by depending upon one another for the minimal necessary support and dangerously defying gravity, achieve a result at the end of the exercise - a figure, balanced, but at the very limit of that balance. Some of Paul Klee's drawings reflect this same tense and simultaneously risky and volatile balance where, as in the Gobierno Civil building, the lightness and virtual simplicity of the final figure is the result of the complex interaction of a system of forces. Referring back to what was said earlier, this point at which the two spaces merge is an expression of maximum economy in the encounter between the two elements and an expression of the maximum focus possible of tension in the entire façade; it is an example of Duiker's ideas carried out to the extreme and, to a large degree, is what makes this building fascinating. An analysis of the interior spaces requires mention, needless to say, of the transparency and diaphanous manner in which they have been handled.

The last example to which I shall refer is the Gymnasium of the Colegio Maravillas in Madrid, built in 1961 and considered to be this architect's



Alejandro de la Sota in the Gymnasium of the Colegio Maravillas, Madrid.

masterpiece; it was included on the list of the ten most important buildings of modern architecture in Spain and Portugal by the commission of the Iberian section of DOCOMOMO. While in the case of the home which I first discussed, the explanatory drawing of the building is that of a bubble and in the case of the Gobierno Civil it is that of the façade, in this case it is the cross section. This shows that the building compensated for a brusque metre drop in the level of the land[12] and that the interior space is crossed by two lines from the southern front to the retaining wall in the back: the line of the sun directed downwards and the line of the air directed upwards, both strictly functional aspects of lighting and ventilation but, in this case, carried out in a highly poetic manner. The cross section also shows the lightness, the effect of floating planes of the building's floors: the new floor created by the flat roof gravitating towards the convex roof structure and the ground floor gravitating towards the concave basement structure. Above all it shows the fundamental idea of the project which is to invert the roof structure which then provides space for an outdoor playing field, two levels of classes and offices, lecture halls and additional overhead lighting in the centre of the playing court. While in the two projects I previously commented upon we could still consider a certain sense of composition, of rules of art, in this project there is none of that, as the building is the direct realization, without compositional mediation, of a logical and successful idea.

We could compare this building with one of the emblematic projects of the radical Rationalists, the strict Functionalists, which is the Petersschule for Basel, presented in 1926 by Hannes Meyer in collaboration with Hans Wittwer. In this case as well the main issue was to create spaces for outdoor play. But without wishing to take credit away from the Meyer and Wittwer project, isn't their solution more rhetorical than simply logical, in comparison with de la Sota's? Isn't the projecting hanging double platform and the spectacular exterior stairway leading to the interior floors and the roof a form of structural boasting? Is it not,in the end, a less economical solution?

I will leave these questions unanswered and simply state that de la Sota once again was able with this building to put a varied series of functions within a simple, unadorned shell in keeping with the principle of economy of material and to concentrate the tensions of the building in one element, the inverted roof structure, thus creating some clear spaces and volumes which radiate intensity, in keeping with the principle of spiritual economy. Is this art? We don't know, nor does it matter, although in any case it would not be autonomous art but rather art which is dependent on the utilitarian needs of the building. What we can be sure of is that it is a tremendously satisfactory solution for the body and for the spirit, a strictly functional, profound and freely inspired answer to an architectural problem.

Notes

[1] See Alan Colquhoun. "Design Typology and Methods". In *Arquitectura moderna y cambio histórico*. Ensayos: 1962-1976. Ed. Gustavo Gili, Barcelona, 1978, pp. 61-74. Also in C. Jencks and G. Baird, editors. *El significado en arquitectura* H. Blume Eds. Madrid, 1975, pp. 296-308.

[2] See Carles Martí and Xavier Monteys. "La linea dura" 2C. *Construcción de la Ciudad*. Nº 22, April 1985, pp. 2-17.

[3] Montage is a basic word in film vocabulary, in both its theoretical and its technical application. However, it can extend to modern art in general and is a good expression of the sense of contemporary culture. See, for example, Vicente Sánchez-Biosca. *Teoría del montaje cinematográfico*. Ediciones de la Filmoteca de la Generalitat valenciana, Valencia, 1991 and Matthew Teitelbaum, editor. *Montage and Modern Life: 1919-1942*. The MIT Press. Cambridge, MA, 1992.

[4] See especially Andrei Nakov. "La revelación elemental" and "Los orígenes de lo elemental". In *Dada y Constructivismo*. Exhibition catalogue at the Centro de Arte Reina Sofía, Madrid, 1989, pp. 13-24 and 39-45.

[5] László Moholy-Nagy. *La nueva visión* and *Reseña de un artista*. Eds. Infinito, Buenos Aires, 1972 (1929), p. 81.

[6] See Barry Maitland. "The Grid" *Oppositions 15/16*, winter/spring 1979. pp. 91-117.

[7] Robert Venturi, Steven Izenour and Denise Scott Brown. *Aprendiendo de Las Vegas. El simbolismo olvidado de la forma arquitectónica*. Ed. Gustavo Gili, Barcelona, 1978 (1977).

[8] Johannes Duiker. "Dr. Berlage and the 'Nieuwe Zakelijkheid'". Collected, together with a series of other published writings in *De 8 en Opbouw*, in E.J. Jelles and C.A. Alberts. *Duiker. 1890-1935*. Amsterdam, 1976, pp. 132-33.

[9] op.cit. p. 132

[10] Ibidem, p. 132

[11] Ibidem, p. 134

[12] A. de la Sota. *Alejandro de la Sota. Arquitecto*. Eds. Pronaos, Madrid, 1989, book flap.[13] Ibidem, p.164

[14] Juan Navarro Baldeweg. "Madrid: Masters and Disciples". *The Architectural Review*. Vol. 179, nº 1071, May 1986.

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Megaform and Landform as a Remedial Strategy

Unlike in the latter half of the 19th century, we are unable to project urban form today with much confidence, neither as a *tabula rasa* utopian proposal nor as a piecemeal reformist policy to be engineered over the long term through the application of zoning codes and by-laws. In the main we can envisage the urban future today only in terms of fragmentary remedial strategies, as these may be effectively applied to the dense urban cores of existing metropoli or to the surrounding of the megalopoli of the urbanized region. This is largely due to the fact that we are increasingly subject today to sporadic waves of development that either go out of control with great rapidity or, alternatively, take place in spurts followed by long periods of stagnation. Needless to say, this predicament confronts the urban designer with an all but impossible task, one in which civic intervention has to be capable not only of engendering an immediate identity but also of serving as a decisive catalyst for the subsequent develpoment of the surrounding area. However, none of this is totally new and at different times over the past century architects have been acutely aware that the contribution they might be able to make to future urban development would of necessity be limited. This is already evident in Camillo Sitte's rather reactionary *City Planning According to Artistic Principles* of 1889, where clearly what is envisaged in relation to the 'space-endlessness' of the Ringstrasse is a form of urban intervention that would be capable of providing some definition in terms of a bounded domain and a certain continuity of built-form.

I have coined the terms *Megaform* and *Landform* in the first instance in order to stress the form-giving character of the work in hand and second in order to emphasize the need for the topographic transformation of any given site rather than in the mere aestheticization of its available ground surface. Thus while the term of Megastructure, dating from 60s, may well seem to overlap with the notion of Megaform to such a degree as to be identical with it, what is at stake here is the plastic continuity of the form as opposed to the articulation of the building into its component parts and thus into a proliferation of relatively open-ended relationships. Similarly, the idea of the Landform may appear at first to be indistinguishable from landscape, despite the fact that the coinage implies that what one has in mind is not merely a matter of horticulture or the decorative arrangement of vegetation.

When one looks back at the history of 20th-century architecture one is immediately struck by the fact that Le Corbusier's mode of beholding the city was totally transformed by seeing the world from the air. Thus he would write in his book *Aircraft* of 1935: "The flight of the plane provides a spectacle with a lesson-a philosophy. No longer a delight of the senses. When the eye is five feet or so above the ground, flowers and trees have dimension: a measure relative to human activity, proportion. In the air, from above, it is a wilderness, indifferent to our thousand year old ideas, a fatality of cosmic elements and events...From the plane there is no pleasure...but a long, concentrated mournful meditation...The non-professional who flies (and so whose mind is empty) becomes meditative; he can take refuge only in himself and in his own world. But once he has come down to earth his aims and determinations have found a new scale".

This was the scale of Le Corbusier Plan Obus of 1931, a project made for Algiers that was inspired by the volcanic topography of Rio de Janeiro which he had first experienced from the air, in 1929. This aerial panorama of an exotic corniche brought him to imagine an urban Megaform in which one could no longer discern quite where the building ended and the landscape began and so, in this sense, it was also a Landform. A significant corollary of this was to render the building itself as a kind of artificial ground, within which the occupant would be free to build in whatever way he saw fit. Hence, while postulating the continuity of the Megaform as a monumental topography, Le Corbusier left the actual domestic fabric open and accessible to popular taste. At the same time it has to be said that the Plan Obus was not a particulary rational proposition from either a political or a productive standpoint. In its failure to conform to any received model of the city, it represented a total rupture with any received kind of urban typology. Unlike his Ville Contemporaire of 1922 it was neither Haussmannian nor Sittesque. It patently had nothing to do with Joseph Stubben's codification of regularized urban space as this is meticulously set forth in his book *Die Stadtebau* of 1890. Nor did it owe anything to the perimeter block type, widely applied in European urban extensions of the 20s. At the same time it did not conform to the Taylorized *Zeilenbau* row house model; this ostensibly industrialized approach to housing production as it was widely adopted in the Weimar Republic and elsewhere. In terms of constructional rationality, it totally repudiated Le Corbusier's earlier propositions for a utopian but nonetheless normative form of urban housing. Distantly related to that naive projection of an urban extrusion crossing the open landscape, as we find in Edgar Chambless' *Roadtown* of 1910 the Plan Obus surely represented the idea of the Megaform taken to extremes. It was already conceived at the scale of the urbanized

region, thirty years before the urban geographer Jean Gottmann recognized this urban proliferation as totally transcending the traditional city.

Apart from this brilliant but outlandish projection, to what other paradigms in the modern legacy may we turn in oder to trace the evolution of the Megaform as I have attempted to postulate it here, that is, as a topographic inflection in what is otherwise an increasingly placeless domain? Before attempting to answer this, we should first establish some hypothetical criteria for this concept of the Megaform. One may imagine it as displaying the following characteristics; (1) a continuous urban mass extending predominantly in a lateral or horizontal direction rather than vertically. However, unlike the Megastruture its mass is not broken up into a series of structural subsets; (2) a form capable of inflecting the existing topography and context. In this respect it is patently not a freestanding object but rather a continuation of the surrounding topography. In this sense it may be perceived as an artificial landscape or rather as a geological metaphor; (3) it should be capable as a complex form of being read as a metaphor for the absent or invisible city. It should appear as a dense urban symbol, within the dispersed urbanization of the Megalopolis.

One is reminded of Rockefeller Center, New York (1930-1939) which, despite its height, surely meets many of these criteria. And while we may not think of Rockefeller Center as a polemically modern work, it is surely one of the finest urban set pieces that the 20th century has achieved. In this regard, it is not only a metaphor for Manhattan but also a city in miniature in much the same way as the Palais Royale in Paris, even if it lacks any residential accommodation. Above all, it maintains the plastic continuity of its form in such a way as to be as readable as a kind of artificial Landform. This characteristic seems to find reflection in Raymond Hood's proposal for installing gardens on the lower roofs of the complex.

If one attempts to trace the evolution of the urban Megaform in the Modern Movement one soon finds oneself in Northern Europe, that is to say in the Baltic rather than the Mediterranean. One looks, in other words, to the legacy of the Hanseatic League and to the German concept of *Die Grossbauform* as this appears in the work of such architects as Hans Scharoun, Hugo Haring, Fritz Hoeger, Emil Fahrenkamp, Hans Poelzig, Karl Schneider, Hugo de Fries, Max Berg, Wilhelm Riphahn, Wassily Luckhardt and above all, Erich Mendelsohn. One finds in the work of these architects a predisposition for creating an organic civitas removed from the dematerialized spacefields of the 20th-century avant-garde. I have in mind such works as Scharoun's Breslau Werkbund exhibition buiding of 1929, Hugo Haring's Gut Garkau farm of 1924, Fritz Hoeger's Chilehaus, Hamburg, Emil Fahrenkamp's Shell House, Berlin, of 1931, Hans Poelzig's House of Friendship, Istanbul, of 1916, Erich Mendelsohn's Alexanderplatz proposal of 1927, not to mention Mies van der Rohe's Friedrichstrasse competition entry of 1922 and his initial proposal for the Weisserhofsiedlung exhibition of 1927.

In each instance it can be said that the building assumes a topographic, even 'mountainous' character. The work of the Tyrolean architect Lois Welzenbacher is also seminal from this point of view,particulary since much of his architecture was expressly conceived for an Alpine context.

Another architect who lies close to the German *Grossbauform* tradition is Alvar Aalto, as is already evident in is Sunila paper-pulp factory of 1935-1937 where a very delicate relationship is established between the brick mass of the factory and the surrounding landscape. This occurs at both a macro and a micro intermediate scale. In a different context, but equally powerful, is the affinity that Aalto establishes between the mass-form of his Baker Dormitory built on the edge of the Charles River in Cambrige, Massachusetts, in 1938 and the form of the riverscape itself.

And once one starts to examine Aalto's work in this light one finds incidents of this syndrome throughout his career; from the 'tented-mountain' he projected for the Vogelweidplatz sports centre in Vienna in 1953 to the Pensions Institute built in Helsinki in 1956, or, say, from the House of Culture, realized in Helsinki in 1958, to the University of Jyväskala, of virtually the same date where the built-form is at once readable as a metaphor for landscape. A similar elision will appear at an urban level, in the Cultural Centre in Wolfsburg (1962) or in the Enso-Gutzeit building in Helsinki. While this last is fully articulated in terms of its framework, it is still perceivable as a mass-form. A similar stress upon mass is also evident in Aalto's plan for a new cultural district on the Tooloo site in Helsinki of 1964.

Traces of a similar Megaform approach can also be found in the work of Team x, in Alison and Peter Smithson's London Roads Study of 1953, although here it may be argued that the work is more of a megastructure than a Megaform. I am alluding to the way in which the building engulfs an elevated road system in such a way as to constitute a formidable barrier in passing from one sector of the city to another.

This tradition of the Megaform will also reappear in Jacob Bakema's Bochum University scheme of 1962 and above all in his proposal for Tel Aviv of 1963. The basic preoccupation is always the same, namely, how to accommodate the reality of a *motopian infrastructure* and at the same time capitalize on the fact that the road system is the one sector where the massive investment is going to be made and that as a result the autoroute is the only permanent structure on which one can finally depend in designing the megalopolis. One senses this kind of thinking in the Smithsons' Berlin Haupstadt Competition of 1958 and even in Louis Kahn's Philadelphia plans of 1956-1957. However, a certain empiricism distinguishes this work from the earlier German *Grossbauform* approach. One

may even see this split within Team x itself, particularly when one compares the work of the Smithsons, say, to Ralph Erskine's project for Svappavaara in Lapland of 1963 or his later Byker Wall housing in Newcastle of 1981. One also has to acknowledge at this juncture the presence of one other seminal figure for the north: John Utzon, who while acknowledging the automobile, did not endow it with undue importance. Utzon's recourse to the Megaform is surely evident in his Sydney Opera House of 1953 as well as in the opera that he projected for Zurich in 1964, and his Bagsvaerd Church, built outside Copenhagen in 1976.

It seems to me that the tradition of the Megaform has enjoyed considerable currency in Spain over recent years. It is surely evident, for example, at an urban scale in the work of Rafael Moneo, from his extremely modest Bankinter building completed in Madrid in 1976 to the continuous form of his L'Illa block recently completed on the Diagonal in Barcelona and designed in collaboration with Manuel de Solà-Morales in 1993. While the Bankinter was a relatively small building on a restricted site urban, in a prestige neighbourhood, it was still able to address the larger urban domain of the Castellana axis. At one and the same time it established both its own identity and contributed to the changing character of the neighbourhood.

To varying degrees and in somewhat different ways, the urban Megaform has been a consistent theme in Moneo's work throughout his career. It is surely possible to find this idea lying behind Moneo's Roman Museum in Merida (1986), as well as his Atocha Station in Madrid (1992). In each instance, the morphology of the existing fabric is given a specific inflection, by transformation of the topography surrounding each building. Such an inflection is evident even in his more formalistic work such as the town hall in Logroño. It is present above all in his 1992 proposal for the Kursall in San Sebastián with its unifying podium and its inflected concert halls turning first towards the river mouth and the sea and then towards the land.

The remedial strategy of the Megaform seems to proffer itself in two fundamentally different ways, first as the 'mound-like' Megaform and second, as a 'mat-building' as this appears, say, in Utzon's Kingo and Fredensberg housing schemes of 1956 to 1963 or in Le Corbusier's pioneering Roq and Rob terraced housing proposal of 1949. The two indispensable conditions for the Megaform are first that the form should be dense enough in mass, rhythm and profile to give an unmistakable sense of identity to the location and second that the building should not be perceivable as a freestanding object but rather as a form that flows

University of Jyväskylä, Alvar Aalto, 1952. (Finnish DOCOMOMO Register)

with or from the topography and thus serves to create a contour where one previously did not exist.
With the Megalopolitan dissolution of both city and countryside, even in the so-called traditional city it becomes increasingly necessary in my view to generate a sense of place in the emerging built-up environment which would otherwise lack any definition whatsoever. This attempt to discriminate between Megastructure and the concept of the Megaform finds a certain parallel in the distinctions one may draw between the Landform in a plastic sense and Landscape as a rather two-dimensional organization of the ground surface; even if this last is something of a polemical fiction, since there are very few landscapes that are absolutely two dimensional. However, it is surely obvious that Le Notre's concept of the parterre is much less three dimensional in character than, say, Luis Peña Ganchegui's setting for Eduardo Chillida's sculpture, *The Comb of the Wind*, as this was installed in the harbour of San Sebastián in 1986.
We may find a number of recent Landforms having more or less of the same three dimensional character as Ganchegui's set piece. In this regard one may begin by citing the 'staging ground' built on the Philopapu Hill, Athens, in 1958, to the designs of Dimitrious Pikionis. More recently one may cite the proposals for a restructuring of the grounds of the Alhambra in Granada as conceived by Peter Nigst, Erich Hubmann and Andreas Vass. One needs to acknowledge here the work of Enric Miralles who seems to have always attempted to situate his work somewhere between the Megaform and the Landform, the one flowing into the other and vice versa as in the Igualada Cemetery or in the archery field house built for the Barcelona Olympics.
As I have already suggested, one has also to take into consideration the transformation of landscape in a more generic sense, that is, the attempt to give shape to an extensive and otherwise rather formless area. One thinks in this regard of the work of Luis Barragan in Pedragal in Mexico City or the gardens by Roberto Burle Marx, above all his Parque del Este in Caracas, Venezuela and his Olivio Gomez estate in Brazil. I personally feel that one cannot stress too highly the importance of landscape today as a field with which to mediate the otherwise totally fractured fabric of the urbanized region.
It may be objected that all of the foregoing is too formalist by definition and that the future of the urbanized region as an efficient infrastructure is not being sufficiently considered or, conversely, that the physical constitution of the city is of little consequence today in a telecommunications age. Again, it may be felt that the European City can only be reconstructed typologically, along the lines of the Italian *Tendenza* or again, one may argue, along with the latter-day neo-avantgarde, that the context of the historical fabric is of no particular consequence.
All of these somewhat nihilistic, instrumentalist viewpoints seem to me to be future development in one way or another in that they do not face up to the responsibility of giving shape to urban form in the late modern and its surroundings. In the meantime the automobile, left to its devices, continues to spread its ruthless, anti-civic character across the earth.
At the end of the century, we know that cities can never be designed as coherent wholes in the *tabula rasa* sense and that they are equally intractable to being incrementally developed. Perhaps this was always the case, but what clearly has changed dramatically in the last fifty years is the rate of technological change and the rapacity of development, all of which tend to totally outstrip anything urbanized society had experienced in the past. Both city and country are affected almost to an equal degree by the relentless dynamism of *motopia*. Above all, perhaps there is the fact that the ground is no longer being significantly marked by the act of *work*, that is, by production of either an agricultural or industrial nature. Instead it is being totally consumed by distribution, tourism, and exchange.
At the same time we remain reluctant to commit ourselves to a dense urban typology and to an economy of land use, or at least to a planning policy that is consistent with the production of a coherent civic pattern. In the meantime, urban development is still largely controlled by zoning codes and mortgage companies and above all by banks and land speculators. Certainly this is the case in the United States and it is, I believe, increasingly becoming so in Europe.
It seems to me that architects can intervene effectively in such circumstances only in a remedial way and that the most effective instrument for this is the building fabric considered either as a Megaform or as a Landform in which the topography, irrespective of its location, is decidedly 'marked'. As Vittorio Gregotti once put it, architecture does not begin with the primitive hut but with the marking of ground.

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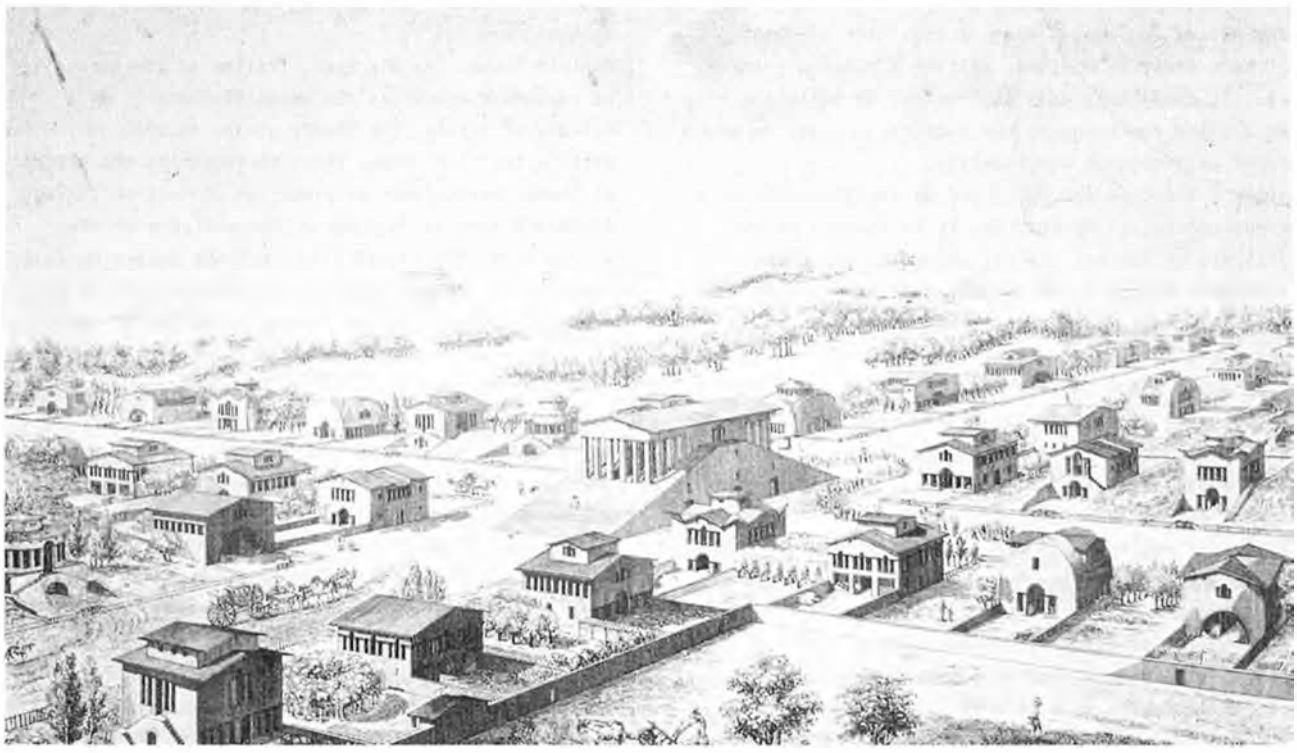
The Art of Building Cities

We must ask ourselves whether it is possible today to think of the city as a 'work of art'.
We could say that it is the city of impressive buildings built with intelligence, from a condition of necessity, that it is the city of engineers, of major technological infrastructure built to perfection.
But this would be a partial answer: it would be to match necessity with beauty. It would be to understand beauty as the representation of necessity alone. The beauty of bridges and roads lies in the recognition of their necessity, of scientific minds addressed to that necessity.
The city as a 'work of art' should be understood in a broader sense, as representing a culture of living - not only of the functions of living but of their value. In the building of a city, the passage from function to value is what enables us to go beyond the city as a tool, and to understand it as a place of self-knowledge, of reflection.
Few people today understand the city as a work of art, except in the sense of its construction as a technological apparatus. So the title of this paper is an anachronistic one.
The Art of Building Cities is the title of Camillo Sitte's treatise of 1889. Written a hundred years ago, it contains a deep aspiration: to build the city as a place representing our culture, a place in whose forms we recognize our identity.
Sitte's treatise was published on the threshold of a great conceptual revolution. It is founded on the analysis of ancient cities, whose secret it seeks to discover. But it fails to turn itself into a manual precisely because the conception of city at that time was going through a deep change.
1889 was a magic year for the architecture of cities, in which three fundamental essays were published: *The Art of Building Cities* by Camillo Sitte, *Garden Cities of Tomorrow* by E. Howard, and *The Manual of Town-Planning* by J.Stubben. Two years earlier Le Corbusier was born.
These are three essays in which the aesthetic value of urban places (Sitte) was claimed, and in which the alternative to the 19th-century city was fully expressed (Howard), and at the same time the rules of its construction were codified (Stubben).
Though contradictory to one another, the three essays contain the premises for all the subsequent research and its conflict with the building modes of the 19th-century city, enunciated during the very years in which it was being built. Hausmann's plan for Paris dates from 1856. Howard's treatise was written in 1890, the same year in which Stubben defined his norms for the building of cities by parts, among which were its low-density suburbs. If Stubben's manual had not been written in the same year as Howard's treatise, we might think it was an attempt to mediate between the 19th-century city and the idea of the garden city. But we know that the idea of the city expressed by Howard is a deeper and more radical one. We know it contains a conflict with the 18th-century city which was impossible to mediate.
Sitte, too, starts from a criticism of the 18th-century city, condemning its poverty of sense and extolling the richness of places in the cities of history.
Both Sitte and Howard, in enunciating their criticism of the 18th-century city, seem to take up rearguard positions. (Camillo Sitte's limit is the picturesque, Howard's is arcadia). But in Sitte's positions as well as in Howard's there is a grand, ideal spur that was to underlie the whole of the theoretical development of the Modern Movement.
Let us start from Howard. The Copernican revolution on which the idea of the garden city is founded concerns the relation between city and nature. As we know, the debate on this subject started a long time ago, with the culture of the Enlightenment, with the position of the Physiocrats interpreted by Ledoux. Nature is assumed as the context in which the city is built. It is a position opposite to that of the 'city of stone': a key idea which formed the basis of the theory of construction of cities devised by the Modern Movement through P. Wolf who, in his *Stadtebau* (1919), looked in the countryside for models on which to build new cities.
Camillo Sitte, for his part, insists on the necessity to recognize in cities the meaningful places of a culture of living. The theory of the square, in Sitte's treatise, means this: to recognize the places of urban institutions as places of collective 'being'. Sitte's theory is founded on the analysis of the walled city, the closed city, and the square he talks about is the closed square. The reversal of the city-nature relationship, the choice of nature as the context in which to build cities, entails a theory of open spaces. Here nature itself is the space of relations between distinct urban elements. This is why Sitte's research did not become operative.
However, Sitte's hypothesis of the city as a 'work of art' remains valid: the shape of places will need to be representative. It is only the point of view that changes: the theme which the modern city has to tackle is that of the search for a rule of construction of open spaces. A rule recognized and shared, as was that of closed spaces in pre-19th-century cities.
This said, let us sum up the main points of the theory developed by the Modern Movement remembering that the Modern Movement focused its attention on the theme of housing. It is precisely on the theme of housing that the few principles upon which all subsequent research is based were enunciated: the

denial of the street as a place faced by housing; the denial of the block as an elementary part of the city; the assumption of nature as the place for housing, of the natural landscape as the place they look onto; the definition of the size and form of the new units of residential settlement, understood as new elementary parts of the city.
So the principles listed involve dismantling the process of building the 19th-century city that had been perfected with precision a few years before, and the search for new forms on the basis of a priority choice: that of a new relationship with nature.
This is familiar history, however it is a history that closely concerns us. Today the will to establish a relationship with nature is strong, perhaps stronger than it was at the beginning of the century. Yet the desire to draw up an idea of the city in compliance with nature is not expressed with the same clarity; nor, still less, is that of setting up a technical apparatus with which to build it.
The contradiction whereby a sharply environmentalist culture like ours has allowed a return to the 18th-century pattern of cities is remarkable.
But let us go back to the principles proclaimed.
Ever since the merchant cities in Europe, the street had been the place onto which houses faced, and the block had been the elementary part of the city's construction. The abandonment of these principles had and still has a traumatic effect upon our discipline.
A great ideal spur was necessary, inducing experimentation with new forms.The vital issue is that of the new constitutive elements of the plan, of the new 'elementary parts'.
The block is replaced by the residential unit. More complex than the block, this is surrounded by nature and traversed by it, and related to other units through the infrastructure system. Also part of this unit was the detached one-family house, a type which until the 19th century had not been considered an urban type, but which in this idea of the city finds its own precise situation.
The research theme therefore becomes the residential unit, for which dimensions and form are sought: the dimensions that define it as a part, and the form which represents its identity.
Through this research the architects of the Modern Movement built the suburbs of European cities, taking from these their peculiar character which is that of being a place where city and countryside interpenetrate.
It should be remembered that the work done by the modern architects on the units of residential housing, at any rate as far as the examples built are concerned, still regarded the pre-industrial core of the city as the only centre to which reference could be made. The notion of suburbs was thus accepted and consolidated. Attempts were made to give a recognizable form to a wide residential (and productive) area around a centre.

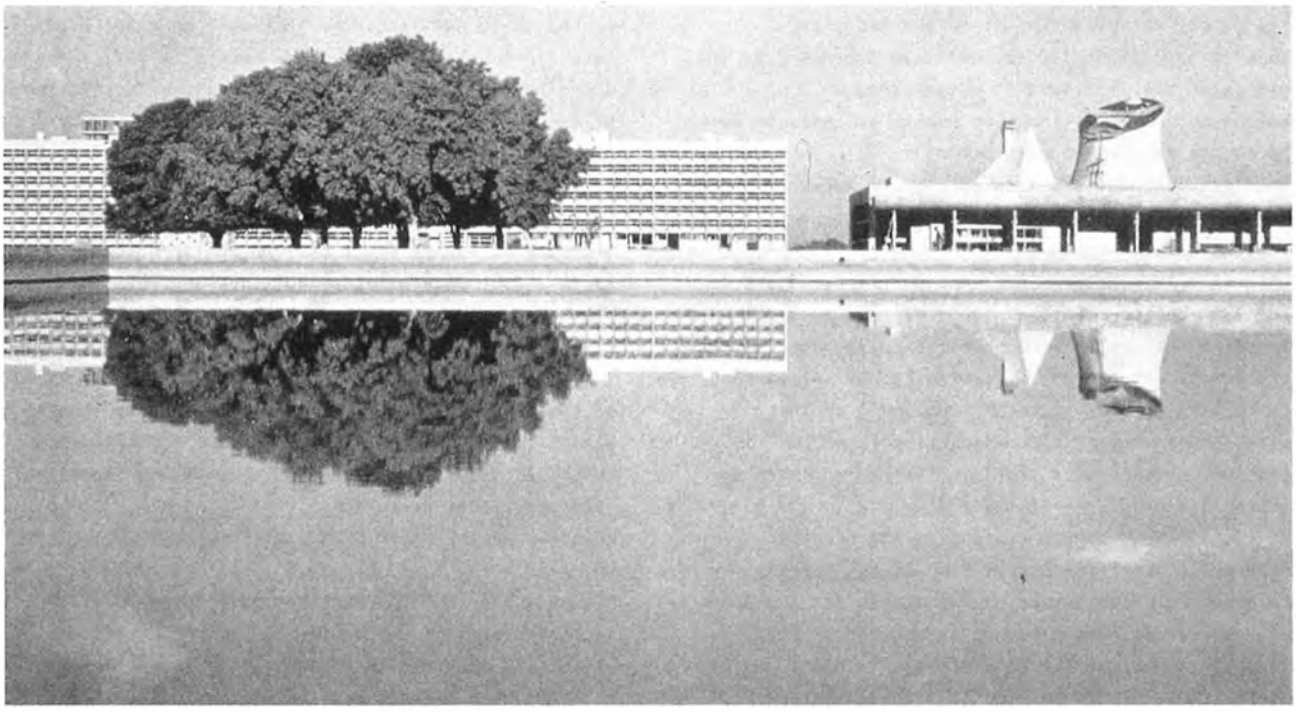


La citè ideale, Ledoux.

In this programme the countryside, understood as landscape, plays a decisive role in the definition of urban morphology. The open spaces of outlying areas acquire sense as places of relations between residential areas which assume from their context - the countryside - the characteristics of their conformation. The programme seemed to be complete. The Modern Movement succeeded in laying down a precise set of regulations for the building of this city. The greatest of the masters understood the building of this city as a 'work of art'.
I believe that despite the extensive literature on the subject, and the enormous theoretical effort made, but above all, the technical precision with which this city was collectively designed, has not yet been attentively appraised.
After fifty years, only the negative results have been assessed. And these, on close inspection, are all contained in one premise: that of accepting the notion of the suburb, of believing that the city can expand without limit, around a single centre, and develop a pattern of expansion based almost exclusively on housing.
Actually, the city has failed, perhaps it has not been able to halt its growth before the free spaces of its outskirts. It has failed to recognize their morphological value. It has treated them as spare spaces and occupied them. Furthermore the city has decentralized its residential and productive systems, but also its business, administrative and service functions.
In other words the city, due to its necessity for growth, has decentralized a number of its vital parts, without a model of development good enough to welcome them into a clear and shared design.
Such a design ought to have firmly held together public and private, to have shaped its places of collective and of residential life into a close reciprocal relationship. As in the old city.
This is the reason for the absolute supremacy of the old city: the fact that it established a morphological order in which public and private were perfectly related to each other.
Thus the land pattern laid out by the Modern Movement for the residential expansion of big cities failed to cope with later urban growth.
Naturally this process does not justify a return to the 19th-century city, as happened in a part of architectural culture. Nor can it be thought that the problem of urban dequalification can be solved only by relying on architectural language - another misunderstanding of contemporary culture. The problem, rather, is a problem of urban engineering. There is a necessity to build in the city the places of civil life, without renouncing the precious theoretical heritage passed down by the Modern Movement. Without giving up the search for a theory of open spaces, where nature is assumed as the general context of the city and of its parts: all its parts, those of its housing and those allocated to the functions of civil life.

The question is how to change from the model of the monocentric city to that of the polycentric city. To a city whose centres of civil life (connected by road infrastructure across a wide territory, dominated by nature) will perform a structuring role. Within that structure will be situated the residential units that will find justification for their form in their relation with nature.
This passage was not carried out by the Modern Movement, although it was announced from several quarters and was prefigured in a few plans.
Nevertheless the idea of this city is an ancient one. It belongs to the whole of that sequence of studies and ideal proposals that consider the necessity to infrastructure nature in order to inhabit it.
I am thinking of the decisive role played by the electric train in Howard's idea of a city. But still more, of the idea of a city conceived by Laugier, the city as a forest, built as a system of meaningful places each containing and representing an aspect of civil life: a city as a place of knowledge in which the functions and values of our life can be recognized when we go through it.
The fact that this city is crossed by nature, that all its parts are everlastingly compared with it, witnesses the will to adopt nature as the context of architecture, as the stage set on which, through architecture, human affairs are represented.
This idea of the city is not founded only upon an environmentalist attitude therefore, but more intensely, on the desire to point up the comparison between nature and history, the two poles of our existence.
On this comparison will be formed the landscape of the new city, ancient in conception but still to be built.
If we look at this programme from the point of view of the city as a work of art, great perspectives are opened up to our research. This will be carried out on different but complementary levels.
The first level consists of defining the functioning of this city, its engineering in fact.
The road infrastructuring of the land is the first act that allows the polycentric city to be built.
The road and the railway become the regulating elements of a city built on land restored to nature.
It is this element that establishes the relations between parts and ensures their connections (Howard's electric train).
Related to this pattern is every act of construction of the polycentric city: the building of its central places (of collective activities), of its residential units, etc. For both of these, a scale and functional order has to be defined.
Uninterruptedly grafted into this idea of planning is the search for form, by which I mean the form of places and of built works that have to be representative of their identity. Only in this way will it be possible to recognize a culture of living. And only through that recognition is it possible to create the kind of civic pride which makes the

inhabitants of a city a collective body. As we see, the role of architecture is a crucial one. Without architecture the city is rendered unknowable.
Today we design our cities in the absence of a shared idea of plan. The context of our design is prevalently that of urban surburbs, on which we operate without any programme for their destiny.
The main points on which we may start up a comparison for the designing of urban suburbs can be taken from the ideal heritage received from the Modern Movement, with one consideration: that our project is rooted in a context that has its own historical reality and advocation for development.
The joint presence of built areas and free areas (once occupied by agriculture) in the suburbs, which gives rise to the typical landscape of wide open spaces, affords a concrete opportunity to implement the reversal of the city-nature relationship that is the basis of the modern project.
Nature can become the place where urban poles are built and interlinked at a distance.
Peripheral areas can be assumed as an opportunity to convert the monocentric model, predominant today in all the principal European cities, into a polycentric one.
A polycentrism can be created on different scales, from the regional to the metropolitan, where the relation between collective places and residential areas will allow an urban place to be recognized in every part of the city's territory.
This is a key point of the programme, considering that the suburb today is a large and wholly privatized territory, inaccessible to those who do not live in it. It is the place of 'non-places'. It constitutes the largest part of the city and it lacks the fundamental requisite of all cities which is, precisely, the relation between public and private.
It is necessary to bring into the suburbs what the urban statute is founded upon: the public function.
This can be done both by locating newly founded central places across the territory, by distributing them along lines of traffic, so as to absorb relations from a wide polycentric system, and by strengthening places that have a historical pre-existence, by entrusting them with a new role in the metropolitan system.
This is to say that the idea of a plan, in our case the idea of a polycentric city, can be put into effect only from a concrete, particular reality. In the relation between the particularities of places and generalities of the plan our project is fulfilled.
At this point two theoretical problems are posed: the first is that of the morphology of central places, the second that of the standardization of residential units.
Agostino Renna says of the square: "We can say that the square, as a built public place distinct from the city's other unoccupied free spaces, fulfils a very wide and general necessity, due to the fact that with it the city represents itself. The city, or a part of it, displays itself in the square and the latter is the mirror, the representation, of the former. Perhaps the architectural history of a city starts from here".
This observation suggests that perhaps it is precisely in the square, more than elsewhere, that the city is built as a work of art.



View of Chandigarh, Le Corbusier, 1951-1965.

Lake Shore Drive Apartments, Ludwig Mies van der Rohe, Chicago, 1960-1963.

It is in the square more than elsewhere that the city manifests its representative intent, that it makes itself recognizable and becomes a theatre of men's lives. The city cannot renounce the square without risk of decay and loss of identity.
If this is true, a technical problem now arises: the building of a square in the modern city. Of the redefinition of its meaning, but also of its size, of the elements that make it up, and of the relations between these. Answering the observation made to us today that the square is an urban element belonging to the city of history, that the contemporary city does not contemplate it among its constitutive elements, and therefore the problem of its new definition does not exist.
This remark is linked to the fact that, in the modern city, the squares of the ancient city are still the only places of encounter and representation. The monocentric pattern of the majority of Western cities causes the original core of the city and its squares to remain the only centre of a big city in which areas of expansion are characterized by large suburbs.
This, therefore, is why the modern culture of cities has not taken into consideration the theme of the square. There are in fact very few modern-movement projects on this subject.
Today the possible reversal of the development of cities, from monocentrism to polycentrism, once again highlights this theme: the propagation of the centre necessitates the morphological definition of its appointed places.
Within the two main types into which the squares of ancient cities may be divided, that of the Agora and that of the Acropolis, the enclosed place and the place of relations between distinct elements, the research conducted by the modern-movement architects follows, in the few examples produced, the way of the Acropolis. That of the definition of a place through the facing of distinct elements each with its own evident identity. The character of the place stems from the relations between these elements.
This choice is linked to the idea of the city as I have outlined it hitherto, which defines natural land as the context of its construction. It is again the natural land that crosses the collective place (the square), making it possible to test unusual measures and forms.
I am thinking of the monumental centre of Chandigarh, of the nature of the land on which the public buildings stand, of their relations at a distance, of the measures that ensue from them, of the role played in the landscape by the architecture-nature relationship.
I am thinking of the distance between this, which I again want to call the square, and the squares of the 19th-century city. Of the conceptual revolution against that model. Of how near we are, instead, to the conception of the ancient (the classical) city, of the relation between distinct elements typical of the Acropolis.
This is a frequent attitude in the work of Le Corbusier: the desire to deny recent history (the 19th century), and to choose his lesson from Antiquity.
What changes radically is the scale.
The greater distances between elements are necessitated by the nature of the land. The land between the buildings must be recognizable as natural land.
Let us now go back to Sitte, to the precision with which he appraises the position of buildings, their scale, their distances. To his determination to find out the secret of the squares in ancient cities, to his aspiration to reproduce their beauty.
We know that that beauty is not reproducible; it can be produced again only by starting from the conditions of our time. Only by starting from an idea of a plan embodying the aspirations of a modern culture of living.
This does not mean that the type of the closed square, the square enclosed according to the pattern of the Agora or of the Forum, has lost its sense in the modern city. Here I mean to demonstrate only that the type of public spaces, too, should be referred to a general idea of cities. It is this idea which shapes it in all its parts, moulding both collective places and residential places.
It is this idea of a plan which led the modern-movement masters to study open squares, without boundaries, in which there would be no impediment to long views across the surrounding nature.
Regarding work on residence, at this point we must ask ourselves only why it stopped. Why the research did not continue on residential units, on their size, type and form. The answer lies perhaps not in architecture and its culture; maybe it should be looked for in the government of the city. As far as we are concerned, it is research to be continued, that contains the premises of its development. Moreover, the reasons for its advancement can be found precisely if conducted together with that on the collective places to which the residence can be only complementary.
Perhaps it is precisely the separation between housing and collective places that has halted the research. The isolation of residential places from those of civil life has forced housing into the sphere of privacy, making it useless to refer to a culture of living.
To act on the suburbs of our cities therefore calls for an attention to the specific realities of each, and at the same time for an awareness of what is the ideal horizon to head for. Situated between these two poles, between history and ideality, is our project.
If we are to maintain that the building of cities is an art, we have to get to know the specific reality of each place and move it towards that horizon.
The Modern Movement defined that horizon with clarity and precision, handing down an idea of planning which we must recognize and learn to adopt as our own.
Together with Ledoux's dream of equipping nature in order to live in it. And with Schinkel's dream of building a cathedral in the trees.

Gérard Monnier

SORBONNE INSTITUT D'ARTS PARIS

The Selective Inventory of Modern-Movement Works: Monuments vs. Ordinary Architecture

Since the very beginning the Modern Movement's approach was marked by the weight of representations and messages, by the power of the images selected and circulated by books and the media, with the active complicity of the authors. At that time, when pictures were beginning to triumph in books and magazines, everyone, architects and editors alike, needed this strong information about the latest developments, about their capacity to support something that was totally new. Let us take a look at the first works dedicated to the new architecture by Adolph Benne, beginning in 1923, which are now being republished. And these images circulated widely and quickly. A circulation that was relayed by the needs of the professionals and in the schools of architecture by those of the teachers and students, always looking for references, for a practical way of grasping the new doctrine.

A good part of the modern-movement culture was thus fed by pictures: photographs (the Villa Savoye, Falling Water), designs (the designs of Sant'Elia, the photomontages of Mies van der Rohe, formulae (the 'living machine'). Associated with the charisma of the leading personalities who are often the 'messengers', the first-class "communicators", from Wright to Le Corbusier, from Venturi and to Jean Nouvel, these representations established the 'masterworks' and the 'heroes' in a sort of adventure story about modernity, full of sound and fury, but also with the sparkle and glitter of myth, the power and the weaknesses of legend. Today's historians and architects are often irritated by this phenomenon of "heroization', by this insistent glory that transforms a building into an icon, and which has sometimes touched buildings whose interest is limited to a form, a sketch, or the name of an architect in technically questionable realizations which are a true challenge to the criteria of usage and maintenance.

But we must also admit that this rapid promotion of masterworks responds then to the need to communicate brilliantly the breakthroughs in a world that until the 20s was overrun by the eclectism of the beaux-arts style and the last echoes of *Jugendstil*. Because this installation in the institutions that produce pictures, the journal, the book, and the museum, this installation of the image of the modern building is the necessary tool of legitimation. Let us not lose sight of the fact that the market for architecture is different from the market for products. Unlike other artistic products like paintings or films, where the market of products commands the representation and the celebrity, one must admit that the intense, renewed, expanded representation in architecture is the occasion for the recognition that is essential to modernity and renewal.

The circulation of images is in opposition to the official channels. when they exist, such as the École des Beaux-Arts of earlier days, the major competitions today where the selection of the professional elite and their social reproduction is organized.

From this standpoint, the history of images of glorious buildings, this transformation of modern-movement masterworks in icons, this history still in the making: one has not yet measured the production and circulation of their representations, in space and time (how many pictures of the Villa Savoye, or Falling Water are in circulation and where have they reached and for how long?); one has not evaluated the role, commercial or otherwise, of these icons in the access to commissions, in the building of a professional career. Some signs indicate the exceptional role of these images: thus the exhibition of new Brazilian architecture at the Museum of Modern Art in New York in 1943 reveals that the image of architecture can be a diplomatic stake where cultural actuality, on a continent scale, becomes an argument in favour of the United States foreign policy.

We need the impact and the power of masterworks and heroes: as in all branches of culture, these icons are necessary to stake out the territory of architecture, to signal its contribution to contemporary culture, to install in the memory of the elite and the masses the brilliant, simple and obvious landmarks that signal the breakthroughs, the experiences, the works consecrated by the first generation of connoisseurs and experts. In short, everything that is necessary so that the operations of construction escape what Walter Benjamin called the 'distracted gaze', the blind eyes. Because for numerous economic and cultural agents, contemporary buildings, because one has so often linked them to a commercial production of ordinary instruments of housing, remain aloof from all issues of cultural value. Starting with the institutions of education and training, from the school to the university, where the masterpieces and heroes of modern-movement architecture are, in general culture, a great deal less present than one believes.

From this point of view, publications and museums never sufficiently celebrate the leading modern-movement building as witness the success of recent exhibitions devoted to Jean Prouvé and Pierre Chareau, and which have revealed them to the general public. And let us not forget that it is the power of vanished icons, which justifies their restoration (here in Barcelona, the Mies Pavilion) and the replicas of icons, such as Le Corbusier's *Unités d'habitation*, all of which have so far resisted destruction, saved by the authority of the model.

But we now know that this is not enough and that the selection inherent in the process of 'heroizing' major buildings is reductrice; it produces nightmares. By default, the production of icons condemns to oblivion, and threatens with destruction, the essential testimonies to the variety and wealth of the production. This reduction follows from the methods, because the architectural history book does not quickly follow the renewal of the researcher's knowledge, because it is a collection of somewhat outdated information; thus in the reference books, as in the dictionaries of architecture, there are delays, exemplary buildings recently emerged from oblivion are missing, among them Mallet-Stevens' Villa Noailles and Nelson's Hôpital de Saint-Lô. I estimate that it will take twenty years before today's books bring their catalogues of icons up to date.

This reduction also stems from the interests at stake. Operated by a generation of contemporaries, unequal and sometimes partisan interests, heroization sometimes draws a line through the production of the competition, ignoring in France, for example, the contribution of engineers, of architects who are extraneous to our professional milieu, or simply geographically removed from the centres of expertise. Thus, official buildings are often unfairly celebrated rather than attention being paid to working-class housing, to technical and commercial installations, in short to the 'ordinary programmes' of an everyday architecture. This everyday architecture is overlooked: this is true of housing architecture since the mass production of the 60s, which was largely rejected; the architecture of transport systems and industrial architecture,doomed to an excessive instrumentalization. and which has trouble attaining the status of a major work. The recognition of 'ordinary' buildings from between the wars, where innovation is the work of architects who do not have access to the more prestigious commissions, this apparently does not thrill anyone. In the subsequent generation the hierarchy of programmes again came into play and it was easier for the architects who were in the public eye to acquire gratifying commissions.

For DOCOMOMO these are important issues: first in terms of our relationships to icons, which should be considered necessary but not enough and that we should correct this by paying more attention to everyday architecture. And this brings us immediately to the famous issue of criteria for our actions, criteria as to age (the icons are above all 'pre-1940'), criteria in terms of the quality of the works.

It strikes me that the inventory DOCOMOMO has begun in two years since Dessau opens the path to a greater recognition of significant modern buildings. Indeed, the 1940 boundary is often passed in the inventories. Without questioning the hierarchies, our work opens the door to new local and international findings, which the quantitative approach gives value and which publication should put in touch with the responsible people of cultural policies.

1. The status of the inventory

As of May 26, 1994, sixteen DOCOMOMO sections had submitted 404 entries to the international index. Since then, 113 entries have been submitted (by five sections), and Scotland made a supplementary contribution with sixteen more entries. These 130 entries combined with the preceding submissions total 534 entries submitted by twenty-one sections. It can thus be estimated that more than 600 buildings (exactly 607) have been studied or identified by twenty-four DOCOMOMO sections. Considering that a number of inventories are not yet complete (Germany, Russia) and that a number of prominent countries (chief among them the United States and Denmark) are not as yet included in these figures, I would estimate that the final inventory will amount to between 900 and 1000 buildings.

It was not without emotion or much respect that the international index - ISC/R - received and registered the results of this tremendous job last May, which was in most cases purely voluntary. Only a very few sections were able to mobilize the governments of their respective countries in order to obtain funding for this job. Special mention must be made here of Québec's DOCOMOMO section, which managed to secure government aid from the Ministry of Culture and Communication.

2. Comments on the catalogation

The catalogue is both incomplete and temporary. The two main reasons for this are:

- Many countries which have played a leading role in the Modern Movement are scarcely represented or not represented at all.
-The selection criteria are still under discussion.

This catalogue then is a work in progress. Although any comments made at this time cannot be considered as 'scientific findings', they can help clarify certain points about the cataloguing technique and the ongoing discussions.

These comments can be classified under three headings.

2.1. Producing and presenting information under the headings contained in the index sheet.

2.2. Assuring that the information is objective.

2.3. Modern-movement representation in every country (i.e. selection criteria).

2.1.Producing and presenting information

The standard information sheet is ambitious: it aims to collect definitive scientific information. The 'open' idea of the headings demands precise and complete answers. Information under the heading "Administrative" is frequently lacking (for example, the date when the building was placed under legal protection, the present owners, and so on) as is the heading "Historic" (no. 2).

As regards publications (no. 3), I would suggest that efforts be made to classify them by type, that is, 'monographs," "general works".

Information about the materials and building techniques is often totally omitted from the description (no. 4). This is a question of method,

and requires us to look at buildings in another way if we want to grasp the relations between new techniques and new forms. Often a distinction should be made between 'supporting structures' and 'supported structures' (floors, roofs); information about initial technical equipment (how openings are handled, the heating system) are necessary.
Under heading no. 5, one can list the relative quality of the innovation of elements: point 5.5. designates the role of the building as a point of reference, in the following sense: has the building served as a model or not? In its particular category? In other categories?

2.2.Objectivity of the information

Answering 'open' questions has its drawbacks. It would be better to introduce the reference to "categories of buildings" in point 2, specifying the initial functional programme and if the building's usage has changed over time. Perhaps another observation should be added to description, specifying if the building is 'isolated' or 'integrated' (in an urban ensemble, or an already existing setting).
Specifying in point 5.4 whether the building can be categorized as an 'icon' or as an 'ordinary' building brings us once more to the idea of an icon as a building that is widely publicized: can we reach an agreement about the criterion that pictures of the building should have been widely published internationally?

2.3.Modern-movement representations in every country

Statistics give a clear picture of the different facts about the Modern Movement, particularly its spread in time: they will give us a new base on which to continue the discussion begun in Dessau. The discussion will continue in every individual country and could give rise to the need for national catalogues, which would differ from the 'Top Ten' classification which ICOMOS destined, as you will recall, as the process of choice.

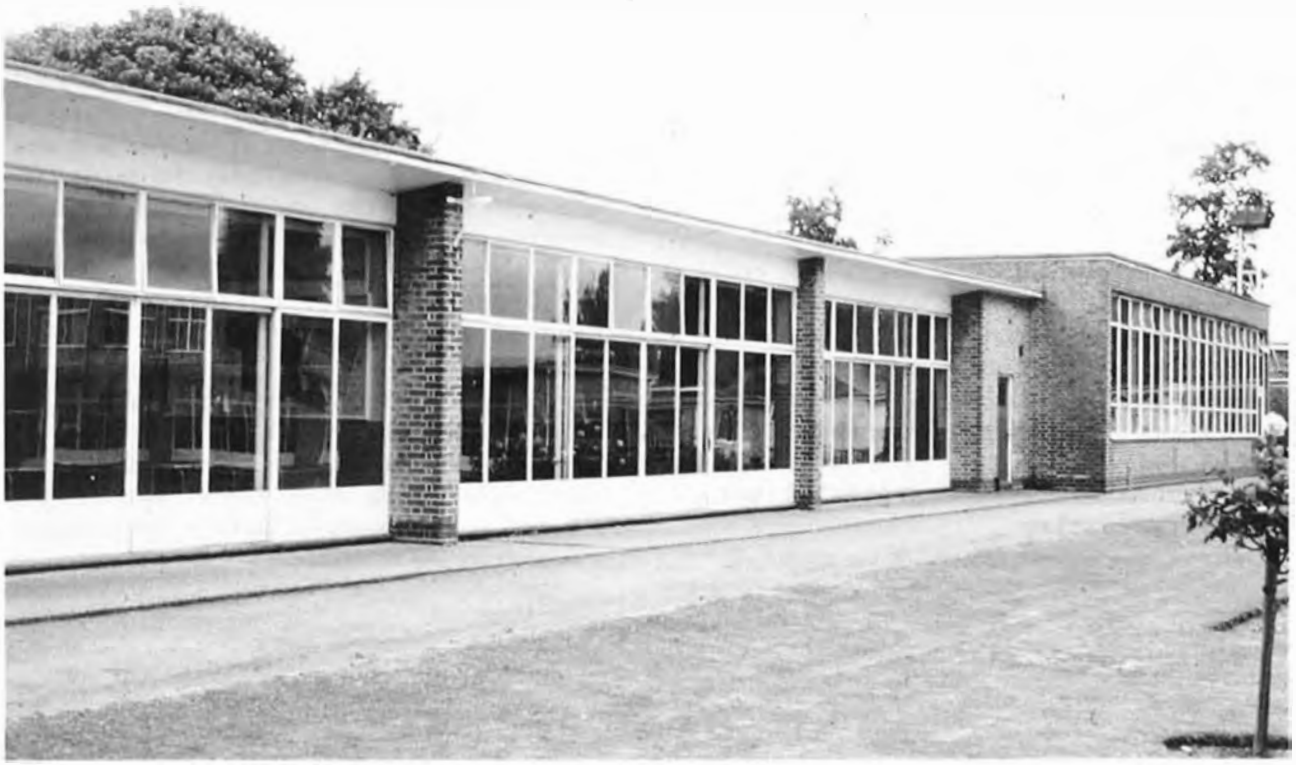
3.Statistical information

3.1.Chronology of the buildings, breakdown by decade

The year given here is the year the building was completed. The figure covers the period 1921-1970 with a high point in the decade from 1931 to 1940 and an obvious break due to World War II. France and Italy have listed buildings dating from before 1920; all the buildings listed by Scotland date from after 1945. Recent production (60s and 70s) is largely listed by Canada (Ontario) and Scotland, followed by Spain, Finland and France, but is not even mentioned in nine countries (out of fourteen). For Brazil, the most recent date is 1942, the closing date for the exhibition of Brazilian architecture held at the MOMA in New York in 1943.

3.2.Distribution of buildings, by type of programme

Public architecture programmes are dominant with Health-Education buildings and Sports-Leisure-Culture buildings significantly in the lead. Public housing's secondary ranking may be only temporary. In many countries, private residences play an important role, as is the case in Argentina, Spain, Estonia, France, Greece, Italy and Norway.



Impington Village College, W. Gropius, M. Fry, Cambridge, 1938-1939.

Dennis Sharp

CHAIRMAN DOCOMOMO-UK

The Division of Functions in the Modern City: The Debate between CIAM and Team X

All is again in flux. The descriptive language currently used about countries and cultures, about identity and communities, region and migration, home and family, is constantly changing. The rapidity of change over the past five years is making us all uneasy. We are left feeling the only reality is history.

Renovation, conservation, preservation are components in a scene that increasingly veers towards anarchical, capital driven, small site developments. Currently there seems to be an overwhelming nostalgia for an imprecise past.

So where do we stand now? Where do we position ourselves in the wars of nostalgia and mediocrity?

I believe this latter question is what DOCOMOMO has to ask itself as an influential international group and as a body of individuals who really care about modern architecture and the way things look, feel and work.

We have to put our questions into context. We have to think about the wider goals of the Modern Movement. About the town, the community and the core of the city and not just in terms of individual buildings or small groups of buildings. Context means the place of the object in its setting. Context is place; placeness is part of modern architecture's brief. This issue - relating to the wider question of 'civic' design- is, I would argue, just as valid an issue as the essential conservation of significant individual modern-movement buildings. We fought for that concept -at least those buildings that were deemed to be not simply of a transient and temporary interest- at the inaugural conference of DOCOMOMO. Now we must shift gear.

This meeting in Barcelona has, I believe, been planned to take into account some of these issues. I hope, in a sense, to reconnect the flow of enthusiastic interest that DOCOMOMO members have shown for the uniqueness of modern architecture. We need to look at the aims, theories and conditions that prevailed during the 30s and inevitably to CIAM and its pronouncements.

After 1933 successive congresses dealt with buildings, villages, towns and cities. This led consequently to a wider understanding of the changing conditions within society before the war. CIAM's subsequent demise occured through an inability to adapt to new conditions in the postwar period.

The postwar period saw a shift in power (that is, theoretical power within CIAM) from the Continent of Europe to Britain.

Members of the English MARS Group (Modern Architectural Research: set up by Coates and Maxwell Fry originally in 1933) set the agendas for the CIAM Bridgewater Congress in 1947 (CIAM 6) and again four years later in Hoddesdon. Bridgewater reaffirmed the La Sarraz Declaration and the Athens Charter. By the time CIAM came back to England in 1951 things had changed. A new found optimism prevailed boosted by the Festival of Britain, the growing success of the New Towns programme and the first manifestations of the Hertfordshire Schools programme.

Royston Landau emphasizes in *Rassagne* the growing bureaucratization of Modernism - half of all architects working in Britain were in the public sector. The Athens Charter was seen as only one of a number of alternative routes in a society that had a great planning tradition ranging from Adam to Geddes, Howard's Garden City ideas, and a growing fascination for the open planned new towns which were soon dubbed prairie towns.

It is the transition from the one set of principles- CIAM's - to another more diversely defined set of theories- Team X's- that I shall examine today.

This, I must stress, is an initial study that forms part of a broader examination of urban planning principles within the Modern Movement which I with a number of colleagues have been engaged upon for some time, trying to examine the changes in broader educational and planning terms.

It is therefore far from conclusive. Rather, it is a scene-setting exercise and one for which the resultant discussion may prove just as useful as the provocations proffered by the paper itself.

The mise-en-scène

A moment's scene setting might well be in order to demonstrate some of the links between the pre- and postwar history of the MARS Group.

Before World War II there were two main currents in English modern architecture:

The earliest current sprang from home and saw a series of experiments - some prior to the formation of the MARS Group in London - in the use of structural exposed reinforced concrete in building. These range from examples by Owen Williams, Lubetkin, Connell Ward and Lucas and F.R.S. Yorke to those architects who, if not using structural reinforced concrete, tried to make their buildings look as if they had!

The other current was strongly reinforced by the presence in England - in some cases for a short time- of Walter Gropius, Marcel Breuer, Moholy-Nagy, Eric Mendelsohn, Ove Arup, Felix Samuely and Arthur Korn. The latter, unlike the others who were architects and engineer teachers and designers, was also an urban specialist with experience working on the Greater Berlin Plan.

He brought the principles of the new city planning into a public confrontation with the authorities through the MARS Group's Master Plan for London, begun in 1937 but published during the war in 1942. This

plan forms a section of my paper and will be presented in some detail in a moment, to demonstrate the CIAM analysis technique.

Korn built hardly anything of any interest in his London years although he had gained a reputation for good building in Berlin. He did, however, revolutionize ideas about city planning through his teaching in Oxford and the AA School in London as well as through the controversial London Plan. At the AA he taught side by side with the new 'young Turks' from the MARS Group who were to form Team X. Moreover, I have to admit he was my own special teacher for well over two years as I went through a course of study at the AA under his tuition and his hierarchical arrangement of studies, which divided up looked like a course of zoned diagrams from the city: 3rd Year; The Village; 4th Year: The Neigbourhood and 5th Year: The City and its Core.

It was a profound learning experience for me and one which, enhanced by individual crits and tuition from John Kilick, Bill Howell and Peter Smithson, the protagonists of the new Team X, has left an indelible impression. Korn introduced a whole generation of students to the work of Muliutin, Hilberseimer, Soria y Mata, Garnier and Le Corbusier's city projects. Those included Graeme Shankland with his brilliant concept for a CIAM-inspired new town at Hook (never built), Arthur Ling's Runcorn New Town (as radical a solution as you will find anywhere), Geoffrey Copcutt's rather more doctrinaire but clearly Korn-inspired Cumbernauld new town centre and lastly the central area of the British new city Milton Keynes.

If the Korn influence remains somewhat neglected as a subject of study, the influence of Team X members has fared much better. This was largely because of important vehicles like the London-based magazine *Architectural Design* and the *Architects' Yearbook* (which under Trevor Dannatt's editorship was virtually a mouthpiece for the MARS Group) and the Amsterdam journal *Forum*.

However, before I deal with the dissemination of Team X's views, I need to go back to Arthur Korn and to outline his unique contribution to urban thinking.

One of the earliest critiques that Korn wrote in the English press was on the 1935 town planning scheme for Amsterdam prepared under the supervision of Cor van Eesteren, which itself was a vehicle for the CIAM/Athens Charter.

It involved a number of innovative features including the use of a scientific analysis of population growth providing a projection for the new population for Amsterdam in the year 2000 - a calculation which in fact proved somewhat inaccurate as the proposed year 2000 total was reached around 1960.

It also divided the city up into separate districts of 35,000 inhabitants separated by strips of green. Each district was split up into smaller units which were the responsibility of architect/developer teams working in collaboration with the master planner. Some of the older districts retained their integrity and each neighbourhood had a green recreational area and was within easy striking distance of the main municipal park.

The MARS Plan

The MARS Plan for London was one of the first attempts of the old guard to break up the homogeneous city into smaller more accessible parts. It was the British MARS Group Planning Committee's major excursion into CIAM planning. The Committee, chaired by Korn, had been set up to examine issues of urban planning and transportation. It had as its secretary the brilliant Austrian-trained engineer Felix Samuely.

The significance of this Master Plan for London was profound, although as published it was respectfully dismissed by the garden city advocates as a "very clever piece of ruthless reconstruction based on the principle that the city should have no limit".[1] It was seen as an excuse for analytical thinking without synthesis.

C.B. Purdom went on to say that the creators of the plan: "... lack philosophy: they do not accept current ideas...The lineal city, which is the form of city they prefer, subjects cities to the conditions imposed by surface communications ... the city (being) drawn out along or between them. Thus they put forward a 'herring bone' plan for London.."

In the publications of the advocates of the new architecture and planning like E. Maxwell Fry in his *Fine Building*, the MARS Plan was carefully analyzed and its speculative basis as a concept requiring interpretation (as Korn always intended it to be) was underlined. The plan which was created in Fry's office took the aspect of Research implied in the MARS name (Modern Architectural Research group) to a positive end. It was not providing a basis for a practical plan as so many garden city designers required, but provided a structural diagram that isolated - in a hierarchical manner - cause and effect, community and public domains and transport and industry. All, it must be observed, as either zones and/or connected units. It was one of the most hierarchical of all the plans produced within the framework of the Athens Charter.[2] Undoubtedly it had a great effect on the later wartime County of London Plan (1943) and the Greater London Plan (1944).

The outline Plan itself was a modified linear concept; the result of a hierarchical rationalization of a plan's function. Its planners saw London as a growth pattern held together by one main lineal artery and controllable in all directions.

The diagrammatic layout of the plan resembled the skeleton of a gigantic herring with a main vertebra, extending from Tilbury in the east to Reading in the west. It was devoted to commerce, industry, administration and the docks, and also included the existing areas taken up by the West End and the City. The bones formed the pattern of the residential units and local pockets of industry and commerce. On the top of the skeleton was overlaid the flesh of parks and recreational areas.

The main backbone of the plan was capable of extension westward along the lines of earlier linear plans (cf Soria y Mata's *Ciudad Lineal*, Garnier's *Cité Industrielle* and the Russian linear city Magnitogorsk of the late 20s). The residential units were extensible in a north and south direction like a pair of combs into the residential zone. Three railway stations - replacing the ten - went underground through the conserved West End and City. There were sixteen residential districts in total, each broken down hierarchically into one District Unit of 600,000 people, subdividing into three Subdistrict Units of 200,000 each and again subdivided into four Borough Units each of 50,000 people apiece. Each of the sixteen residential districts measured approximately 8 miles long and 1.5 miles wide and the population was spread out in various densities.

High density areas were nearer the main arteries and predominantly flats, while low density housing lay exclusively on the northern edge.

The sixteen districts - making a city of nearly ten million people - were spaced approximately two miles apart with green 'wedges' penetrating into the central areas. The central spine was 2 miles wide and the overall size of the plan was approximately 18 miles by 30 miles.

By the time it was published, the war was well under way and little happened in Britain until the end of the 40s.

What the plan did not specify was the preferred kind of architecture. That would be left to individual sector architects although Korn's own preference showed a suspicion of garden city architecture as too picturesque. Hilberseimer, a friend of Korn's, had advocated a rational solution for housing blocks and it was the adaption of this concept together with the cubic aesthetic of British Modernists.

Architects like Connell, Ward and Lucas, whose work Korn praised highly in an article in the AA *Journal*, offered the right formula 'of their work'. He wrote "Two aspects seem important: the courage with which they exploited new materials (concrete, glass and metal windows) and the artistic vigour in which they conceived a new way of life in building form".

Written in 1956 this statement coincided with the period Colin Lucas was a leading architect in the LCC and directing the major CIAM-inspired building in Britain - Alton West, Roehampton Estate and the work of his younger assistants, Howell, Killick and Partridge, the core group of Team x.

The demise of CIAM

CIAM gradually became moribund. Of that there is little doubt.

The welcome shadows of the great father figures of Modernism, Le Corbusier, Sert, Gropius, Aalto, had fallen far into the postwar era both as pioneer architects and urban sages. Indeed, there were few questions about the validity of their architectural ideas. Le Corbusier had startled the postwar architectural world with his Modulor ideas and his capacious condominiums at Marseille, Berlin and Nantes. Eventually the tours de force at Ronchamps and La Tourette brought him back on centre. Chandigarh revived his reputation as an urban planner. There he worked on his famous grid with his English colleague Max Fry. Aalto held my generation in thrall. Gropius, apart from a dubious exercise in Playboy aesthetic had extolled the virtues of teamwork and through AC had seen a mixed outcome.

CIAM as a collective was for a time still strong. The MARS group made sure of that. But it too, with the return from service abroad of those trained prior to the war and the growth of a new generation of inquisitive youngsters asked different questions. So was the thinking. It shifted from the Cartesian mould to a pragmatic, behavioural one.

In a note on the Tenth CIAM Congress, the AA *Journal* indicated: "It came clear that what goes to the making of life and falls through the mesh of the four functions lies in fact beyond the scope of analytical thinking. The meeting therefore attempted to formulate a new way of thinking about urbanism that would consider each problem as a unique example of human association at a particular time and in a particular place".

Today we view Team x as the natural successor to CIAM. It was a new slimline version of what had become an unwieldy and virtually unmanageable organization which had entered an academic and technical impasse. (CIAM had 3000 members, eight membership categories and endless numbers of formative and active international groups, most of which were beginning to go their own way.)

Its younger members, entering the parent body via the livlier national groups, soon began to have an impact. The elder statesmen, Le Corbusier, Sert, Rogers, Giedion and Tyrwhitt, were seen as holding views that were becoming increasingly irrelevant in a fast changing society.

The academicism which CIAM had claimed to have overcome now re-occured, like a fungal attack. There were no antidotes available for the dogmatic, doctrinaire generalizations of the older group. The younger members inside formed a tightly knit group in order to start investigating new problems and took over peacefully at Dubrovnik in 1956, like heirs to a vacant throne. Existing fiefdoms were either closed or transferred.

The major shift in emphasis between the old guard of CIAM and the radical Team x was now about human habitation, about 'place' and by extension the human dimension in city culture and design. Gone were the grilles, the zones, the heirarchical divisions of society into units of varying sizes. Gone was the rigid architecture.

Theo Crosby in the AYB7 called this new dimension "the human aggregation" of isolated (or individual homestead), village, town and city. The new order was established by A & P Smithson, Bakema, Candilis, the Howells, Voelcker and Van Eyck.

Aldo van Eyck at Dubrovnik had another way of looking at it when he summed up a need to find new 'devices': "...without these a house will not become a house, a street not a street, a village not a village, and a city not a city." His studies took him far outside the European and American milieu.

It must be said that the Team x definitions may not on the surface appear too far removed from the original four problems (or functions) that had absorbed CIAM since its inception in 1928: House, Group, Community and Core. Yet they underscored the need to reconsider in detail the same area, but from a social dimension.

They were also concerned with bringing into focus the complementary study of community, kinship and sociological issues. Behaviour, analyzed as a scientific discipline, had never come within the scope of the CIAM before, even with the interest in Patrick Geddes' survey before planning prescriptions.

At Hoddesdon a major decision was taken to pass on control of the organization to its younger members: George Candilis and Bill Howell were appointed to the Council. Thus it was that for the Ninth Congress Howell was able to invite some of the young generation of British architects to contribute to its theme on the Habitat Charter. These included the Smithsons and John Voelcker.

In 1949 Alison and Peter Smithson first gained prominance with the winning entry for a new secondary school at Hunstanton in East Anglia.

The year before the 1953 Conference at Aix-en-Provence, the Smithsons submitted what has now become a celebrated competition entry for Golden Lane (the story of which is summed up in their book *Ordinariness and Light*, 1970). At CIAM 9 the analysis of this scheme was to form the basis of their presentation grille, which propounded their views on urban re-identification.

At the centre of this programme was the notion of association within a community: "the house, the street, the district, the city (were) reidentifying man with his environment." It was thus a view that directly opposed the isolation, density and zoning implied in Le Corbusier's planning proposals with his neighbourhoods and in the new *Unités*. The Smithson's new articulation of urbanity was not well received by their elders at the Aix Congress.

It was 'an awkward event' at which the founders did not hand over power as was suggested at Hoddesdon or even carry on a positive debate with the younger members. Alison Smithson reported "that the older generation were quite aloof: this lack of connective will was to prove the rotten core of CIAM".[3]

The Smithsons, together with William and Gillian Howell and John Voelcker, issued a short report in December 1953 in which they severely criticized the direction CIAM 9 had taken. Furthermore it was felt that CIAM was no longer relevant in the way it was organized and that the whole question that architects and urban designers worked together needed to be completely reconsidered. In January 1954 a meeting of like minded architects was held in Doorn, Holland, which was attended by Bakema, Van Eyck and others and marked the beginning of what was to become Team x. It was officially inaugurated in July 1954.

The Doorn Manifesto had proposed a methodological revision of the four functions of CIAM, but in order to avoid trouble no comment was made about it in its final version. The manifesto emphazised the Smithsons' ideas of association and the study of particular functions in appropriate ecological fields. The manifesto was tampered with by Giedion, who claimed that the material Team x presented for circulation lacked clarity.

In September 1955 many of the issues came to a head in what proved to be an antagonistic meeting at La Sarraz between the CIAM Council and Team x. The gulf between the old guard and the new generation widened. By the time CIAM 10 took place in Dubrovnik in 1956, Le Corbusier, Gropius and Van Eesteren were so opposed to the new views that they gave their excuses and did not attend. Three CIAM elders were present: Giedion, Sert and Tyrwhitt, but all of them avoided direct contact with Team x members in the various working commissions.

Returning from the Congress, the Smithsons wrote: "The most positive result in the Tenth Congress is that CIAM as a whole began doubting the reasons for its continuing existence."[4]

CIAM's final denouement took place at Otterlo in 1959 at a meeting entitled CIAM Study Group on the Interrelationship between the Social and the Formal. The event was attended by fifty invited individuals, all of whom were expected to contribute to the meeting with a critical presentation, and which culminated in a talk by Louis Kahn. After Otterlo, CIAM hardly existed.

Team x became autonomous and a group in which the Smithsons were to play a dominant role. The MARS Group had been disbanded a couple of years earlier and CIAM, even with Jaap Bakema's attempts to keep it alive in further exchanges on the Habitat Charter, eventually faded from view. In 1961 Oscar Newman's curiously titled book *CIAM 59 at Otterlo* appeared, but even by that time it was over.

As Banham has said: "These published documents reveal that the close discussion of generalities could often be as trivial as broad discussion of generalities!" Banham also quite rightly condemned the acrimonious end of CIAM and the accusations of bad faith launched by the CIAM founders against Team x. Nevertheless, he claimed CIAM was for two vital periods (1930-1940 and 1950-1955) the instrument through which the ideas of modern architecture and town planning were disseminated throughout the world.

The influence of the new thinking of Team x and its members, their involvement in the dissemination of information in books, lectures and journals, saw a wide application of their views in practice.

This whole area needs much closer attention than this

short paper can provide and incorporates aspects as diverse as Ralph Erskine's epoch-making community housing scheme at Byker, Newcastle, to the continuing work of Van Eyck and Hertzberger in Holland and Giancarlo de Carlo in Urbino and elsewhere.
By 1959 Aldo Van Eyck was arguing for places that could "serve the person in different ways and different persons in the same way". Two years earlier (1957) Wilmott and Young's classic study of *Family and Kinship in the East End of London* was widely circulated among architects and planners intent on increasing their level of social understanding or awareness of the movement of populations and the effects of satellite and overspill developments.
In other architectural circles, particularly those concerned with the second stage New Towns, the publication provided an attractive and fascinating account of working class habits. An important study, too, of familial ties and obligations began in Liverpool University in the late 50s. A number of us working in the city at that time were able to use its findings to argue for the retention of the more homogeneous aspects of the existing community in the city centre, rather than throwing this tightly knit population out into new estate suburbs. The various exhibitions mounted emphasized the cohesive character of the 'slum'. They sought to identify the social, architectural and urban design aspects of culture, this offering a 'local solution' rather than a universal one. Van Eyck was clear in his views about space, time and cultural preceptions: "whatever space and time mean, place and occasion mean more. For space is the image of man's place, and time is the image of man's occasion...provided that place articulates the in between...makes a welcome of each door and a countenance of each window... gets closer to the shifting centre of human reality and builds its counter form - for each man and all men, since they no longer do it themselves".

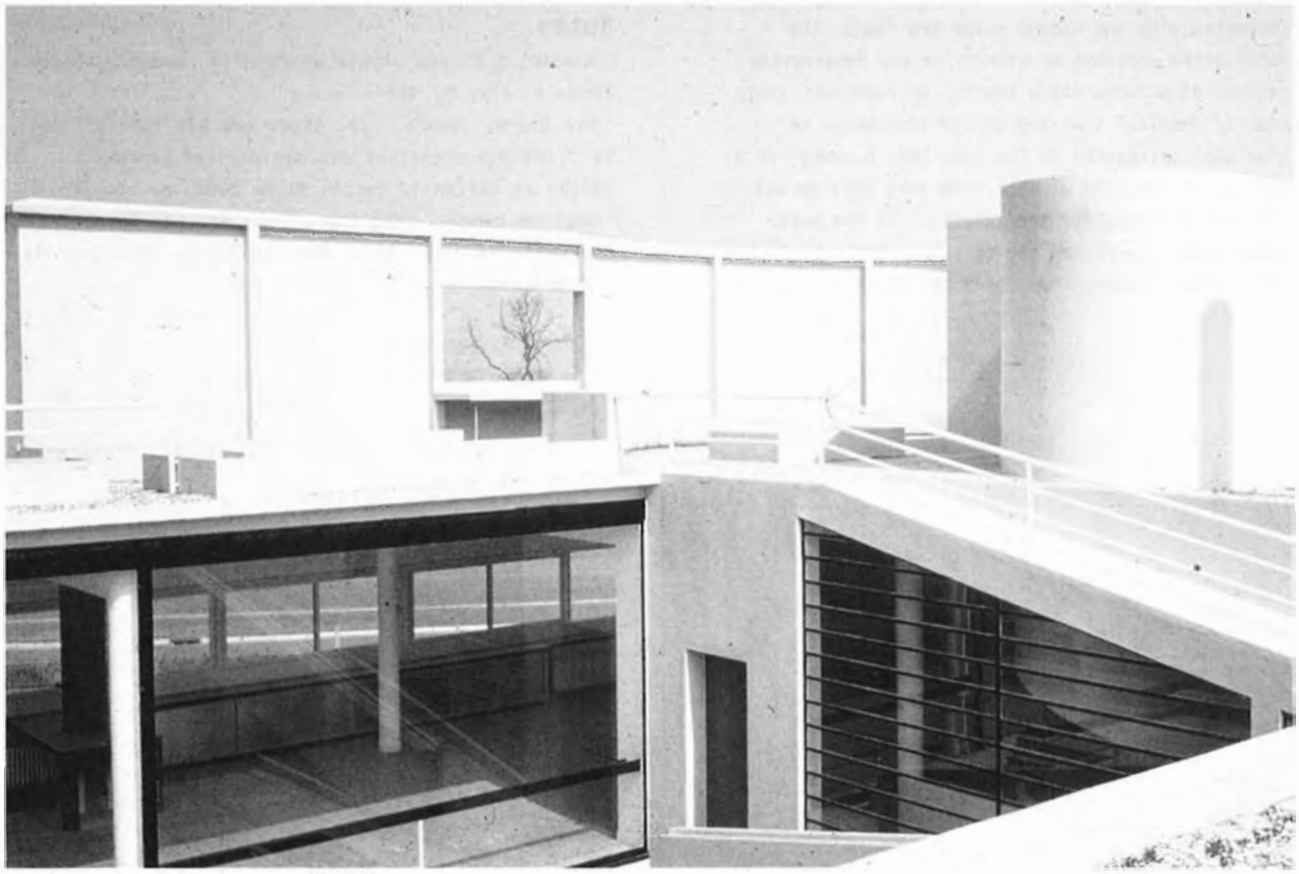
Notes

[1] Purdom, C.B.,*How should we rebuild London?*, London, 1945, n. 131, p. 284

[2] See Sharp, Dennis, "Il. piano MARS per Londra", in *La Citta Dimonstrativa del Razionalism Europeo*, edited by Raffaella Pozzi. Milan 1981, pp. 96-125

[3] Royston Landau, "The End of CIAM and the Role of the British", *Rassenga 52/4*, Dec. 1992, pp. 40-47, p. 41

[4] Ibid p. 43



Villa Savoye, Le Corbusier, Poissy, France. 1928-1931. (DOCOMOMO France Register)

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The Problem and The Myth of Technology in Modern-Movement Architecture

A simple look at the situation is enough to reveal that, in recent years, a new architectural current has, once again, captured everyone's attention. We find ourselves in the midst of the boom of what is known as high-tech architecture which serves as a 'serious' alternative to the hackneyed banality of postmodern Classicism or the laboratory experimentalism of the so-called Deconstructivists.

It is certainly true that these are all imprecise terms, the outcome of the conventions which tend to be created by what is fashionable at the moment and the latest critical currents of thought. But taking a closer look at the facts we discover that amidst all of the confusion in the present situation those forms of architecture in which high technology is the characteristic feature are gaining acceptance and recognition day by day in professional circles as well as with the general public.

It is nothing new to focus on the technology-architecture relationship. Nor is it new to suggest that the latest technology in the field of construction characterizes today's architecture. In other words, there exists a true tradition of the new, as Rosemberg would call it, in which architectural newness is expressed through the technnological innovations on which it is based. Since the progressive ideas of Semper and Viollet-le-Duc the relationship between technology and architecture within the modern tradition has attained the status of a fundamental problem.

Having abandoned its discourse on style, the architecture of modern times seems to be distinguished by its ability to profit from the innovations which today science and technology offer as specific achievements of this same modernity.

The new technology/new architecture relationship is also a confirmed and basic fact in what we call avant-garde architecture, to such a degree that it was a dominant, if diffused, subject in the thinking of the innovative architects and in the shaping of the new architecture.

The conceptual model upon which this modern-movement tradition appears to have been based is the following: new technology provides the springboard for new architecture. The subsequent technological innovations which follow would spur the ensuing architectural innovations. So-called high-tech, that is electronic technology and the technology of global energy control, is at the source of the architecture by the same name. It is important to take immediate note of what this current of thought signifies. Within the broad context of the crisis suffered by the modern project during which innovation ceased to be considered a manifestation of progress, it is quite extraordinary that there be an architectural current whose concept of contribution is based on belief in the modern project, in progress and in technological innovation as the expression of this progress.

If, on the one hand, it is science, that is to say man's and society's rational progress, that leads to technological innovation - an idea which formed part of the enlightened origins of the modern project, now questioned by thinkers such as Vattimo, Deleuze or Baudrillard -; and if, on the other hand, it is technological innovation which sustains architectural progress, we must therefore conclude that the aim of high-tech architecture - once again enjoying a boom in the present culture - is none other than to update that optimistic, scientifically based and allegedly rational modern project which has been developing over the course of two centuries within Western culture.

But the relationships between technology, progress and architecture are not now nor have ever been as simple as this linear model seems to indicate.

I would like to briefly analyze a key text in the modern architectural tradition. In 1923 Le Corbusier published *Vers une architecture*, defined by Peter Collins in 1965 as the most influential book on 20th-century architecture. As we know this book/manifesto on the ideals of modern architecture is, in fact, a montage based on a series of articles published by Le Corbusier between 1920 and 1921 in the magazine *L'Esprit Nouveau*. In the course of the seven chapters comprising the book a complex thesis is developed in which the problem of new technologies is central in the definition of the architecture of our time.

Le Corbusier structures his presentation of the overall discourse on the new architecture in three different segments.

Chapters 1, 2 and 3 are on the confrontation between engineering and architecture. A defense of modern engineering's radical submission to economics and calculus is contrasted with the idea of architecture as a pure product of the spirit. The forms and relationships created by architecture differ from the strict forms of engineering because in the latter innovation is always open to the scientific and technological dictates of the moment. Nonetheless, in spite of its call to learn the engineers' modus operandi, architecture must fulfil a different commitment: expressing the absolute. Le Corbusier's position reflects a cautious reaction to the radical technological focus supported by avant-garde

materialism, by Russian Constructivist-Productivists and by the new German objectivity.
Indeed what initially appears to be a tract in support of modern engineering as a guideline for the new architecture immediately takes on new shading through the dialectic between identicalness and difference and between engineering and architecture. Chapters 4, 5 and 6 are seemingly an argument in favour of a new architecture which should act like engineering: the design of large objects and assembly line production. Boats, planes, automobiles, turbines, silos and mass produced furniture appear on the pages of *Vers une architecture* as icons of modern civilization. But Le Corbusier's position is immediately qualified by the sections on "The Lesson of Rome", "The Dynamics of the Plan" and "Architecture as Pure Creation of the Spirit".
How can the architectural difference to which Le Corbusier refers time and again be understood?
Let us say that for the architect of Villa Savoye, architecture is mediation. It is a significant operation in which the new technological universe is incorporated in the architectural statement but without being its final end.
In the text in question we are meant to discover that it is not that architecture is technology, nor engineering but neither is it the forms of the past. Before and now architecture is mediation between the techniques, the images and the cultural scene at any given time and what Le Corbusier was to call the order of the universe. Mediation is a more generic word which goes beyond the technical or practical aspect of each work. There is mediation between the technical surroundings to which the architect's eyes must be open and the aesthetic end which is the architectural work's final objective. Mediation of architecture does not operate, in the final instance, on the practical, productive, specific level of the objects but rather on the discourse, expression and message which, from them, can be expressed as a manifestation of the present time.
The objective of architecture is not the literalness of its functions or techniques but instead the eloquent statement, the convincing presentation and the credible expression of the message of universality which can be found in these techniques. These objectives of eloquence, credibility and conviction are the objectives of rhetorical art: a creative activity the object of which is effective communication of a message. Architecture as mediation is rhetorical, art of communication, eloquence.
To understand architecture's mediator effect in these terms is also to suggest a fundamental aim for it. The book closes with a chapter which is surprising at first glance: "Architecture or Revolution". If we were not aware of the dichotomy to which Le Corbusier is referring one would say that this is an impromptu question. Revolution for him is not so much social disorder or the violent change that can be provoked by the masses but rather, and above all, the insecurity and fear, the lack of control and the threat posed by the forces of the scientific/technical revolution if their blind energy cannot be channeled to enable them to be socially assimilated, collectively available, controllable phenomena.
The dilemma of architecture and revolution is the rendering of the optimism which Le Corbusier displays in all of his work through which innovation and scientific/technical changes need not be considered inhumane threats and destructive hazards to the individual and to life in society, but instead beneficent products capable of reconciling the subject with its surroundings, architecture being the mediator between one and the other.
Between the wars intellectual thought and art was for the most part mistrusting and fearful of the new technology, of mass production and the increasing automation of the major manufacturing processes. Be it in literature, film or philosophy of those years, one finds a repeated and obsessive concern with regard to the new mechanical and technical world unfolding with the new civilization. In Wells, in Orwell, in Huxley the apocalyptic vision of the future becomes the only one imaginable when faced with the unstoppable process of technical sophistication of urban life, both on the level of society and of the individual's private life.
Even in writers such as Ernst Junger who ostensibly sing the praises of the new man of technical civilization, one cannot ignore the profound emotional instability that these new situations create, in work or in war.
Something, as yet nonexistent, must be found so that the new power be not a threat but a tool for individual and collective growth. Heidegger, in his thinking in the years preceding and following World War II, places importance on this same attitude regarding the problem of technology. This split between doing and being, between techne and poesis is, in Heidegger, the expression - through the exploration of these same categories in the ancient world - of a basic malaise suffered by man and modern societies. It is a malaise for which the antidote lies in the direction of art, of talking, of constructing, of inhabiting.
While in German circles Simmel, Rathenau, Wagner, Berhens, Giedion and May proclaimed the inevitability of acceptance of the tehnological world of the 20th century, the intellectuals and artists were no less fervent in expressing their fear and dread as a counterbalance to the optimism of the intellectual and aesthetic vanguard. Surreal barren machines, absurd Chaplinesque versions of Taylorism, architectural expressionism against the horror of industrial society are some of the proofs that the relationship between the new technology and progress was not always experienced as something obvious and almost natural.
Nor for Le Corbusier, representing an intelligent and measured position, was this relationship immediate or

an unequivocal sign of progress. On the contrary, for Le Corbusier mediation and resolution of ambiguities of all sorts was necessary between the new technology and the social order which architecture represented for him; examination of the facts of the new technical and social situation through specifically artistic operations. In other words, exercises in rhetoric, using rhetoric in the accepted sense of the word; a positive, accurate contribution towards the creation of a language and the explanation of a reality which can be approached only through mediation.

In 1962, in an article published in *Architectural Design*, Alan Colquhoun made the distinction between the literal and the symbolic in the technical aspects of modern architecture. This distinction was in a certain sense parallel to that made by Colin Rowe and Robert Slutzky in another memorable text written in 1956 and published in *Perspecta* in 1963, where they established a clear difference between literal transparency and a feeling of transparency.

The authors of the two texts, posed with different problems, one with technology the other with transparency - both being, nonetheless, topics in modern architecture - established the difference between an instant, obvious and clear meaning of the term and a meaning which can be understood only in an assemblage of meaning through which the terms technical or transparent were such insofar as they were an expression or statement of a purpose or objective. The immediacy of the literal meaning was set in contrast to the mediation of a whole linguistic system which offered a place for the use of typically rhetorical means of expression such as the metaphor, redundancy or eurythmy.

An example of literal presentation of the relationship between technology and architecture in the transition period between what Banham called the first and second machine age can be found in the famous propositions of Buckminster Fuller.

This self-taught man, in the tradition of Giedion's *Mechanization Takes Command*, who was extolled as a pioneer by the then defenders of technological architecture, is the best example of a direct relationship between technology and architecture, if the artifacts produced by him can be termed architecture.

Through simplified development of certain problems - urban movement, transport, flexibility, unitary climate control, etc. - Fuller created a repertoire of objects which quickly became the best images of recent technology-based work.

His inventions - not coincidentally linked, in many cases, with the war industry - were a straight line approach to a clearly defined problem thanks to effective simplification of the multiple inputs associated with that same problem.

The result was his houses, cars, compact bath systems and portable dwelling units all known by the trade name Dimaxion. Complexity, permanence and relationship with space was nonexistent in all of these objects. Just as with war machines, with these artifacts the final aim had been deliberately simplified with the purpose of presenting the direct relationship between need and technological response in the most obvious way.

But what could have been seen as an extension of the scientific-technical pioneer movement after the fashion of Jules Verne's inventions became a paradigm for a relationship which was considered the maximum exponent of modern ideals: the happy encounter between technology and architecture.

When in the 60s the Archigram group came to represent the development of uninhibited architecture from the standpoint of the incorporation of technological innovations, Bucky Fuller was to become the guru of all the radical neo-avantgarde movements that preceded the outcries of the modern-movement crisis. Archigram took Fuller's schematic concept further, enriching it with the introduction of other parameters in their projects. Probably the most important step was that all of the formal repertoires used by the architects, who together worked on the publication of the same name, shared the media-based concept of architecture.

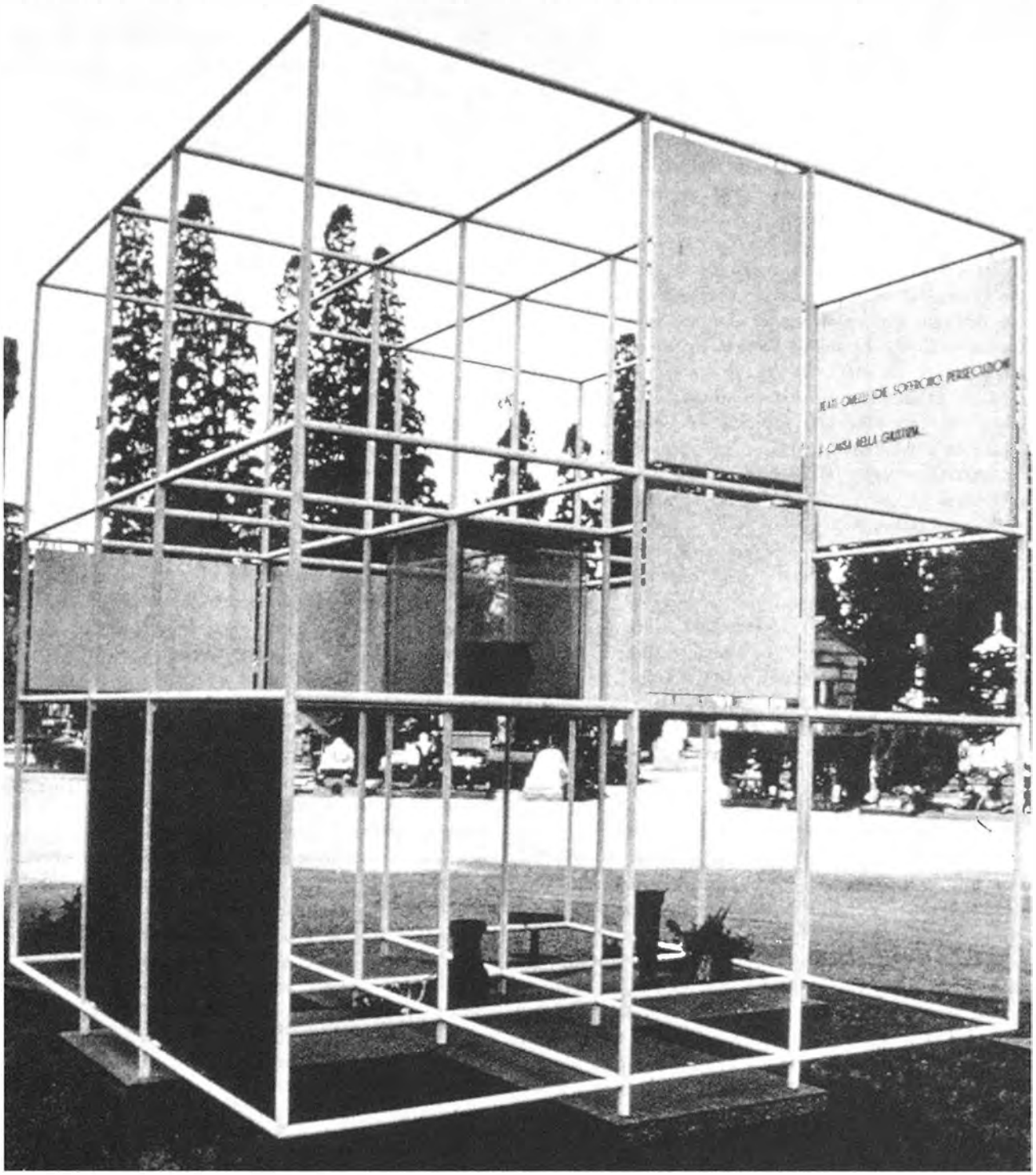
The repertoires drew from the imagery of state of the art technology such as space ships, offshore oil rigs, mobile homes, the boom of household appliance technology and the increasingly frenetic consumption of television images. All of these ingredients mixed together to produce architectural proposals which, as the alternatives they intended to be, set mobility against the traditional stability of historical buildings: pop colours and forms against the repertoires and canons of conventional architecture; and the multi-media message against the institutionalized communication which belonged to the architecture of the past.

Accumulation, assembly, containment, change, multiple impulses, tension and instantaneity are some of the values put forward through the ironic and sometimes utopian drawings and projects of a series of architects for whom it was as important to offer an alternative to established architecture - not just the classic anymore but also the modern - as it was to respond in this way to a social and cultural situation in which the new technical, mechanical and electronic age had burst in on Western civilization from every angle. Architecture, once again, searched for an expression of the spirit of the time and a truly modern condition which did not have to come from an adherence to formal repertoires but from the ever-changing encounter between new technologies and architectural artifacts.

The theorists of this renewed optimism regarding the relationship between technology and architecture first gathered in Great Britain under the umbrella of the Independent Group, a group of artists, architects, theorists and critics among whom were the Smithsons, Richard Hamilton, Eduardo Paolozzi and the young James Stirling and Colin St. John Wilson. From

the theoretical point of view the most outstanding of the group whose influence was important from the mid-50s through the decade of the 60s was, without a doubt, Reyner Banham.
In his doctoral thesis on architecture in the first machine age, Banham, a graduate of the Courtauld Institute, chose precisely to re-examine the fiasco of the programmatic intention on the part of the masters of the Modern Movement to create an architecture which was in direct response to the conditions of the contemporary mechanized world.
By criticizing the inconsistency of that relationship in the first machine age he was proposing, implicitly, that it had to be in the second machine age, that is to say in the moment he was writing his book, that the close relationship between machines and architecture was finally reached. Banham placed himself in the position of raising a call to orthodoxy if by that what is understood is the need to invent the architecture of the present time as the outcome of a machine civilization.
Marshall McLuhan rounded out the theoretical picture with the affirmation of communication through images as the new centre of reality in a culture which had moved on from production of objects to production of messages. The call for pan-semiotic conversion was, in McLuhan, the theoretical base for the production of ephimeral, instantaneous, changing and purely communication-oriented architecture.
Against this backdrop of the theories on the possibility of architecture engendered by the equally new technological conditions, we can set the more sombre analyses of the same situation made, for example, by the Situationists and similar groups such as Cobra and the International lettriste. In all of these the only point in common with the defenders of the new technical context was that of using mass culture as food for thought. But while in the pop climate of Archigram or, later, in Venturi's 'McLuhanism', the new situation was basically seen as positive, Situationism focused on the misery and banality of what Guy Debord called the big-show society.
Just as in the period between wars the philosophers and theorists of art and architecture had tried to explain mechanization's uncontrolled impact by accepting the positive aspects as an alternative to the fear and terror which mechanization aroused, so too in the flourishing decades of the 50s and 60s - the years of economic miracles and the great development of the Western world - was there a strong reaction to mechanization and its repercussions; strong criticism was focused on the mass urban development in the new suburbs of cities, on the indiscriminate consumption of objects and images and on the alienation resulting from community living. This was expressed through calls for individual freedom, for the reconstruction of private living space and for concession to situations, those momentary events in which, for a limited space of time, it was possible for the individual to find himself again.
The derive theory in the situationalist school of thought placed positive value not on an organized, clear and simple spacial experience but rather on the richness of erratic wandering, of movement without a clear end: possibilities for personal enrichment in the context of modern city life.
Growing out of this same situation, another type of critique of what Alain Touraine called post-industrial society, was that of the nascent ecological movement. Anti-urban and anti-technology at the start, it focused its critical eye on the part maudite of the society of abundance, pointing at the squalor of its debris, the lack of control over its waste and the unlimited consumption of resources and energy as the signs of a new impending holocaust.
Perhaps the most immediate consequence of the ecological movement was the investigation into alternative energy sources, materials and architecture, as well. This is not the moment, however, to analyze the effect over the last twenty years of the direct application of ecological theories to architecture.
The issue here is that recent architectural movements and styles are in a theoretical context of chiaroscuro as a result of the new technological situation in the Western world.
Seemingly the self-proposed mission of what we call high-tech architecture is precisely that of responding positively and with wide-eyed optimism to the need for a renewed relationship between technology and new architecture but also, in certain cases, to the possibility of responding to the criticisms of the situationalists or the ecologists by proposing architectural works which are clean, with energy control and, ultimately, provide comfort and happiness to the users.
It is surprising to find on repeated occasions that commentaries by Richard Rogers, Norman Foster or Jean Nouvel, as three well-known examples, reflect a stronger interest in demonstrating the ecological and communicative aspect of their works than in justifying technology as an adaptation to the spirit of the present time.
Firstly, the works presented by these architects have nothing to do with the crisis which, from Habermas to Baudrillard, has been labelled postmodern. Theirs is architecture which carries on from Gaudí, Mies, Le Corbusier and Aalto but also, without stretching it, from Fuller and Archigram.
Innovation is reflected in these works not only through the construction, that is the application of new mechanical possibilities, but also and especially through the elements of communication and management. All of the architects of this tendency place their emphasis, above all else, on two factors. One is the effectiveness with which the new artifacts describe their function, present their objectives and display their technical logic. It is the triumph of

communication through images of architecture of transparency and growing immateriality.
The other factor is the calling of attention to the management procedures which lead to such sophisticated and perfect artifacts. The business techniques of management, interdisciplinary cooperation and new division of labour seem to be the key to explaining the novelty and modern quality of these buildings.
Ideologically this whole conceptual picture leads us to a clearly defined rhetorical message.
In a conflictive world such as that of the end of the 20th century this type of architecture appears as something obvious, evident, logical, rational and economical. There is nothing more compassionate than the victory of wisely administrated technology. It is a victory reached by clearly conservative paths: social integration, professionalism, lab coat architecture. It is the consummation of happiness.
The ecological imbalances seem to have disappeared and the high production and maintenance costs are secondary to the issues of adaptation to the surroundings, to work place needs and to integration into the urban scene. High-tech architecture is not, therefore, something self enclosed but rather signals a path by which the intelligent application of the rationality of well utilized technology leads to the attainment of the social objectives of a highly developed culture.
The result is always a rhetorical exaltation of the institutions, very especially the large corporations who are most inclined to pay for the extremely costly production of these great architectural artifacts. More than the public sector or the private world of housing,high-tech architecture's place of privilege is with the great monopolies, the multinational companies which represent the de facto powers in the most developed capitalist societies.
Paradoxically what began as a pioneer and avant-garde spirit now results - in keeping with the discourse of the happiest modern tradition - in a rhetorical exaltation of the technological as, precisely, the path towards personal and social pacification.
Thus technological rhetoric finds its permanent calling in the positive sense which I put forth earlier: the art of eloquence with which a message - in this case integrative - is shaped by the creator of the architectural forms.
It is rhetoric which, once again, unveils the quality that we had detected in the origins of modernity and since. It is rhetoric which can be literal or mediated, a direct translation of techological icons brought together as a redundant call for their legitimization or architecture in which the repertoires offered by technology are the object of mediation using (applying) rules, protocols and codes which result in the construction of an elaborate system of communication through architecture.
It would not be difficult, for example, to uncover in the most quintessentially high-tech architecture, that of Norman Foster, the application of a carefully worked process through which his buildings represent true media-oriented architecture, each more so than the previous.
They are not exactly media-oriented through their use of mass media but rather between the raw state of the art technological element adopted and the final architectural result comes the intelligent and carefully worked process of typological definition, of hierarchy of steps in treating the problems and in the recurrent application of certain forms of static resolution which work both for decisions on a large scale and those adopted for detail work, furnishings and complementary elements.
Union, tension, lightness, provisionality, flexibility, juxtaposition of degrees of intervention, total environment, continuity and transparency are the main criteria which seem to appear as a metamorphosis of the Vitruvian principles of *utilitas, firmitas, venustas*.
What for other architects who were enthusiasts of this very continuity of the modern project never went beyond inarticulate babbling of platitudes on mechanization, in the case of Foster's work became progressively better articulated and syntactically richer over time.
There is nothing on the current architectural scene either as thoroughly worked out or as closely reflecting the principle of accommodation between new technology and new architecture. If it were not for its obvious efficiency it would be a paradox that this type of architecture should end up being the purest example of conservative ideology and the most stable base of the Establishment.
Perhaps the reason for this is the fact that this architecture is diametrically opposed to that critical pathos of objection to which other currents in modern architecture resort. On the contrary, we are faced here with the paradox that the purest rhetoric which the technical world has to offer us today through architecture is precisely the best antidote to the fear and insecurity which technology's unbounded development continues to stir up in the majority of individuals.
As Manfredo Tafuri said in his famous opening words of the book *Architecture and Utopia*: remove the anxiety. Revolution or architecture, as Le Corbusier propounded in 1923, could have been, from the start, the true objective of the appropriation of the technical, of technology, through architecture.



Monument for the Victims of Nazi Concentration Camps, BBPR, Milan 1946-1955.

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Critical Restoration of Modern Architecture

In the case of the conservation and restoration of monuments, it is advisable to talk about particular cases. Perhaps the best one can do is illustrate cases of conservation or restoration in detail as an exchange of experience, an exchange of knowledge. I shy away from generalizations, doctrines, catechisms, which are often a Trojan horse for dangerous operations. It is no accident that modern architects often quote history, especially when they are in the process of destroying monuments. History as legitimation has the history of the restoration of ancient buildings carried out in the 19th century as a pretext for the destruction of modern monuments.
However, I am going to give a twist to what I have just said. Indeed, what I propose to do now is to present some specific cases in order to draw out some more general consequences. That is to say, I will try to start from an analysis of buildings which are not even, or not necessarily, monuments, from buildings which are not necessarily being restored, or which may have been, or will be one day, from a number of fairly disparate buildings; in short, I will try to show what problems the restorer may encounter, to show the close connection between historical knowledge, research work on the building, interpretative hypotheses, and the chances that a modern building has of surviving its conservation or restoration.
Even more, perhaps, than historical buildings, modern buildings are forgotten, partially described, subjected to the state of the critical discourses which are brought to bear on them. And, as we shall see, those critical discourses are often the source of a distorted, partial perception which is frequently the cause of their destruction.
I shall often conclude with questions rather than propositions, because in fact there are cases which pose more questions than solutions, and for that reason my lecture will often be rather colloquial, something of a chat about certain aspects of the conservation and restoration of buildings.
I would also like to show another aspect, which is how certain fixed ideas or prejudices or points of doctrine, to give them their high-sounding title, can often lead, let us say, to a fallacious interpretation of the building or monument and thus bring about its transformation or destruction. But I shall also show that sometimes chance adjusts things correctly and teaches us lessons.
To begin with I am going to talk about an object which is not actually in danger but, because of what has happened to it, constitutes a kind of allegory of the problems of the restoration, of the conservation of modern buildings. It is a curious object, very small, it weighs a few kilos of metal tubing and a stone plinth, but it lends itself to countless analyses and descriptions. I will spare you that and just talk about certain aspects. I am referring to the *Monumento ai Caduti nei Campi di Germania*, which was erected in the Cimitero Monumentale in 1945 to commemorate the victims of the Nazi persecutions. When you see that little metal cube, one metre eighty-three, painted white, standing on a small plinth, a small plaque in Carrara marble, and some pebbles which seem to have been collected nearby, you understand the anti-rhetorical purpose of the architects Belgioioso, Peressutti and Rogers, the famous BBPR, that group of Milanese architects, one of whose partners, Banfi, was indeed killed by the Nazis.
Now the work is not the work of the group but, by a chance of history which is easily explained, the work of Peressutti alone. It is a small object composed according to the golden rule, an object shaped like a cross. In the centre of the cross there is a pannikin with earth from Mathausen. It is a pannikin which comes from Germany, from the concentration camps. That metal cross stands on a stone plinth. As I said, the stones were collected nearby, and so it has an eminently anti-rhetorical purpose in relation to all the buildings, the famous monuments that stand around it; it is indeed an extremely prestigious place, the Cimitero Monumentale. It is a kind of declaration of war, if one may put it that way, on the ostentatious signs of the Cimitero Monumentale in Milan. In the grille formed by the metal tubes there are plaques, plaques bearing phrases taken from the Bible or dedications to the victims, of the Caduti nei Campi di Germania.
The fact is that this building, which is destined to the eternal memory of those victims, did not last very long. Doing honour to the poor reputation of Italian products just after the war, the monument soon rusted and, two years after it was built, the architects had already started to make plans to replace it. Here are two more pictures of the first version. In the second version, the architects decided to change its appearance a little. The theme remains the same, but they think that bronze is more appropriate to its commemorative function, since bronze is the noble metal of cemetery monuments, is it not? They make it in bronze and because of that they now change the plaques: the white plaques become black and the black ones white. And then, most important – and we can see that Italian design has made some progress – the plinth becomes a single object in white marble, this time perhaps a smooth white Candoia, without the little veins of the Carrara, and because at the time there was a lot of talk about the *divina proporzione* (in Italy there was a congress on the subject attended by Vidcover, Giedeon, Rogers and others) they decide that the urn must be raised to eye level. And that is why they increase the height of the plinth which is raised

from forty odd centimetres to fifty odd, whilst the volume keeps the same dimensions. Meanwhile, Kaufmann, from the MOMA, who has heard that the object is to be replaced, bursts into Belgioioso, Peressutti and Rogers' office and buys the remains of the ancient monument for the Museum.
The interesting thing is that when the object ceases to be a monument it is enthroned as a work of art, without the pannikin, without the earth from Mathausen, without the base. Which means that when all the symbolic elements which belong to Christian symbolism —though not only Christian — are taken away, the object finally enters the museums. I would say that it is a beautiful case of a superb misunderstanding which saves a monument. Personally, I hope soon to have those remains from the MOMA.
In the second version, as I said, it is far more elegant, as we can see, that is the plinth of another version, because there is a third one. In the second there are no longer any small feet, the cube is pure, just resting on the base, as Max Bill would probably have done at the Hochschule für Gestaltung, whilst the original version had small feet attached to the cube; an impurity, in fact.
But history wants even the bronze version to deny its solidity, to rust, to become sick, and it soon has to be changed. Then the architects contemplate returning to the original solution, and there we are in 1955; they will say that in fact the bronze version was an elegant object, not at all suitable, because of its very elegance, for its commemorative mission. That judgement passed on the previous object is very interesting because it indeed shows that a plus in formal quality may be a minus in symbolic quality and that the true value of the first version was its authenticity, the fact that it had been made only with war material at the end of the war.
So they return to the third version. Naturally, to put things in order, all the small images that people had left below were removed, since evidently modern art (because that is what the monument was considered to be; Max Bill talks about it in his texts as a work of concrete art) has little capacity of evocation for simple people; they find it difficult to substitute the name or image of the victim, and so they had decorated the little object.
The history of the BBPR studio tells us that the third version actually restored the first one. Obviously they write their texts in the 70s, and in the 70s it is clear that if architects who are concerned, like BBPR, about a monument and its conservation they redo it, they redo it identically, which means like the original. That value was acquired during that decade. But the monument was redone in 1955, the third version dates from then and what actually happened was that the architects changed it once more, they lowered the base again, but they wanted to keep the height of the urn. That is why they changed the dimensions from one metre eighty-two to two metres twelve. The base, however, is more or less the original height, but the plaques have been changed because obviously the dimensions had been changed, but more especially because the black marble unfortunately tended to go grey. Which meant that the black marble passed from the first version to the second and in the third version it is still black marble, but once it was a marble from Varenne, then it was an urn from Belgium, and now it is black granite from Sweden. What is rather interesting then is to see the whole transformation of the object. Naturally, if the base, the plinth, has changed materials, perhaps the idea, unlike the first version, was for it not to have a white Carrara base any longer, but a greyish white base which is less striking, and that will be made of *sirizo antogorio*. And meanwhile relations between Germany and Italy have been normalized, which means that the Germans finally bring themselves to tell the Italians that the plaque bearing the words *Alle vittime e caduti nei Campi di Germania* may be a little offensive to Germans in general, which is why they were changed to *Alle Vittime de la persecuzione nazista*, or something like that. Which means that even the content, the text on the plaques, has changed.
Why do I find this case so interesting? Because it shows first of all that modern monuments, even the most commemorative ones, have a short life. That there is a clash between the monument and the work of art and that sometimes the work of art dispenses with the monumental value and vice versa. That when architects lay their hands on a monument they rarely agree to leave things in their original state; they always seize the opportunity to change, to modify, to leave, let us say, traces of their intervention. Most of all, when the architects are the authors. So perhaps we should never let authors intervene on their works to conserve them or restore them. But, on the other hand, it must also be said that this story is beautiful because it gives us the exact temperature of architecture in Italy in the years immediately after the war. It shows what has always been said: that enormously experimental character in the work of the architects Belgioioso, Peressutti and Rogers. That way of continually transforming, of improving, the idea that the work is never finished, is something open which always lends itself to new interpretations.
And indeed Belgioioso, whom I talked to at length, told me that they themselves made an enormous number of variations around the monument and that the monument stands in a direct line from other monuments from before the war — the monument in Piazza Fiume or the Torre Velasca — which means that it stands within a conception where the works constitute a whole and where each work illustrates a larger work, which is the work of the authors in its whole extension. In that sense I think that the history of that monument is a good illustration of all the vicissitudes which beset modern architecture.
I will now move on to another case, the case of the Villa Demandereau, about which I could tell you many

things, but I will restrict myself here to just a few aspects. We all know that the Villa Demandereau is a turning point in the work of Le Corbusier. It is a work which marks the passage from Purism to what one might call Postpurism, with the recovery of materials, the highlighting of materials, the techniques of craftsmanship, the abandoning of pure, simple volumes in favour of a greater complexity. That change is so strong that when I began to study the building in the early 70s, an eminent student of Le Corbusier, Alfred Roth, told me that it was clear that I obviously had no gift for architecture, because after studying the Pavilion Church I had attached myself to another equally bad, botched building by Le Corbusier. That is to say, the Villa Demandereau, in the early 70s, did not even find favour in the eyes of Le Corbusier's pupils, his priests.

Nevertheless, it is a pivotal work. I have already said that one of the most remarkable aspects is the fact that we pass on to a new type of composition, from a composition by subdivision which belonged to the purist buildings, such as the Villa Stein in Monzi, or the Ville Savoye, we pass here to a type of composition by the addition of elements, of units. The quality is in the element and in the principle of aggregation, but the work may be open. It is the birth of a concept of the open work in Le Corbusier's work which culminates in the masterpiece of the Villas Sarabaye or the hospital in Venice. And here, Le Corbusier tried to manipulate units by putting them in front, behind, in line, taking away and putting back.

I was asked to restore this house and it must be said that once the preliminary studies were finished, my commission was taken away, because I was taking too long beating my brains over how to make a start and the owner did it himself, but that is not what I want to talk about; among the subjects we have been dealing with in this study there is one which I have kept close to my heart: the treatment of stone. In this house, indeed, Le Corbusier uses exposed stone for the first time. They are Provençal quarry stones and Le Corbusier was bent on emphasizing the fact, especially in the book *Croisade* which is his reply to his enemies, such as Camille Mauclair or Udenstock, a lecturer at the École Polytechnique, a famous fighter for regionalism, as befits a French Alsatian. And in the polemic with Udenstock, in defence of his architecture, he made a great deal of the Villa Demandereau as a tribute to a French tradition, building in stone, and he emphasised that resurgence of interest in the quality of the stone and in craftsmanship in the work, for the people of the time.

Now, the interesting thing about that story is that, first of all, the use of exposed stone in a house in Provence does not correspond in any way to Provençal tradition. It has even been demonstrated that stone in Provence must be covered by a coat of plaster and that it is felt in Provençal tradition that a house without a coating is a naked house. Exposed stone is only suitable for farm buildings, for purely utilitarian ones, but not for dwellings. Moreover, Monsieur Emon Hetique, a very important person since he is the man who builds for Le Corbusier, tells him that he is very worried about that way of leaving the stone exposed, without plaster, and not protecting the wall. Indeed, what we know is that there is always water in the house. And from 1931 to 1936 Le Corbusier spends all his time tackling the problems of the watertightness of walls. At first he assumes that the water gets in through the joins and so the proposal is to apply cement to the joins, to thicken them. But then he thinks that the stone itself is porous and at that moment, in a false interpretation, he thinks of covering the stone with a very fine plaster.

Now it is interesting that Le Corbusier writes to his builder to tell him to cover with materials that keep changing their names, always specialities – at one time it is Kessel magnesium, and at another it is an April plaster, whatever that is; on another occasion, it is a selfaraticine; the whole house becomes an experimental laboratory for all the wonders that, in the field of watertightness, France was engaged in producing during those years. Even products for making concrete boats watertight. And we can see all that on the façade of the house, just as it still was a few years ago. Here you can also see the traces of a test made to see if the plaster could be removed.

The interesting thing is that Le Corbusier gives the order to apply the plaster, but also to keep the old, beautiful modelling of the wall. which means that he was interested in the plastic qualities of the wall, and he says that if the material cannot be saved, at least save the texture. And there are several letters which bear witness to this interest in the modelling.

So we were facing a problem (if we take theories of restoration seriously): to find out exactly what should be kept. Because we are well aware that the theory of restoration tells us that we must keep the building in the state in which it has reached us. Suddenly there is a similar case with the specific intention of the architect who shows a particular interest in the modelling and who, through the misadventures of the façade, basically discovers a new kind of plasticity, a new formal interest. So it is interesting to know whether the plaster must be conserved.

And that idea led us to discover something which came as a great surprise, which is if you look at the interior of the hall, you see a wall which looks white, where the stone is exposed, perhaps just whitewashed, and you see the relief of the wall. You can see quite well that Le Corbusier took an interest in the tactile qualities of the material, the reliefs, but not necessarily in the material itself. And the most astonishing thing is that when we removed the plaster which was applied later by the inhabitants when they took possession of the house, we discovered that the white was not white in any case; perhaps in a later overhaul, possibly just after the war, that white became, at the hand of Le Corbusier himself (there is mention of it in the

notebooks), that white became blue, as it is here. You will say that I may be splitting hairs, but I think that it is a question that arises, since clearly in this villa, as with many other aspects, there was a 1931 state and then a whole series of states until 1936 which changed its appearance considerably. And the question, in the case of restoration, arises. In this particular case, we need not worry, because the present owner has done everything himself and I think he has acquitted himself pretty well.

But let us consider another aspect. In his texts Le Corbusier emphasizes the importance of the landscape in the presentation of the house. He will say that the role played by the landscape in the composition of the building is very important. He bestows special praise on that exit, on the north side, to the flight of steps which opens onto a view of the landscape of the Var. Indeed, he takes account of the fact that Mme Demandreau herself spoke to him of that landscape and sent a postcard of the terrain when there was still nothing on it. Le Corbusier has seen nothing of the land, but has learnt the lessons and the indications on the view given to him by Mme Demandreau.

On the other side, Le Corbusier knows that the landscape is far closer; there is not the depth of field, to use a cinematic term, that there is to the north; to the south the landscape is much closer. That will be a major factor in determining the plan of the house. He will determine it as follows: towards the north, towards the flight of steps leading to the garden, and towards the mountains of the Var, Le Corbusier closes off the residence with a wall and opens only one door, and the view of the landscape is only there when the door is open. On the south, on the other hand, the landscape is present all the time because there is a huge glass façade, partly transparent, partly translucent, but there is always direct contact with the terrace in front. And up there, which is very interesting, Le Corbusier placed two sculptures by Lipchitz: towards the north the *Field of Vowels* on a large pedestal which can be seen from the terrace steps and which is picked out against the sky when you go down into the garden, and which sets off, acts as a foreground to the landscape in a way, whilst on the south side is the *Reclining Nude With Guitar*, also by Lipchitz, on a plinth, which centres the terrace of the house and centres it on itself and gives it a feeling of intimacy.

And so when in the late 40s, in order to get rid of the house, Mme Demandreau decided to donate the sculptures to the Zurich Museum, she asked for the site to be photographed exactly before they were removed, and for a survey to mark the exact spot where they had stood, since she considered that the works were fundamental for an understanding of the house and were part of a monumental whole. The young historian who was sent by the Zurich Museum naturally took this request as the whim of a crazy old woman and naturally did not take any photographs, which means that now we do not know where Lipchitz' *Field of Vowels* stood. Now, so many years later, we know that Mme Demandreau was quite right. The removal of the statues may well have destroyed one of Le Corbusier's most important works.

All the historians who, when talking about Le Corbusier, speak of the synthesis of the arts place it in the late 40s and see its culmination most of all in Ronchamp and the Pavillon Philippe. Well, I think that we can demonstrate that the idea of the synthesis of the arts was already complete and present from the time of the Villa Demandreau, 1931. That means that in 1931 the Villa Demandreau with its sculptures proposed by Le Corbusier marked a whole new direction, let us say, in the artist-architect's relationship with the arts. It was Le Corbusier's reply to those who said that he was an enemy of painting and the arts in houses, because he had attacked, among others, La Roche, when he had filled his gallery with cubist and purist works, hanging the pictures any old how.

That is to say that in fact the state of critical discourse on the arts, on architecture, plays an essential role in understanding and saving a monument. I think that if the Le Corbusier adepts of the 40s and 50s had been aware of the importance of that house, it would not have run the risks it did. If the art historians who had taken it upon themselves to remove the sculptures had realized the value of their location and the value of the overall location, they might at least have thought of documenting it all and giving us a chance to put back, if not the originals, at least copies.

I will now move on to another work by Le Corbusier which lends itself to a further consideration about the problem of conservation and restoration. It is the case of a residential complex in Briey-en-Forêt. This residential complex, built between 1957 and 1959, has been in serious danger of disappearing. Indeed, it enjoyed a moment of success; it was inhabited for the first few years. After the mining crisis in Lorraine and the departure of the NATO soldiers it was soon put to other uses; the degree of social cohesion of the groups of inhabitants was degraded and there was a moment when the house was hardly lived in and, in any case, was in an incredible state of dilapidation. It is even said, though possibly by partisans of Le Corbusier who want to defend the idea of the interior street at all costs, that at a particular moment one of the streets had become a kind of brothel, something like the streets in the red light districts of São Paulo or Amsterdam, where one could enter, visit and choose the whores by peeping through the slits that had been cut in the doors of the houses. But that may well be a tribute, an invention of Le Corbusier's most devoted fans.

In any case, at one time there was a plan to demolish the complex and it is thanks only to the fact that it was built of solid concrete that such a thing never happened. And it is also thanks, it must be said, to some very committed people, among them a doctor and owner of a hospital in the surroundings who decided rather reluctantly to save the complex. On the right you see the plans. It must be said that, unlike the

complex in Marseille, the partition walls are all made of concrete, 18 centimetres, on all floors, as opposed to the skeleton principle of the Marseille complex. Also the ducts with the technical installations are collected in elements, in boxes that you can see on the plan, and are not contained in the thickness of the bearing structure, as in Marseille. And that plays a rather important part.
Now the interesting thing is that the people who decided to save the building went about it in a rather original way. First they used part of the complex as residences for nurses and to do that they dug into the concrete of the residential complex like rats into a Swiss cheese. They made holes everywhere with a drill, even with a laser cutter, leaving the surfaces of the complex like vertical plots of land. This shows how solid the complex was. They say that artists and architects clubbed together and bought houses, residences, in that first street to save something of Briey-en-Forêt. The lots were sold so quickly that certain spaces remained empty, caught between two dwellings, and no-one even knows who they belong to, because in the rush the division of ownership was not exactly regulated. In any event, that is what people say.
But the interesting thing is to see that the buyers were offered different types. The original residence was considered to be far too small and so, starting from small dwellings, like these, one-room apartments were accumulated, then two-room, three-room, four-room, by regrouping more elements horizontally. Those were the models on offer to the buyers, but the buyers did far more, or far worse: they cut even more holes than the ones you see on the plans to link different surfaces. Even the staircases do not necessarily respect the original state and in any case the stairs have often been mounted the other way round; those that went up now go down on the other side; in short, the whole house has been treated a bit like a plot of artificial land.
And that, perhaps, is the lesson to be learned from this case. On the one hand we may be appalled by the transformations the complex has undergone. Indeed, it conserves characteristics of the original state inside, but others are totally new. It has been treated with a good deal of brutality and not always with too much intelligence. However, it has provided us with proof of the basic flexibility of a residential complex. It shows us that fundamentally the residential complex is still a very interesting principle, especially now that children no longer leave home, that they stay willingly until the age of fifty, until just before retirement, with their parents, that couples separate and come together again according to the season and that the family, in any case, is extremely unstable. Why not imagine a structure like this, one where you can provide many spaces with ways out to the public space by going up or downstairs or walking out on street level? It is an eminently flexible structure, you can buy a plot or you can rent one.
That means that in a certain sense, this very demolition of the interior layout of the residential complex of Briey-en-Forêt provides us with proof of the vitality of the principle. Indeed, it reminds us that the complex is characterized not only by its famous vertical section, which we love so dearly, but also, let us say, by other sketches, by other drawings which were a little the basis of L'Abac, the residence planned by Le Corbusier in Marseille, which effectively shows the type in horizontal, vertical and tentacular expansion.
Indeed, I would say that we can learn a lesson from the transformations of the residential complex in Briey-en-Forêt, which is that even carelessness often teaches lessons. I think that in a case like that of the Briey-en-Forêt complex, it is impossible to list all of it; one would not even find people willing to rent the building in its original state, and so we can accept, perhaps, an operation of this order. In any case, I would say, to be prudent, that the operation opens our eyes to the potential, which may well have been unsuspected, of the principle of Le Corbusier's complex and also its survival within the present problems of accommodation.
Above all, I think that the complex still has many good days ahead of it when I look, in the first street, at the state of the piping. The owners have even taken the liberty of removing the envelope which protected the ducts and the pipes are now exposed, crossing the house like organs. All of which gives an impression of great fragility, but also inspires a good deal of confidence. If one can live in a similar state of nakedness, I am sure that the house will enjoy a long life.
Like most of Le Corbusier's complexes, the closer they come to completion, the more things have to be removed. The curious thing is that most of the complexes have sacrificed most at the entrances. That is also the case of Briey-en-Forêt, where the entrance is reduced, in the original state, to the stair and lift well. Later on the zone was totally transformed. In some plans from the Garland collection, which show the sketches of the entrance zone of the complex, we can see clearly that from here on Le Corbusier gave up managing this zone, because there was no longer any economical way of dealing with it. The zone was later transformed; a central heating plant for the young nurses' residence was installed, a caretaker's house was put in, etc. Which means that the famous Piloti zone was filled in, because naturally the common sense of the people who lived in the house could not contemplate such a waste of space. Which made the entrance sad and dark, but now that they have become a little more aware that they are living in a house of some value, that the social strata living there have become richer, the problem of the refurbishment of the entrance arises.
The question has been put to me, as to other people, and naturally I have wondered what should be done. In such a case, should one simply return to the original solution, take out the caretaker's house, remove the heating plant? Is that possible? Or should one try to see if

there is anything to be got out of the other solutions envisaged by Le Corbusier, something which might serve as an entrance, which would leave some space for the caretaker's house, or some other, which would not be an imitation of Le Corbusier, but would respect his architecture? That is more or less the question.
I thought about it and then I went to look at the slides I had taken of Le Corbusier's complexes when I visited them. I was ashamed to notice that I had taken practically no pictures of the entrances. It was as if we had all tacitly decided that Le Corbusier's complexes should do without an entrance. As if the great master had failed when it came to making the entrance to his complexes. In any case I was annoyed to see that I did not even have any good slides of the Marseille complex. That is a question. I have no answer. But I think that it is an urgent question, because things are really happening at Briey-en-Forêt.
I will now finish with two cases which are very close to us, at least to me, two cases in Geneva. I am referring to two works by Maurice Braillard: a small garage built between 1935 and 1936, the garage in the Place des Nations, one of the first independent petrol stations, very elegant, built with the participation of Maillard, especially to hold up that great light sail, that great canopy that seems to be resting on a pane of glass and which is in fact resting on small columns hidden inside the structure, the window jambs. Now, that garage is a prestigious object which divides the traffic, conceived in a very functional manner, and it still has a small caretaker's house upstairs. The building was not listed when, a few years ago, a competition was announced. The architects who won the competition had the merit, it must be stressed, of saving the object when they were not obliged to do so. They adjusted their plans so as to save the garage.
Then something happens. In the meantime the building is constructed and they see that the little garage partly cuts off the view of the building. Especially when you come out of the new building, which you can see there at the back, you are confronted with a two-storey façade, which is the façade given by the height of the garage plus the little cube, the caretaker's lodgings. Now these same architects propose to remove at least the caretaker's house. They show us these two images you see here and, as an argument, they take some of Braillard's sketches which are full of drawings which do not include the caretaker's house. Now, another interesting question arises. Have the Braillard archives been so unlucky that among the few sketches that have been preserved, among practically the only ones that have been preserved, there is this page of sketches showing the garage without the caretaker's house, which now serves as a damning piece of evidence in favour of demolishing it? Or can one say that basically, if there are only sketches of the lower part, that means that the master was not so interested in the upper part? Is it possible to imagine that on a monument one can split up a horizontal or a vertical layer and detach what is good from what is less so?
Those are questions which naturally occur to the restorer, but the restorer often lacks the courage to say so, because obviously as soon as one makes a value judgement about a work by a master, one naturally opens the door to a wave of attempts to separate the good from the bad. Which means that each work cannot even be defended as a whole any longer, but has to be defended almost piece by piece. That is why there is enormous insistence on saving the work integrally and that is the aim and the wish of the Venice Charter. But in this case, the question arises.
Now what makes the question interesting is that the problem may not be in Braillard's little garage, but elsewhere. I went to the site, I took photographs of the works in an advanced state and I realized that if the architects now ask for the top of the little garage to be removed, that is due to the fact that they were one storey out in placing the ground floor. That happened for two reasons. First, they did not check the plans they received from the State and they realized too late. Indeed they had the courage to write a letter to the authorities saying that the plans they had been given were one metre eighty lower. That means that the ground floor had already been planned that one metre eighty lower.
But I think that the mistake lies elsewhere. It is that the whole building is sunk into the ground. When you look out from the entrance, you see a metre and a half of land and then the garage begins. If you look here, you can see very well that the ground floor, which is on the lowest level, let us say, of the protruding part of the building, is sunk straight into the ground.
The lesson I have learnt from all this is that perhaps what should be restored, transformed or adapted is not Braillard's garage, but much more simply the new building which is being finished. Perhaps the real restoration concerns the new building. It might be a novelty, but it would not do any harm, at least, to the object which is in no way to blame for the misfortune that has occurred to the building that has just been erected.
The last example, which still concerns Braillard, is the famous upper station of the cable car at Salève sur Genève, which was built between 1931 and 1932. It must be one of the most dazzling cable car stations in Europe built before the war, along with the one by Baumann for Owen Kettenbahn or Walden's for Lanenkamer Kitzbuhl, or perhaps a few of the rare stations built by Olzmeistern, also in Austria. There are few cable car stations as important as those or which celebrate the structural, constructive and functional problem with such emphasis. The station however has now been taken over by ropes, cables, pulleys. Because of the transformation of the machinery, it looks like a kind of Prometheus Bound, a kind of metaphor, perhaps, though a rather doubtful one, for the destiny of modern architecture, tied up and reduced to a wreck, to a kind of one-eyed tethered horse.

Bank building, J. Cernigoj, A. Dev, Maribor, 1931-1932.

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Modern Slovenian Architecture and the Conservation of Monuments

This short report can give only a rough outline of the situation regarding conservation of architectural monuments from the period between the two world wars in Slovenia. There are several reasons for this, the main one being that we are currently in the middle of systematic research into the architecture from that period, which enables concurrent planning of the conservation of key monuments and landscapes and townscapes. Dr. Bernik wrote on the state of architecture from that period, known as "functionalist architecture" in his report to the first International Conference of DOCOMOMO.

In his introduction he established that there exists a long list of architects whose works in Slovenia have been changed in one way or another - by having their external appearance altered or their walls rebuilt - or else improperly presented or even pulled down. This constellation includes works by the most important Slovenian modernist architects of international renown such as Maks Fabiani and Joze Plecnik, who worked at times in Vienna and were close associates of Otto Wagner (Plecnik was his pupil).

Other architects were trained in European centres, such as Ivan Vurnik, Josip Costaperaria, Ivo Spincic (who studied with Peter Behrens), Josip Sivec, Vladimir Music and Ivo Medved who studied in Vienna, or Vladimir Subic (who studied in Prague), Franc Novak (educated in Berlin and in Paris), as well as a number of architects of the Architectural School of Ljubljana who graduated in 1920, headed by Vurnik and Plecnik.

In this short report only some of the most prominent and active architects will be mentioned. Such was Plecnik's first assistant and after 1930 the sworn Functionalist Franc Tomazic, followed by Stanislav Rohrman (who studied in Prague and Munich). There were also Herman Hus, Josip Cernigoj, Sasa Dev, Emil Navinsek, Maks Strenar and Edvard Ravnikar. The latter, after several years of apprenticeship with Plecnik, continued to expand his knowledge - as many other Slovenian architects did - with Le Corbusier in Paris (1939). He was the architect who most connected the modernist architectural tradition with postwar practice. As professor at the Architectural School of Ljubljana for many years, he influenced not only the development of recent Slovenian architecture but also that of the former Yugoslavia.

If we look closely at the reasons for the devastation of modern architecture, we find that too little attention was paid to the problems affecting it and its survival. It was not promoted enough. We insufficiently influenced the consciousness of those people who should have embraced it as an active cultural value in their lives. We were too attached to older buildings in spite of legislative possibilities of protection. (We can protect any architecture, even that which is only one-year old). In the search for reasons for such a disheartening state of affairs in the modern architectural heritage, or more precisely, such a careless attitude and readiness to sacrifice it, we have come across many. A key one is the fact that the living presence of this type of architecture inspires tendencies towards adapting it to the current needs of tenants and owners. From their point of view, the original functionality and orientation has been transcended and more often than not conflicts with current views on the quality of housing. We can say that its message was insufficiently credible within this framework. Even after their appropriate evaluation as monuments these crucial values were not accepted as essential components of a cultural heritage.

The devastations we mentioned were caused by tenants, company managements and even cultural institions, ministries and government bodies. A typical form of destruction was the inappropriate use of buildings. Usually offices were moved into residential buildings which led to confrontation between two incompatible functional concepts with predictable outcomes. In many cases this is discernible in the destruction of the monument and always in incorrect semantic approaches and inappropriate monument conservation management. This was already happening under the previous regime and, unfortunately, seems to be continuing irrevocably after the recent democratic changes.

All institutes and agencies for preservation of our heritage recently became aware that the most important monuments of modern architecture can be protected by applying the principles and methodology already in use for older historical architectural monuments. Of course, this procedure needs to overcome the obstacles it has laid in its own path by disregarding modern architecture for its lack of 'patina'. In these efforts we are trying to find a base in current legislation. In some cases this has turned out to be possible without any particular problems (for example the comprehensive conservation of Plecnik's buildings - although only after a large-scale exhibition - and some individual buildings from the Viennese Secession and Early Modernism). But until the passing of a law unequivocally protecting the quality of modern architectural monuments, we have to test the efficiency of existing legislation on those postwar architectural works in most urgent need of conservation.

Some years ago, the Slovenian Institute for Conservation of the Natural and Cultural Heritage undertook as one of its most pressing tasks the preparation of a register of modern architectural monuments. It is now in accordance with the professional and scientific discourse and efforts of DOCOMOMO. Entry in the National Register, supported by the Slovenian DOCOMOMO working group, is conditioned by the requirement to fulfil precisely specified principles of professional evaluation. This should at the same time work as a preventive measure to help the heritage preservation agency in its implementation of different acts and measures for the renovation and conservation of modern architectural monuments. Professionally effective and systematic conservation within the existing legislation will be achieved by proclaiming monuments with official acts adopted by municipal and republic assemblies. The basis must be professionally developed, complex and argumented proposals made by regional institutes for the preservation of the heritage. Only in this way will the Slovenian monumental heritage of modern architecture be equated with other historical and cultural monuments. Its specific message, validated by thorough and comprehensive multi-disciplinary evaluation, is one of the most important and distinctive examples of current functionalist persistence.

A study of the problems surrounding the conservation of modern Slovenian architecture and the relevant documentation has been under preparation at the Institute for some time. It is expected to be concluded in 1995. It should however, be possible to present some of the most important results at the next DOCOMOMO International Conference.

Notes

[1] Mentioned in *Sinteza*, Ljubljana, 1990-1991, 87-90,pp. 193-195.

Subic House, V. Subic, Ljubljana, 1929.

Gilles Barbey
Michel Clivaz

ARCHITECTS LAUSANNE

A Possible Selection of Criteria for Safeguarding the 20th-Century Built Heritage

Introduction

The effort made for the last thirty years to inventory buildings, monuments and historical complexes throughout the countries of Western Europe, by the 80s succeeded in constituting a body of work published from time to time in instalment form and as an atlas. In the 70s it was decided to enlarge the selection of historical objects to the assembly of constructed heritage and include industrial architecture and works of art. The interest in buildings of the industrial era has been extended to all architectural production of the 20th century. Moreover, the attention formerly paid to individual objects has now been brought to entire constructed ensembles and to the context of their acceptance.
In Switzerland, the majority of the Cantons decided to extend the limits of the architectural inventory to after World War II putting the emphasis on the built up areas rather than on rural zones or the outskirts of cities where obviously the majority of the 20th-century buildings are situated. Various private inventories like the ISOS (inventory of constructed sites worthy of protection) or the INSA (inventory of architecture from 1850 to 1920) help to complete the official census. However there continues to be an area of uncertainty in terms of the whole country and more recently of individual buildings. The architectural inventories of the Cantons are normally accompanied by a rating of the relative value of the buildings on a scale from one to seven: buildings in category one are of national importance, those in category two of regional importance and those in category three of local importance. Such a differentiation leads to different degrees of protection measures. Only the buildings in categories one and two can be classified as historical monuments; other buildings are simply listed in the inventory. The works ranked from four to seven do not benefit from any protection.
These measures do not deal with the uncertainty about protection applied to 20th-century constructions, which have not yet been inventoried exhaustively. There is no overall view of this heritage. Although everyone agrees about the necessity to assure a representative selection and an example of each category, it is much more difficult to obtain a consensus on the choice of the building. We found it useful to take DOCOMOMO's efforts which deal with documentation on and protection of works exclusively of the Modern Movement and by extending it, include all buildings constructed in the 20th century and thereby offer to those involved in the preservation of monuments a means of selecting those buildings which deserve to be safeguarded as contemporary constructed heritage.

Definition of the targeted problem area

An inventory of classified and protected objects is merely a first step. It is necessary to obtain a permanent means of identifying buildings and assigning them priorities for safeguarding as a means of comparing the relative value of buildings of the same type. This information has only partially been provided by the architectural inventory and complementary work. It is therefore urgent to establish a grid for ranking works which should have priority in being protected. François Loyers' recommendations from the beginning of the 90s for criteria for cataloguing contemporary architecture are unarguable in that they propose assigning priority to the three following classes of buildings: constructions with an innovative or experimental character; constructions which are representative of a major type; and works which reproduce a range of local variations. However, these recommendations are not enough to make a true selection. There is still the need for a ranking of inventoried buildings.
As far as attributable values are concerned, one must first refer to the work of Alois Riegl who distinguished between values of age and those of present interest and then refined the respective categories of values. Although the value of age is hardly pertinent for inventorying the contemporary constructed heritage, that of present interest or of contemporaneity certainly is. It seems possible to us to recognize four subcategories of values linked to the present interest of contemporary architecture which are:
a. the physical state of conservation (or deterioration) of the building;
b. the use or services rendered by the building;
c. the building must be unique and readily identifiable as belonging to a highly representative class;
d. the potential cost of restoration.

Proposed methodology

In considering a ranking grid for the selection of works, one aims at measuring the difference which separates each building from the average in terms of physical condition (a) and use (b) of the building, on the one hand and the value as a type or an example (c) to obtain the value of restoration (d). This relative simplification allows for a critical and coherent appreciation of buildings inventoried according to the five following categories:
1. isolated buildings;
2. homogeneous ensembles;
3. heterogeneous series;
4. exterior or landscape arrangements;
5. urban real estate.

The resultant grid was tested on a selection of work located in Canton de Vaud, Switzerland and constructed between 1920 and 1994.

Ranking Grid

A. Work
A-1. Code
A-2. Description
A-3. Architect
A-4. Place
B. Obsolescence values
B-1. Value of physical condition
B-2. Value of use
B-3. Average of values of physical condition and use
C. Restoration value
C-1. Value as example
C-2. Restoration value
1. Villa Karma 1906-1916
2. Clinic-factory, 1913/1928
3. Small house, 1924
4. Nyon great hall, 1930
5. Vevey-Corseaux beach, 1930
6. Kenwin house, 1930-1931
7. Ancient community centre, 1932
8. St. Martin catholic church, 1932
9. 'Le Rialto' residential building, 1931-1935
10. House-painter's studio I & V de Grandi, 1932
11. 'Les Bouleaux' apartment building, 1933 (plans)
12. House, 1933-1936
A. Value of physical condition
B. Value of use
A. Value of physical condition
B. Value of use
A. Average values of physical condition and use
B. Value as example
A. Average values of physical condition and use
B. Value as example
A. Restoration value
B. Average values of physical state and use
C. Value as example
D. Restoration value

A critical analysis of the results

An examination of the results of applying the grid to a dozen buildings selected as worthy of protection shows its effectiveness in evaluating safeguarding priority, which we have called the restoration value. This value is obtained by measuring the difference between the value of type, on the one hand, and the average value of its physical condition and use, on the other. When this difference is equal or superior to the value of one, it is a sign that priority should be given to safeguard the corresponding object. The grid, then, offers a means for ranking in which accuracy will depend on the degree of exactness of the judgment pronounced by experts on the objects considered. Only a homogeneous and precise weighting of values will lead to a satisfactory ranking of buildings to which priority should be given for safeguarding.

Although evaluation of physical condition and use is always a delicate matter, the results obtained by the application of the grid to a selection of objects are encouraging in that they give a clear idea of degree of priority for restoration which should be given to each building. In the case of uncertainty about the values we used, it is always possible to refine them by adopting more detailed criteria. For example, deciding on the value of the physical condition may entail the use of very different diagnostic techniques for the structure, the exterior and the facilities.

Concerning the use of comparison between works of the same importance and value, weighting the values of exemplary character and restoration allows one to decide on priorities.

Conclusion

This means of defining a work in terms of safeguarding priority is viable but still needs to be perfected. It is only of interest if the database corresponds to a selection of our architectural heritage which is extensive enough to allow for data processing. It should be noted that the database must be continually updated because values are constanly being readjusted.

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The Modern Movement in Leningrad: Problems of the Register

When revealing the heritage of modern-movement architecture in Leningrad (St. Petersburg), the question arises about criteria of choice, about what indications are paramount, and also about modern-movement chronological limits and conformity to local conditions. As has been clearly summarized by the Chairman of DOCOMOMO, Hubert-Jan Henket, it was ascertained that the situation in every country is specific and that the period of modern-movement architecture can vary between wide limits. But for all that, the following three groups of indications are essential: social, technical and/or aesthetic.' Undoubtedly, the latter three criteria encompass the complete extent to which buildings, sites and neighbourhoods belong to the Modern Movement. But in real construction practice these three aspects very often differ and sometimes even contradict each other. The novelty of compositional decision can unite with both socially new and conservative functions. And, by contrast, modern social content may be enveloped in traditional form. It has been shown that many innovative constructions from the artistic point of view were built using old techniques and old materials, and sometimes using primitive construction methods. Conversely, technical innovations and original building structures were masked by historical styles or outwardly monumental appearances.

What group of indications can be considered paramount? We believe the aesthetic one, that is, belonging to categories of form and style. At best it is modern form which synthesizes the novelty of functional, constructive and artistic bases. But even when these bases differ and construction is socially conservative, there are technical grounds for its inclusion in the Modern Movement. On the other hand, the most innovatory functional and constructive structure, hidden in traditional form, need not be considered as inevitably belonging to modern-movement architecture.

However, the question now arises as to what new and modern aesthetic forms belong to the Modern Movement. The fact is that architecture, in principle, is always 'modern', in the sense of objectively expressed ideas and all-round needs of its time. This postulate is true no matter what language architecture speaks and regardless of innovative or historical forms of 'clear' style or eclecticism. It results from this that a certain spectrum of avant-garde stylistic trends is consistent with the Modern Movement. In Russian (Soviet) architecture this was first of all Constructivism (functional method), Rationalism and Suprematism. These trends, which differ considerably as to methodology, are integrated into an overall style. Varying in theoretical aims and creative programmes, they interacted and became entangled in real practice. Meanwhile, in Leningrad architecture of the 20s and 30s was greatly influenced by neo-classical reminiscences.

We are inclined to think of the Modern Movement as a concrete historical phenomenon, connected with a specific style of this time and its chronological limits must not be extended to infinity for it is a stage of modern architecture, localized in time. The innovative achievements of Historicism, Art Nouveau and Neoclassicism belong precisely to these periods but not to the Modern Movement. On the other hand, at the stage when the avant-garde became transformed into the International Style it must be considered as a secondary phase of the Modern Movement.

The history of modern architecture in Russia has a broken, uneven character. The periods of search for the new and of return to retrostyles alternated clearly, although avant-garde movements, which came to prominence in the mid 20s, confidently took the initiative. However, the development cycle of the Modern Movement in the USSR was interrupted violently in less than ten years. During Stalin's totalitarian regime it was completely forced out by monumental-decorative Neoclassicism, which prevailed until the 50s, so that in its pure form the Modern Movement in the USSR lasted for a relatively short period.

The revival of funcionalist principles in the 60s was clearly secondary, somewhat artificial and behind the times, which is why the architecture of that period must be regarded not as the organic continuation of the Modern Movement but rather as analogous to other returning phenomena, such as the Neomodern Movement (Neofuncionalism, Neomodernism).

Transferring these general statements specifically to Leningrad (St. Petersburg) , we built up the following picture: the first major symptoms of the Modern Movement in St. Petersburg date back to the beginning of the 20th century. At this time industrial warehouse and commercial buildings with reinforced ferro-concrete carcasses appeared. In the housing sphere, living quarters were built, which became the forerunners of future experiments by Soviet architects in the social field. Outstanding among pre-revolutionary objects of this kind are the General Supply Stores of the Guards Economic Society (1908-1909, E.F. Virrich, N.V. Vasiliev and others); New Passage (1912, N.V. Vasiliev), in which the monolithic ferro-concrete carcass is laid bare; and the Gavansky Gorodok housing

complex for workers (1904-1906, N.V. Dmitriev, V.A. Fedorov), where free standing buildings with small, well-managed flats are completed by establishments alluding to the life of a people. However, chronologically and stylistically these buildings belong to Art Nouveau. They were not reflections of a wide movement, but embodied the most radical rationalistic or democratic tendencies of Art Nouveau, to the extent that they can be regarded as sprouts of Protofuncionalism.

The second decade of this century in St. Petersburg-Petrograd was marked by a boisterous flourishing of Neoclassicism and other traditionalist movements. The artistic beauty of old, classical St. Petersburg, newly seen and appraised during the 'silver century' of Russian culture, commandingly subdued tastes. Neoclassicism became a kind of 'St. Petersburg Renaissance', oriented towards the continuation of the city's own architectural traditions of the 18th and early 19th centuries.

The Revolution of 1917, which marked such a drastic change in the fortunes of the country, did not interrupt the consistent cycle of neoclassicist development in the city, which lasted up to 1925. Attachment to Retrospectivism took firm root in the professional conscience of local architects. Indeed it became the profound peculiarity of the St. Petersburg-Leningrad mentality. Petrograd Neoclassicism at the turn of the second and third decades of this century absorbed moods of revolutionary Romanticism and was distinguished by ponderous figurative symbology. The Revolution brought to life new types of buildings, sites and neighbourhoods: small villages and housing blocks with services for workers, house-communes, wholesale kitchens and restaurants, houses of culture for workers, district council buildings, experimental schools, and so on. Social criteria for the assessment of building in those years are of paramount significance, but while the social contents of architecture changed, its language remained as before: modernized Neoclassicism, symbolic Neoromanticism. Thus the first housing blocks for workers were built in the mid 20s in the traditional style: Palevsky (A.I. Zazersky, N.F. Rybin), the Weavers (D.P. Buyshkin, L.M. Tverskoy) and Kusnechny market (S.O. Ovsiannoikov, A.S. Pronin). In spite of their functional or constructive novelty, they cannot be included in the Modern Movement.

In the second half of the 20s, the Leningrad school embarked on the road of innovation under the influence chiefly of German Modernism and the Moscow avant-garde, although few Leningrad architects followed the line of orthodox Constructivism (Functionalism). This school was distinguished first of all by increased attention to the problems of artistic form. Not surprisingly, Suprematism was clearly revealed here (form-making experiments by K.S. Malevich, projects and buildings by A.S. Nikolsky, L.M. Khidekel, graphic compositions by Ja.G. Chernikhov). The methods of Suprematism were aimed not at the organization of functional-constructive areas, but at working out self-assessable aesthetic systems.

The tendency towards plastic expressiveness gave nuances of Expressionism to the new Leningrad architecture. This feature was strengthened especially by the erection in Leningrad of the Red Flag Factory (begun in 1926), on the basis of a project by E. Mendelsohn. The influence of expressionistic ideas and the direct legacy of Mendelsohn were revealed especially in the works of N.A. Trotsky. The revolutionary symbolism trend had not died out. Thus,

Club "Krashy Putilovets". A.S. Nikolsky, 1925-1926. St. Petersburg.

the school named after the tenth anniversary of the October Revolution (1925-1927, A.S. Nikolsky) has a functionally zoned plan subordinated to the figure of the hammer and sickle. Neoclassical allusions remained until the end of the 20s and re-emerged after 1932. These are regional peculiarities of Leningrad architecture between 1925-1935.

Meanwhile, it had acquired a sufficiently solid core by responding to modern-movement criteria in the wide circle of buildings and complexes by A.S. Nikolsky and his creative studio; by G.A. Simonov, A.I. Gegello, N.A. Trotsky, Ja.G. Chernikhov, D.L. Krichecksy, A.A. Ol', L.V. Rudnev, N.A. Mituritch, E.A. Levinson, I.I. Fomin and others; and also by A.K. Barutchev, I.A. Gilter, I.A. Meerson and Ja. O. Rubantchic, who worked together. We shall abstain from enumerations of their works, which deserve inclusion in the Register. Besides, many of them are mentioned in the report by B. Kirikov at the First International Conference of DOCOMOMO. This group of buildngs convincingly expresses both the social and aesthetic qualities of the Modern Movement although it conforms to technical criteria to a lesser extent.

Active construction began in Leningrad in 1925, when the restoration period ended after the postwar years of collapse, but it remained at a very low level. This led to the use of old materials and artisan technologies which were in requisition, thus preventing the realization of many original project ideas, which were watered down and simplified. Metallic beams and ferro-concrete constructions, necessary for new types of buildings, were often replaced by timber beams of tram rails.

Such is the case of the construction of the Red Flag Factory. They had to build workshops in the form of silhouette ventilated pits, while the carcass structures of the production buildings were replaced by tram rails. This may be one of the reasons why the author, E. Mendelsohn, withdrew from supervising the construction of the factory.

The Palace of Culture named after Gorky (1925-1927, E.E. Gegello, D.L. Krichevsky) was built from brick and pine beams, taken from demolished houses. The use of old brick proved fatal for two shining examples of modern-movement bath-houses, created in 1927-1930 by the brigade of A.S. Nikolsky. The influence of the wet microclimate led to destructive changes in the wall's brickwork.

The low quality of construction work limited the scope of architects. It was difficult to introduce large glass surfaces. The motif of uninterrupted horizontal windows, characteristic of Constructivism, was often imitated by dark-coloured piers between windows, which created the illusion of continuous horizontality.

The experience of the Krestovsky housing block project (1931-1936, S.V. Dmitrievsky, V.A. Latynyn, N.N. Nosov) provides the other side of the coin. Here the experimental technology of cheap and quick construction by industrial methods was suggested; an easy-to-assemble concrete carcass, consisting of standard elements, bonded by thin ferro-concrete. One of the buildings, named Tahyteclon (1932, I.V. Yangin) is affixed to movable tubes. But technological novelty is combined in this block with the discomfort of soul-destroying monotony and primitive architectural design. It must be noted that low levels of aesthetics and comfort were inherent to many housing complexes from those years. Indeed, the first house-commune in Leningrad (1929-1930, A.A. Ol' and others) was christened by its tenants the 'tear of socialism'.

Among the buildings created according to the latest technology, we must note four wholesale kitchens and restaurants (1929-1931, Barutchev, Meerson, Gilter, Rubantchik), whose basic structure is a monolithic ferro-concrete carcass. Here a new social function is organically combined with modern construction and with the stylistic cleanliness of dynamic constructivist forms.

As the synthesis of different modern-movement features (social, technical, aesthetic) these constructions are true models, although their authorship cannot be attributed to constructivist leaders. This example is significant by virtue of the fact that the best works were certainly not created by the best masters. In particular, the preserved buildings by famous avant-gardists Nikolsky and Chernikchov do not completely reveal their imaginative and creative potential.

Summing up, we state once more that the Modern Movement in Leningrad passed through a dynamic but brief cycle of development between 1925 and 1935. Already in the early 30s a sharp turn was made towards the classical legacy, sanctioned by party and government leaders. Constructivism did not leave the scene immediately, although it changed at the expense of enrichment and monumentalization of forms.

In spite of consistent social tendencies, functional novelty and the appliance of modern technics in the creation of form, in the long run it was the adherence to innovative trends that determined these and other objects being classed as modern-movement. Priority was given to the form and style, inherent to the Leningrad school, in detriment to functional methods. Nonetheless, we must not regard this aspect as purely negative; on the contrary, it enriched along its own lines the common world picture of modern-movement architecture.

In conclusion, we must mention separately the reflection of the Modern Movement in the mirror of Soviet architecture after 1950. In the mid 50s, after two years of predominance of the Stalinist empire style, a very important change took place in Soviet architecture. This turning point clearly presented itself in the words of the party-governmental resolutions "to eliminate excess in design and building" and "introduce futher industrialization, improve quality and reduce construction costs". The rejection of empire monumentalism and external decoration was based on priority being given to social services. In response to the

pressing need for housing. "For every family a private apartment" became the popular motto of the time and a type of industrial building which maximized standardization of elements was developed. Typification also spread to the design of public buildings. The architectural ideology of the time was concerned with economy, technology and utilitarianism, and the concept of architecture as an art became optional or even undesirable. Under conditions of state monopoly, these principles turned into offically confirmed requirements to which there was no alternative. In this atmosphere of sharp reappraisal of values, Soviet architects turned to the legacy of the Modern Movement. Now a new slogan was coined: "Forward to the 20s" (to be exact "forward" from recent traditionalism to new innovations). The main sources of the new forms were Soviet Constructivism and European Functionalism and, later, modern foreign architecture. Quite often direct quotations from these styles were made. Thus, Le Corbusier's Villa Savoye became the model for standard trade building in Leningrad and for Lenin's memorial in Ulianovsk. Glass prisms à la Mies van der Rohe were erected everywhere.

In spite of a sincere aspiration to renovate and develop the methods and ideas of the Modern Movement, architecture from the late 50s through to the 70s remained nothing but a repetition of what had already been established (albeit of a lower standard). It was not a natural, organic continuation of the avant garde. Though the representatives of the 'old guard', Khidekel, Barutchev, Leninson and Fomin, continued to work in Leningrad, theirs was a retrospective return to an interrupted tradition which could be termed Neoconstructivism or Neofunctionalism. Following particular stereotypes, innumerable repetitions of certain methods meant that even the discoveries of the Modern Movement were reduced to profanation, especially in the case of mass housing. Industrial methods became the deciding factor on the aesthetics of an architecture which now found itself trapped by primitive technology. However, the Modern Movement remained the formative core of building activity. Its potential has by no means been exhausted; instead, diverse facets of it are continually being uncovered, adding to the complex mosaic of Russian architecture's pursuit of pluralism, which continues today.

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Chronological and Stylistic Criteria for the Modern-Movement Register

The question regarding which buildings should be selected for the register encompasses the problem of style in the broad sense and the issue of local identity. For some countries (The Netherlands and Russia as well as Latvia) this question is more or less resolved, but in the majority of cases general considerations of style and its chronological limits are still very open. There is no system of values which can supersede rules of each style; each period has always had its own style with its own formal language. For a specialist, there are usually no difficulties in recognizing the time of construction of any modern-movement building merely from its external appearance with an error margin of three to five years.

The period of the principal development of the Modern Movement is the late 20s and 30s (although some outstanding monuments appeared earlier). In a great number of countries the movement flourished also after World War II. As with every style, the Modern Movement has distinct roots in history, especially in Art Nouveau. The latter was the first style of the contemporary system. Its essence lies in the artistic expression of the utilitarian substance of buildings, that is, functional solutions, corresponding spatial layouts, appropriately used building materials and structure. There is no fixed prescription on how to embody this idea in the architecture of buildings. Thus, Art Nouveau comprises a great variety of formal language expressions.

In Riga, for instance, which can justifiably be regarded as an art-nouveau metropolis, rationalistic trends prevail. Most importantly, a number of the art-nouveau buildings already visibly anticipate the formal modern-movement vocabulary of the 20s and 30s. Characteristic examples are also found in Scandinavia, Austria (works by J. Hoffmann and A. Loos), Hungary (B. Lajta), Germany (W. Gropius), Scotland (Ch.R. Macintosh), France (H. Sauvage, G. Chedanne), as well as in Latvia (A. Schmaeling). Such objects can be deemed to be pre-stylistic examples, both as roots of the Modern Movement and as proof of historical continuity.

From the point of view of internationally approved 'canonical' vocabulary (cubistic play of volumes, ribbon fenestration, vertical intersections, rounded balconies or bay windows) the Modern Movement emerged approximately in the mid 20s - the time generally considered to be the beginning of this specific style. In Latvia the first 'cannonical' building appeared in 1926 (the trading house and apartment block at Marijas 8 in Riga, T. Hermanovskis).

In 1927-1930 a number of municipal apartment blocks, trade office buildings and banks followed in Riga and sanatoriums in Ogre and Tervete. However, the Soviet

Latvian Stock Bank, A. Karr, K. Betge, Riga, 1931.

occupation in 1940, followed by Hitler's invasion, completely interrupted all construction activities. The postwar (again Soviet) period introduced strictly ordered retrospective 'socialistic realism', which terminated only in the late 50s.

From the very beginning the development of modern-movement architecture in Latvia was accompanied by extensive discussions about stylistic and national identity problems. In actual practice, various retrospective trends, Art Deco, the search for a 'pure' national syle and Neoeclecticism (an 'official' style, based on the interpretation of the classical language) developed simultaneously. At least ten different methods on how to attain a national style were formulated.

Nevertheless, modernism remained as the leading style in Latvian architecture, although at the same time it was influenced by other stylistic trends. A number of 'ordinary' buildings were constructed following designs of both architects and civil engineers. They differed from the internationally 'canonical' examples due to the vocabulary used, adjusted different stylistic ideas, and reflected domestic traditions. Typical features, characterizing mass-scale modern-movement construction in Latvia, are syntheses of various materials in finishes (yellow and red brick, plaster, timber), rather steep roofs (thus responding better to the local climate) and accentuated cornices. Sometimes such architectural elements as gables, bay windows and pilasters were used to fit the building in the environmental context. Among the best monuments of the Latvian Modern Movement is also the Brethern Memorial Cemetery complex in Riga (1924-1936, arch. P. Feders, sculptor K. Zald). It is a true national shrine.

The aim of the Modern-Movement Register is both to make an inventory of the most valuable monuments and - as far as possible - to achieve a complete survey of a country's architecture of a fixed period and fixed style in its entire diversity. Therefore, the most characteristic buildings of a wide typological range must be selected to embrace the whole period. The term 'canonical' can be mainly assigned to monuments, whose architecture is nearer to the international archetypes, whilst 'ordinary' should be applied to examples in the local architectural language and following traditional expression.

The universal nature of modern-movement architecture - both from the point of view of its abstract spatial categories and local cultural identity - can be considered as its general asset. This is relevant not only for Latvia, but for every country.

Sanatorium, A. Klinklavs, A. Kalnins, Tervete, 1930-1934.

Klára Kubicková

HISTORIAN AND CRITIC OF ARCHITECTURE AND ART.
CHAIRWOMAN OF DOCOMOMO SLOVAKIA

The Development of the Modern Movement in Slovakia and its Chronological Relationships

Two years ago we decided that each working group determine its time schedule according to its own national register and with respect to a cultural-historical frame. Our selection was made by an eight member team of architects and art historians and it is the of many discussions and opinions expressed.
We have decided to present a selection of our Modern Movement from 1924 to 1947, that is in an interval which is wider than that presented in the work of Vittorio Magnano Lampugnani (1925-1941).
When studying the origins of the Modern Movement in Slovakia it is inevitable to take into account wider cultural historical relations and we can see that this phenomenon constitutes a very interesting chapter.
Slovakia was one of the subsequent states of the Austro-Hungarian monarchy. Some aspects of the national, economic and spiritual life of the young state Czechoslovakia were missing. One thing that can be positively confirmed is that the existing but slowly disappearing wave of pseudohistorism and Art Nouveau resembled the former monarchy so much that a resistance against it accelerated the tendency towards a new architectural style which soon became an official 'state' style.
This new style played a dominant role in the whole history of Czechoslovakia. In the 20s the first wave of Czech architects implanted Rondocubism into Bratislava but it was just a temporary episode in the creative work of some authors (Klement Silinger - Anatomical Institutes of the Faculty of Medicine in Bratislava, 1925). Carpathian Ukraine belonged to Czechoslovakia and from that period we know of one interesting project: the healthcare house in Uzghorod from 1922, designed by Jaroslav Fragner (mentioned in the first. volume of *Bauhausbücher - Internationale Architektur).*
From the second half of the 20s until World War II, we can speak about the quantitative and qualitative expansion of architecture reflecting the Modern Movement and about the first generation of modernist architects in Slovakia. Its members were both Czechs and Slovaks. Some Czech architects came from Bohemia and settled in Slovakia, while others were living in Bohemia and carried out their projects for Slovakia on a competitive basis. This strong generation wave included also German, Hungarian and Jewish architects living in Slovakia. They were educated in Prague, Brno, Wien, Budapest, Germany and Switzerland. The only exception is the architect Vladimir Karfik, who studied in Le Corbusier's studio and who worked also with F.L. Wright. This unique international community had good personal contacts with the rest of Europe.
Unfortunately, many people of this community died or had to stop their work because of the political persecutions of World War II and the postwar period. After the war there came a new generation of Slovak architects, and the international mixture practically disappeared.
The enthusiasm and hard work of the first generation of the Modern Movement was really great, but until now we have not archived and identified their creative work. DOCOMOMO enables us to present this architecture on the international forum - it is a paradox that in the presentation of the architecture produced between the wars in former Czechoslovakia, Slovak architecture was absent. Even the last exhibition organized by The National Gallery in Prague for Valencia, Spain - "The Art of the Avant-garde in Czechoslovakia, 1918-1938" - suffered from the same misrepresentation.
Bratislava has been the capital of Slovakia since 1918 and it is the main centre of modern architecture. Circumstances after 1918 underlined the fact that it was necessary to meet the demands of a new state - in all areas. In our presentation we set out to cover the wide spectrum of functions - we present one top work from each type - in order to map the pattern of life between the two wars in Bratislava, exactly following the principles of the Modern Movement. We present a bank, supermarket, university, campus, all dwelling forms - from a small family house to a multifunctional house and a residence - hospitals, a rowing club, and the seat of architects and artists. At that time Bratislava did not yet have its own school for architects.
Another important part of our presentation represents the constructions outside Bratislava, the most important of which are large-scale healthcare facilities financed from the state or insurance companies' budgets. The choice of a project was always the result of competition. All the positive aspects of a Modern Movement appeared in these constructions. Some of them were built in the mountain areas (High Tatras, Váh Valley), a fact which their technological and mass solution had to respect. All these buildings are still in operation and they fully meet today's demands (Vyné Hágy, Sliaç, Trenčianske Teplice).
The second centre of modern architecture was a small trade centre in northern Slovakia, Žilina, where all architectural problems of the period were also solved.
The selected works represent just 'visiting-cards' of the top authors and do not offer the complex picture of the quality and scale of their works. Based on a competition is the project by Peter Behrens: his

famous synagogue was erected in 1928. Behren's student Ferdinand Čapka from Žilina designed the market in his home town (1940-1942). Here in Žilina also worked M.M. Scheer (today a ninety-two year-old architect). Apart from a project of the cooperative family houses (community Svojdomov - project 1927, construction 1928-1932) he designed many multifunctional houses, schools, shops and the administrative building for the town's financial institutions.

The engineering works constitute another important chapter in our presentation. Their architectural qualities are truly impressive and I feel that no one would doubt that they deserve to be included in the list of protected buildings, because they fully reflect the spirit of the Modern Movement. The problem is that many of them were later rebuilt for functional reasons, which is why the Bellu's mill in Trnava (1936), for example, was not included in the Register. At the time of its construction it was one of the most published works; today, however, it has additions which change its external appearance and proportions. The function of the other engineering constructions cannot change, that is why they are conserved and maintained - the unique colonnade bridge by Emil Bellus in Piestany (1930-1932) and the water reservoir in Trnava.

The selection of objects reflects the peak period of the Modern Movement in Slovakia. There is one interesting difference between the evolution of Modernism in Slovakia and in the other states of Europe during the war period. Slovakia was an independent state, and, unlike in other states, the development of modern architecture was not interrupted, only decelerated. Some constructions were finished after the war (the Trnava water reservoir, the Sliač spa), which is why 1947 represents the end of this period.

Some of the buildings which reflect the functionalist spirit and were constructed after the war (1945-1949) have another character, the work of the second generation of Slovak architects (Štefanec, Kramár, Lukačevič, Bellus, etc.) This period was definitively interrupted or better said halted 1949 by the political interferences of "Force Majeure".

Remarks on the Register content:

1. Due to the isolation of Eastern European states, I have not found significant information on the publishing of their buildings in international literature. It is necessary to stress and present the real qualities of this architecture.
2. In registers I find it necessary to take care of authors-architects, to present their biographical data, and training and study in famous studios. After final processing an interesting pattern of their movements, influences and activities can emerge.
3. At the inauguration of the exhibition "Europe, Europe" in May in Bonn, Mr. Brockhaus proclaimed that there is a need to rewrite the art history of the 20th century. I think that DOCOMOMO is trying to do the same for architecture.

District Social Insurance Office, A. Balán, J. Grossmann, Bratislava, 1937-1939.

France Vanlaethem

PRESIDENT DOCOMOMO QUÉBEC

The Architecture of Modernity in Québec: Modern Movement or International Style?

During the conversations about inventories of the architecture of the Modern Movement at the last DOCOMOMO international conference at Dessau, two subjects have been the object of lively discussions: The definition of the period and the specificity of European architectural modernity versus its American counterpart.
In this brief paper, I propose to examine these issues. I plan to approach architectural modernity from two angles, theoretical and historical. The concepts I will introduce in order to explore its advent and affirmation will be applied to the context of a particular region, Québec. I will discuss only the most significant examples, those which were documented in the first group of fiches submitted to the international DOCOMOMO register by DOCOMOMO Québec. This narrative, which will allow us to underline certain of the most significant events in the development of architectural modernity in Québec, will certainly be schematic: it will center on Montréal, giving nonetheless a regional perspective with the presentation of some buildings and ensembles constructed notably in Québec city.
To conclude, I will explore the validity of the ideas of the Modern Movement and International Style in order to report on the development of modern architecture in Québec in particular, not to say in Canada or in North America. By taking up these questions on a larger continental scale, I am hoping that this paper will give rise to discussion.

Modernization, Modernity and Modernism

First of all, a problem of methodology must be resolved. It seems to me that before getting involved in the study of the history of modern architecture, one must equip oneself with the proper intellectual tools and establish a framework where the concepts of modernization, modernity and modernism complement each other to grasp the radical changes which Western society has experienced since the mid-eighteenth century.
We must note that this theoretical triad had a great success in Québec in the 1980s with researchers in cultural and art history. Many of my colleagues who have studied the advent of cultural modernity, be it learned or popular, concentrating on the first breakthrough in practices and dominant ideas and seeking to reverse the common belief that modernity arrived not only late but also suddenly, after World War II.

The concepts of social modernization, of cultural modernity and modernism are all linked together. The first refers to different social processes which are correlative to industrialization, such as the mobilization of populations, the social differentiation and the secularization of institutions. The second, modernity, defines the idealogical aspects of the phenomena, an ideology where the rejection of tradition is accompanied by a fervent belief in progress and a pretension to rationality. The third, modernism, recognizes a new form of artistic practice, a practice, which, according to the definition introduced by the American art critic Clement Greenberg, uses the methods inherent to the discipline to criticize that same discipline. In architecture, this concept is valid in order to understand the formal strategies of modernist architects. The work on specific materials is work on space and/or construction.
In the case of Québec in particular and of Canada in general, this preliminary theory seems to me all the more necessary since the architectural press, which is the most immediately accessible documentation, is poor. Very few magazines have been published in the field of architecture and a large part of the significant constructions have never been recognized. The collective memory is proportionally weaker in that modern architecture in Québec, as elsewhere, has been denigrated since the 1970s. Its rediscovery could profit from, on the one hand, of a good knowledge of social development in order to identify the important producers and, on the other hand, of a good knowledge of the architectural community, the most innovative protagonists and institutions that have defended the values of modernity. The interchange among architects which took place immediately following the war is a priceless source of information and exploring the archives of architects' studios, when they exist, is a necessary task.

The Québec case

The modernization of Canadian society in general and Québec in particular was relatively late in coming. It began when, on an international level, capitalist expansion was in its second phase of development. It followed the creation of the Canadian Confederation in 1867 and was financed at first by British investment and then later by American. Industrialized production began only in the second half of the nineteenth century, triggering a progressive urbanization of the population. By 1915, the province of Québec was largely urban and Montréal was the major city of Canada, where the great Canadian bourgeoisie lived and where the financial power and services which supported the economy from east to west was concentrated. In Canada as in Québec, architecture which borrowed its vocabulary if not its syntax from history prevailed until the 1920s when it finally began to be questioned.

The first breakthrough

So, in 1918 in the pages of a little multidisciplinary artistic magazine, *Le Nigog*, published by a small

group of artists and writers who called themselves the "Back to Europe clan", the debate on architectural modernity was begun. It's editor, architect Fernand Prefontaine (1888-1949) vigorously condemned pastiche and overabundant ornamentation, defending rationality but identifying, nevertheless, always, as an ideal model, the old stone houses of the French regime. The engineer Paul LeCointe, went farthest when he praised machines and the work of engineers for their simplicity and their functional logic.

This displacement of the architectural corpus of reference, was an important breakthrough: it constitutes a step forward in the affirmation of the necessary rationality of architectural forms which must be elaborated not only in reference to historic precedents, but in relation to the logic of building, to the positive demands of technique and use.

The debate continued in the 1920s when a notary in the city of Québec, Gérard Morriset, a fan of architecture practicing illegally, extolled the ideas of Viollet-le-Duc in a series of articles published between 1926 and 1929 in *L'Almanach de l'Action catholique sociale*. He also rejected pastiche, advocating modern architecture, a logical and sincere architecture which used new materials.

At that time, the first echoes of the European debate appeared in the trade journals. In November 1929, the *Journal of the Royal Architectural Institute of Canada* published the English translation of Le Corbusier's *Vers un architecture* and the following year, it presented Bruno Taut's book *Modern Architecture*. Philip J. Turner, a Montréal architect connected to McGill University, reviewed it. The acceptance was mitigated: modern architecture, naked and unadorned, lacked humanity, it was a European reality.

In the pages of this magazine, the debate on modernity was carried out, in the beginning, by foreigners: lectures or articles by architects such as Erich Mendelsohn ("Modern Movement in Architecture", December 1930) and Jacques Carlu were re-published.

By mid decade, the debate intensified. In 1935, a Montréal architect, Emile Venne, professor at the traditionalist École des beaux-arts in Montréal stated like Le Corbusier that "a new era has arrived, a new ideal exists." But to be modern, according to him, one had to do creative work, not only refusing to repeat forms created in past centuries, but also those created by European modernists. For him the challenge was always the creation of a Canadian architecture.

The first examples of an architectural modernity constructed in Québec also date from this period.

The first examples

The first modernist buildings were built in the mid thirties as the country slowly came out of economic recession. They were modest examples of domestic housing constructed in the attractive neighbourhoods of Montréal or in the capital, Québec, by architects who had spent time in Europe or who had come from there, such as Robert Blatter (1899).

An architect of Swiss origin, Blatter studied at the Technical School in Berne after the First World War and at the School of Arts and Technology in Zurich from 1918 to 1921. Before immigrating to Quebec, he worked in Paris in Maxime Roisin's studio. In 1929, he built the Bélanger house in Québec (now demolished), the first of a dozen residences which he constructed throughout the 1940s. We should also note the Bourdon residence erected in 1934 (now demolished) and the Kerhulu residence in Sillery designed in 1939 and constructed in 1945.

In Montréal, and more precisely in Outremont, in 1936, Marcel Parizeau (1898-1945) built the double house of the Jarry brothers, designed in 1935, and the Beaudry-Leman residence finished in 1937. Parizeau is a central figure in the advent of architectural modernity in Québec.

Returning from Paris in 1933, he was able to construct half a dozen houses for the French Canadian bourgeoisie in Outremont and its surroundings. He was very influential as a professor at the École du meuble as well as an active member of the professional organization and a staunch defender of rationalization of architecture and of urban planning. About his friendships and who he had admired during his long stay in Europe (1925-1933) little is known in the present state of research. According to Father Marie-Alain Couturier, the Dominican priest who played an important role in the renewal of religious architecture in France just after the World War II and who wrote a small book on Parizeau, his friend Parizeau - with whom he spent a great deal of time with while in exile in North America during the war - was a follower of Tony Garnier and Auguste Perret and, though very different in their way of thinking (to put it in Couturier's words, p. 15), of Henry Prost and Le Corbusier. Parizeau's collaboration with the construction team for the French Embassy in Ottawa between 1934 and 1939, under the direction of the French architect Eugène Beaudouin offers us another indication of his ideological and artistic affiliations.

Also in Montréal and still in 1936, Ernest Isabell Barott (1884-1966) an American architect who had been living in Montreal since 1912, constructed the Greenshields residence.

In fact, this house, much changed today, was designed in collaboration with the young architect Lorne Marshall (1905-1959). A 1931 graduate of the University of Michigan, this native of Montreal had travelled for almost a year in the Middle East and then in Europe where Dutch architecture in particular impressed him. Barott occupies a unique position in the history of Québec architecture. Among the successful firms at the beginning of the century, his office was one of the few to survive the crash. In the 1930s, he renovated his team by taking on young graduates who were familiar with modern European architecture.

In Québec, not only immigration but above all travel, in the form of periods of study abroad played a major

role in renewing ideas and architectural language. The majority of the most innovative architects of the 30's, 40's and 50's took advantage as students or recent graduates of scholarships which allowed them to travel to Europe, mainly to England and to Northern Europe.

In fact, during the years of crisis, outside of being relatively long periods in which construction was at a standstill, were years of renewed questioning, a shake-up of established truths. In terms of ways of thinking, this was a period which, accepting of course the difference in proportion, was similar to that of World War I in Europe. Thus, the situation in the 1930s, with its crisis in the building industry, its unemployment and its crisis of values, had repercussions in the teaching of architecture.

In Québec city, the architecture section of the École des Beaux-arts was closed in 1937 and in Montréal, the Architecture School of McGill University was at a hair's breath of being closed. In Canada, in general and in Québec in particular certain educational establishments had, in my opinion, a crucial role in the advent of architectural modernity.

At McGill University the last years of the 30s marked the end of an era: the teachers who had consolidated the organization and the content of architectural teaching the Scots, Percy Nobbs (1875-1964) and Ramsay Traquair (1874-1952), reached retirement age. A new generation took over. That was how a native of Montréal, John Bland (born in 1911), a McGill graduate, returning from London, where he had studied urban development at the Architectural Association School and where he had worked for the urban development department of the London County Council, was commissioned to reorganize the teaching of architecture. He totally remodelled the curriculum, on the one hand, by redefining teaching, introducing a practical side directed toward such issues as housing and urban development and on the other hand, by setting up a design workshop inspired by the Bauhaus. His professor, Gordon Webber, had been student of Moholy-Nagy at the New Bauhaus in Chicago. It was the first graduates of this modernized teaching who constructed the first modern buildings after the war, this time, with public rather than private funding. Among them are found a number of members of the most important architect studios which defined the 50's and 60's by contributing to the affirmation of architectural modernity.

The affirmation of architectural modernity

In Canada, at a federal level, the modernization of the State happened earlier than on a provincial level, at least in terms of Québec. In our province, except during the interlude of World War II, when the Liberals were returned to power, the government from the mid 30s to the end of the 50s was ultra-conservative advocating free enterprise and resisting any increase in State intervention (Keynes). Nevertheless, the end of the Great Darkness, as the regime of Maurice Duplessis (1936-1940, 1944-1960) was called, were years of lively political and cultural activity brought about by the vigor of the postwar economy.

It was in a suburb of Montréal that the Canadian Postal Service constructed its offices which are a fine example of postwar architectural modernity in Canada. Commissioned in 1953 to architect Jean Michaud (born in 1919) a graduate of McGill (Bachelor of Architecture, 1945) who had travelled in Europe, working several weeks in Le Corbusier's studio (1947), the building was conceived by his young colleague, Ray Affleck (1922-1989) another McGill graduate (Bachelor of Architecture, 1947) who during his stay in Europe completed his training at the Polytechnic School in Zurich. Although the building's exterior has changed little, it's interior, which was designed by Guy Desbarats (1927), another McGill graduate (B. Arch., 1948) has been greatly altered: the original layout of the neoplasticist lines articulated a spatial continuity in the glass box marking the relative importance of the areas set aside for different purposes.

In 1955, Guy Desbarats had the occasion to design another small and exceptionally interesting building: the restaurant-pavilion at Beaver Lake (1955-1958), a project carried out as part of the renewal plan for the Mont Royal Park designed by Federic Olmsted. The commission had been given to the architect Hazen Size (1906-1974), a 1930s graduate of MIT who had worked in prominent studios in Europe and the United States such as, Le Corbusier's studio (1930), Howe and Lescaze in New York (1931), Alfred Agache in Paris (1933), Adams, Thompson & Fry (1933-1935) as well as with the MARS Group (1933-1936) in London. For this small public building, Desbarats designed a fairly airy pavilion, with a prismatic framework and roofing in reinforced concrete, whose references, according to Guy Desbarats, are modern British architecture, especially in the buildings of the Festival of Britain, as well as in traditional Québec architecture.

From those years, dates the second large public housing complex constructed in Montréal, the Jeanne-Mance housing project, done in conjunction with government at city, provincial and state levels, within the framework of the National Housing Act. This development was in response to protests over slum housing by militant groups at the beginning of the 50s which demanded healthy low rental living quarters. Its construction was recommended by a committee formed in 1952. The 1954 Dozois report - named for the president of the committee - proposed cleaning up an urban zone in the heart of the city, on the eastern side of the modern town center and outlined a first plan for constructing housing blocks in a cleared urban area. The object of a very lively political controversy, the Dozois plan did not go into effect until 1957.

The Rother/Bland/Trudeau studio, established in 1955 by architects with European experience, redesigned the

Place Ville-Marie, I.M. Pei & Associates, Montréal, 1958-1962 (phase 1). (Archives photographiques, Ville de Montréal-DOCOMOMO Québec Register).

plan proposing a mixed development where five apartment tower blocks would alternate with low buildings and row houses. The construction project was given to the Greenspoon, Freedlander and Dunne office.
On the French speaking side, in the immediate post-war period, it is in the field of religious architecture where we can find innovation. Yvers Bélanger, an architect who was close to Marcel Parizeau, designed the monastery St.-Albert-Le-Gran, which the Dominicans built next to the University of Montréal. A short time earlier, Roger D'Astous, returning to Montréal after a year's apprenticeship in Taliesin, built the Notre-Dame-du-Bel-Amour church. The teachings of Wright come out in this first building, which is still very close to its original state. Another interesting construction is the Church of Notre-Dame-d'Anjou (1962) by André Blouin (1920-), an architect of French origin, former student of Auguste Perret and admirer of Le Corbusier. He came to Québec in 1952, commissioned by the provincial government to participate in the reform of the teaching of architecture at the École des beaux-arts of Montréal. This church, like many others, bears witness to the impact that the Ronchamp chapel had in Québec. The vigor of the religious architecture is linked to an urban expansion, to the development of suburbs because of the more extensive use of the automobile as well as by a government housing policy. In Canada the Central Mortgage and Housing Corporation, established to oversee the national housing law, gave private individuals financing to buy property and houses. The development of the suburbs led to the creation of new parishes and also to the extension of the saving bank networks and the proliferation of supermarkets.
Thus, the Church and the State played a major role in the production of modern architecture in Québec, the latter multiplied public buildings while intervention in different sectors of social life increased, especially in the 1960s, which is known as the Quiet Revolution in Québec. Another important participant was Big capital.
With the coming of the 1960s, the big property developers flocked to Montréal even though the city's national status was put into question by the construction of a maritime channel (1954-1959), which disqualified Montréal as a sea port and a continental railroad junction. From that time, Toronto increasingly became the major economic and financial center of the country. Nevertheless ambitious service and commercial facilities were constructed, financed mostly by foreign investment.
In 1955, the president of the Canadian National called in an American developer, William Zeckendorf, to complete a vast urban renewal operation that had been started forty years before when the Canadian Northern decided to build a central station in the heart of the new town center. Zeckendorf had made his reputation by buying the land on which the United Nations Headquarters in New York was built, and his company, Webb & Knapp was known for the shopping centers which they had built in the areas surrounding major North American cities. The architect attached to the developer was the Chinese American I.M. Pei who for this Montréal project worked in association with a young local studio: Affleck, Desbarats, Dimakopoulos, Lebensold, Michaud & Size. A few years before, they had gained reputation for their innovative constructions. After winning the competition for the Vancouver Auditorium, they founded The Architects in Co-Partnership, an office also knowns as Arcop. It became one of the most important Canadian firms in the 1960s. In 1966, at the height of their professional success, their team numbered more than 150 employees.
The Place Ville-Marie project was a very ambitious project. The biggest complex of office buildings ever constructed was built next to Rue Ste-Catherine, the city's most commercial street and adjacent to the central station. Place Ville-Marie is remarkable for its clarity of urban and architectural concepts. The spacious esplanade is a very beautiful example of modernist urbanism, modified by taking into account urban and natural conditions particular to the site. With its cruciform tower, its aluminium curtain walls, its stone buildings that encircle the quadrangle and establish a human scale, PVM is a development of international caliber. The public interior spaces are also very successful, the shopping mall and above all the grand lobby of the tower and the bank which has a tremendous spatial and tactile quality.
At the beginning of the 1960s two big Canadian banks were rivals on the Montreal skyline. Two city blocks from each other were erected the Royale bank and the Canadienne de Commerce bank (1959-1962) each one aiming for the record of the highest tower in the Commonwealth. The latter was a project by one of the most important modernist Canadian architects, an English immigrant, Peter Dickinson.
Without pretending to offer a complete vision of the most remarkable constructions by property developers during the 50s and 60s in Montréal, one must, nevertheless mention two other exemplary projects. The Place Victoria (1961-1964), a vast service complex designed by the Italians Moretti and Nervi with the idea of concentrating financial activities traditionally located in the old quarter, of which the Tour de la Bourse was the only part constructed. This building is remarkable for its construction technique - it has a reinforced concrete framework - and for its form which clearly manifests its structural principles.
The other property development which must be mentioned is Westmount Square (1964-1969) one of the major urban complexes designed by the Mies office in North America, a unique construction considering that it brings together all the most important urban functions. On a platform under which is situated a parking garage and a shopping mall, was erected an

office tower and two apartment towers. The whole is connected directly to the subway network.
When in 1967 the shopping mall of Westmount Square opened its door to the public, Montréal was hosting the World's Fair, which my colleague, Yves Deschamps has qualified as "the last splendor of the architecture of the 1960s". With works by architects such as Otto Frei, Carlo Scarpa, today there only remains the model house conceived by Moshe Safdie on the McKay jetty in the Montréal port in front of the old quarter and several pavilions on the islands built in the middle of the St Lawrence river: the French pavilion which has become a casino, the Place des Nations which has been the object of a modest restoration, the Québec pavilion, which is in a pitiful state and the United States Pavilion, the most celebrated of Fuller's geodesic domes, which has recently been restored.
Indeed the end of the 1960s marked a weakening of economic growth and therefore of the social reform movement. In the field of architecture, 1972 was a turning point: the savage demolition of the Van Horne house aroused an awareness of our architectural heritage and contributed to a return to history and to the discrediting of modernist architecture.
Having given this description of the development of architectural modernity in Québec, I will now conclude by questioning the validity of the concepts of the Modern Movement and International Style.

Modern Movement or International Style?

After some authors, let us give concise definitions for these notions. In the long time span, the Modern Movement corresponds to one of the orientations of architecture's historical development. If its origins can be traced back to the 18th century, when the traditional forms of social relationships and the world vision offered by religion and metaphysics were shaken by rationality, it crystallized after World War I. Then a small number of European architects shared some common political ideals and some formal and technical strategies by means of the dynamic avant-garde press. After the success of the Weissenhof in 1917 and the failure of the SDN competition, they organized themselves at the international level under the CIAM.
The notion of International Style popularized by the Americans Hitchcock and Johnson synthesized an above all formal interpretation which these art historians gave to the new architectural experiments, principally European, on the occasion of the famous exhibition they organized in 1932 at the MOMA. This concept has had a great and long success but has not kept its content from changing. Though the history of this semantical shift has not yet been written, one may notice that the International Style does not denote anymore the white and cubic architecture of high modernism, but rather the glass and metal closer to the American work of Mies. Designed by large architectural firms like SOM in response to commissions issued principally from the private sector, this postwar International Style is linked to the extension of the tertiary activities.
Today the use of these notions of the Modern Movement and International Syle cannot ignore the criticisms, at times very virulent, of which they have been the object since the 1970s. My feeling about them is contrasted and ambiguous: if I reject categoricaly the latter, on the one hand, for its codifying intentions, which are a real obstacle for the comprehension of the modernist language specificity, and, on the other, for its reduction of the economical and political stakes, I still favour the former for the ideals which it continues to represent for me and for others. Nevertheless, I avoid using it within the framework of historical study of modern architecture in Québec, because I am afraid of hasty parallels and easy simplifications. The espistemological critique of this notion of the Modern Movement is still to be done, its relationship to historicist thought is to be made. This filiation renders this conceptual tool inadequate because it does not bring out the diversity and the complexity of historical develpments.
As far as Québec is concerned, our research reveals that the Modern Movement began later than in Europe. Although one can trace its advent to just after World War I and the first buildings to the 1930s, its unquestionable affirmation dates from the 1950s. The time which separates that decade from the Golden Age of the avant-garde was marked by socio historical events which profoundly changed the world economic and political balance and Western culture as a whole. The United States dominates the world now as much on an economic as on a cultural level. The belief in the inevitability of progress associated with science and technology has been shaken by the holocaust and the explosion of the first atomic bombs and, in architecture, values such as monumentality and history, which had been rejected, were rediscovered, and the Modern Movement's institution, the CIAM was brought to book by the questioning of certain members of the younger generation. These conditions modified architectural modernity which was introduced in Québec at the end of World War II spurred by an increase in State intervention in housing construction and also by private investment whether big or small. Modernity materialized in the architecture of school buildings and universities, in public administration buildings, in big projects destined for tertiary or commercial use, and in public housing, all of which profoundly transformed the city centers.

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The Modern Movement in the City of Salvador

The official history of architecture of the Modern Movement in Brazil was written through the works realized basically in Rio de Janeiro by architects of the school of Niemeyer, a follower of the principles of Le Corbusier. This line of the Modern Movement was succesfully developed and adapted to local specificities such as climate and culture; however, it gained the representative status of 'Brazilian Architecture', above other existing tendencies in the country, a status which would subsequently be questioned.

The first big international exposé of Brazilian architecture took the form of the book *Brazil Builds* by Philip Goodwin, published by the Museum of Modern Art of New York (MOMA), during the exhibition of the same name held in 1942-1943. The book emphasized the contribuition made by Le Corbusier on his visit to Brazil in 1936, and the consequent rationalist examples.

The Modern Movement in Brazil had at least one determinant particularity, namely the search for a national identity. Modernism, which in its strict sense proposed the future unity of a blend of three original races - Portuguese, Indian and African - plus the enormous number of immigrants fleeing from the war, for whom modernity meant freedom.

The 8,511,996 square kilometres of Brazil are organized in States, and then in even bigger regions of which the North is the poorest and the Southeast the richest. Many groups were working and exchanging ideas during the beginning of the century, and even the remote states such as Paraiba and Pernambuco produced interesting examples of early modern architecture, with different interpretations of what the movement could be. An important feature nevertheless was exactly the conception of integrated projects throughout the country, as for example a plan to link the whole coast of Brazil by hydroplane stations; or the construction of Post-Ofice and Telegraph buildings, all with a similar typology (of unknown authorship) again, covering all the territory.

The city of Salvador, in the State of Bahia, was no different and it had a very interesting approach. In 1926 it received the visit of Marinetti, author of the Futurist Manifesto, and 1929 saw the inauguration of an elevator nearly 80 m high a record of structure in reinforced concrete at the time that linked in a matter of seconds the two main levels of the geological fault that divides the city.

The Brazilian Register worked with six other buildings besides the Lacerda Elevator, all between 1922 and 1942. In 1922 the city of São Paulo organised the Week of Modern Art, promoted by intellectuals, and this date is used as a parameter for the introduction of the Modern Movement into the country and 1942, the year of the publication of *Brazil Builds*, as the end of the first period of modern architecture in Brazil.

The other buildings were:

-the Cocoa Institute (1933-1936), constructed next to the Port, a building/factory that stored fruit and featured an internal system of humidity conditioning (80% or more in Salvador) and carriage, including underground conveyor belts to the Port;

-the Crèche of Pupileira (1935), a building for caring for and educating young children, all in reinforced concrete;

-the Post-Office and Telegraph Building (1935-1937), of unknown author, whose straight, symmetrical lines resemble many other constructions in other parts of the country;

-the Hydroplane Station (1937-1939), part of a project on a national scale, uses a simple programme, clear open spaces and expressionistic form, all in reinforced concrete, including the submerged part;

-the Educational Institute of Bahia (1937-1939), which not only explores the technique of reinforced concrete in a composition of cantilevered slabs but also introduces a new concept in education, opening the view of pupils to subjects such as agriculture and applied science;

-the Santa Terezhina Hospital (1937-1942), a sanatorium for tuberculosis like many constructed during the time in many countries, it had a complex programme of self-sufficient maintenance, and served as model for other hospitals. It was built in reinforced concrete.

By contrast with the south of Brazil, the buildings, all of which were some kind of institutional representative, were significantly influenced by modern eastern European and Germanic architecture, specifically the Bauhaus, with its programmatic concern and industrial form. Modernist housing did not appear except for the middle or high-income brackets, as in the case of the Oceania Building which, besides the apartments, also featured a casino and a cinema in its programme. Compared to other modernist trends in Brazil, the projects in Salvador were probably the most sober and, curiously enough, made a less expressive use of colour.

One aspect of extreme importance for an analysis of architectural production is the contractors' role during the process. Most of these were linked to Europe, such as the German-owned Odebrecht. The other important company was the Danish Christiani Nielsen, with its headquarters in Rio de Janeiro, which was responsible for many architectural and civic constructions in Brazil. Responsible not only for building but often for choosing or even proposing the

Lacerda Elevator, F. Thiesen, Salvador, 1929-1930.

design, these contractors were the force behind the rapid diffusion of modern architecture.
These buildings represented an effort to produce efficient changes on an urban scale, introducing hitherto unprecedented socially oriented interventions through collective and/or public services in an attempt to build citizenship. The fact that the city of Salvador had concentrated the largest number of slaves in Brazil until slavery was abolished in 1888 (only forty-one years before) is an illustration of the crucial nature of these projects; indeed, they formed part of a process of re-thinking the city. However, Modernity here did not take the form solely of innovative technical, social or aesthetic achievements; architecture was conceived as an agent of transformation and the character of 'new' places as a possibility of change, even if only apparent. Having made these introductory remarks, it will be easier to discuss the methodological issues proposed by the International Specialist Committee on the Register. Since this paper sets out to contribute to an exchange between the other DOCOMOMO groups, it follows the sequence proposed for this event.

1. Chronology

1.1. The cutoff dates are a methodological reference that may be checked and altered only after the conclusion of the work. On an international scale, the decision to give the national/regional groups the opportunity to establish their own dates, indicating only a basic period, was ideal. For the second part of the Register (the following two years) this flexibility should be maintained, allowing also the inclusion of other first-period cases from regions that had hitherto not worked with DOCOMOMO registers. The definition of the final date for the whole Register, related to the end of the Modern Movement, must be seen as a historical parameter. In this sense, the architectural crisis of the 60s might be a suitable closing point.
1.2. We consider it still too early to constitute sub-periods, since modern-movement architectural trends have first to be identified.

2. Criteria

2.1. Instead of the five criteria set by the ISC/R, it would be better to provide guidance for a continuous text which, while containing all these points, would not exclude others that might emerge on the basis of evaluation. Establishing these five criteria at the beginning of register work is tantamount to giving privilege to a specific interpretation of the concept of 'modern'. For instance, to put artistic and aesthetic concepts together in the same (third) item is to diminish their value in terms of 'technical' and social appraisal. In both Salvador (Bahia) and Brazil as a whole, experience has shown that the visual aspect is strong. In other words, the innovative attitude is first identified through the aesthetic aspect of the building, its modern language, even if it lacks specific artistic quality, as in the case of many of Niemeyer's 'architecture-sculptures'. Hence the aesthetic aspect was as important as the modern technology and social programmes. While this cannot be admitted by the principles/postulates established by modern architecture, on the other hand we cannot follow only 'modern criteria' when it comes to evaluating a modern building. We can also say that social appraisal is implicit in this aesthetic evaluation. When we look at the case of Salvador this becomes clear: people usually spend most of the day outside, in the street (basically because of the climate). The streets are not therefore mere pathways but actually living places, homes. Consequently, the city's buildings are important everyday social references by virtue of their visual aspect. We suggest the introduction of the concept of 'use' or 'programme' as a new criterion which differs in meaning from 'social appraisal'.
2.2. The categories 'canonical' and 'ordinary' have to be further discussed. Could a reconstructed building, like the Barcelona Pavilion of Mies van der Rohe, or a building of normal use be considered as canonical examples? Another point concerns the International Style, which could only be understood in terms of the existence of similar designs in different parts of the world. It would not be correct to preserve only one, but a group of these buildings, to fill only one register fiche. It is therefore too early to propose these categories.
2.3. Regarding 'engineering', we can say that a good civic constructional work is a good architectural work, and it was also responsible for the introduction of the Modern Movement into the environment, so it may be considered on our Register. To conclude this topic, we understand that architecture transmits information. Not only must its sources be analyzed but also its receptors, who are not only the experts but also the general public, and the way they decode architecture in its many aspects and levels of comprehension, considering their 'mistakes' of comprehension as important elements through which to establish a productive relationship between modern architecture and social behaviour.

3. The scope of the Register

3.1. Number of fiches: Fifty fiches per methodological period is a good reference for the national/regional groups, but the ISC/R must be open to special cases. In the case of Brazil, for the next period this figure will undoubtedly be surpassed due to the dimensions of our territory and the great amount of architectural production in our cities during the 50s and 60s.
3.2. It is difficult to evaluate the relationship between the public and private inventory because in Bahia there is not as yet a private inventory of modern-movement architecture. In some regions of Brazil, the inventories that already exist are based on official historiography and they must be checked and completed.

4. Matters of local organization

4.1. How to proceed. We have tried to work together with institutional organisations (schools of architecture, preservation offices, historical

archives and the like), but the experience proved to be unfruitful. They were beset by frequent strikes and, besides, the people responsible for preservation offices were not completely convinced of the importance of this work, changing priorities along the way and relegating the Register to a secondary position. Many groups in other parts of Brazil also encountered similar difficulties. In future it would be better to request funding and to establish a specific group for the Register.
Furthermore, it proved extremely difficult to find historical documents concerning these buildings. The relevant archives were for the most part badly organized and, in some cases, had simply been destroyed.
Due to these problems, Part 1 of the Brazilian Register was not completed: from a previous list only those buildings were selected that had most documentation besides outstanding value.
4.2. In Brazil the groups worked on Microsoft Word.
5. A register may have many uses. It is clear to all members that the present DOCOMOMO Register deals only with a World Heritage List; in other words, it is working on a specific register aimed for inclusion in the ICOMOS list. There is no reason, however, why the DOCOMOMO should not be open to a DOCOMOMO Register that may be developed and completed at a future date, once the ICOMOS Register has been completed. This second register would have wider applications addressed not only to conservation offices but also to architectural training, the academic field, theoretical reflection or, better still, to current architectural output. This register should be related to the special Register requested by ICOMOS, published for the general reader and transposed to video to be sent to schools, tourist offices and so on.
6. A proposal to the ICOMOS for a total of ten works for each national territory would be a useful point of reference. In some countries the total may be less than ten, thus providing other groups with the opportunity to increase their own list. A suggestion would be to select buildings (or groups of buildings) that are unique in their proposal of modernity to the world, a selection based on technology, use, spatial organization and appearance.
To conclude this contribution, there is an aspect to be strengthened, namely more detailed guidance on completion of item 6, concerning photographs and visual records. The Brazilian Register drawings have been reduced to A4 format in different graphic scales in order to standardize our work. Besides plans and sections (not always complete), we have also introduced sketch copies as further illustrations. As regards photographs, we suggest that for the next time colour prints (at least one per entry) be assembled to complete the supplementary dossier.

David Whitham

DOCOMOMO SCOTTISH NATIONAL GROUP

Noticing the Ordinary: an Archaeology of Building Provision

The debate within, and between, DOCOMOMO groups centres on modes of documentation and preservation. Not all agree with Professor Hubert-Jan Henket that in most instances proper documentation can be effective preservation, but we remain DOCOMOMO, not COCOMOMO. Documentation must be our first duty, as history workers in the building field where change is implicit and essential to the existence of the industry.

This paper argues the need for shorter and finer recording nets: shorter in time, to catch even the temporary and ephemeral; finer to notice buildings which, though 'ordinary', might individually or in context meet our criteria of significance, or because of rarity or even profusion prove historically important.

"...The expansion of the big modern cities gives the land in certain sections of them, particularly in those which are centrally situated, an artificial and often enormously increasing value: the buildings erected in these areas depress this value, instead of increasing it, because they no longer correspond to the changed circumstances. They are pulled down and replaced by others."

Those words were written by Frederick Engels in 1872, and his proposition remains true: development depresses the value of a site because there is always another developer who can do something more profitable with it.

The last fifteen years in London's Docklands have seen buildings demolished and their sites redeveloped before they were occupied, and prestige developments failing to attract tenants. At the other extreme we see buildings demanding adaptation or extension to meet new demands as soon as they have been completed, and buildings rejected or abandoned by their users because of unsatisfactory or inappropriate design or construction.

Most of us will now have had experience in compiling the International Register and probably will have found that the criteria of modernity, in terms of technical, social, aesthetic evaluations incorporated in the modern-movement fiche operate fairly clearly at the range at which we are working. For many European groups that has been the inter-war period when their nations experienced the tide of modernity: in Scotland, and elsewhere but for differing reasons, the significant period of modern construction began at the end of World War II. Professor Henket has suggested a 'test of time' filter (say twenty years), though at such a range a building might be culturally unLopical, even publicly vilified. Experience suggests that those dangers are greatest at precisely that time, when some building types are economically obsolescent, requiring extensive alteration or even replacement.

Perhaps the most generally experienced problems are with housing. Throughout Europe a large part of the population has been rehoused since 1945, and in most countries a proportion, usually a small proportion, of the new housing stock has proved unpopular. Particular housing types have been targets for criticism, but extreme dissatisfaction is almost invariably due to serious design defects or to errors in management. High building itself cannot be blamed: these fifteen-storey blocks at Falkirk, set in parkland within walking distance of the town centre, have had a waiting list for vacancies since they were built nearly thirty years ago, but these are small flats with a largely elderly population and few children. Problems occur in high-rise housing for large families, often in schemes dating from the later years of the high-rise era, which in Scotland was the late 60s.

Deck access, where large dwellings, usually of more than one storey are approached from wide balconies, has proved particularly unpopular despite an initial success at Park Hill, Sheffield, in the early 50s. Two examples: Hutchesontown E in Glasgow, constructed in 'Tracoba' system, which proved unsuitable for Scottish conditions, which was demolished within a few years of completion, and Whitfield, Dundee, now radically reconstructed, decks partitioned to form pavilions, or terraced point blocks, façades adorned with postmodern architectural features, and pitched haystack or mansard roofs. Two cases of rapid rejection and reaction; the latest the first to go.

Other building types achieve obsolescence by their very success; retail supermarkets and factories can justify their investment in less than fifteen years, and transport installations quickly exceed their designed traffic capacities. Glasgow Airport, relocated in the late 60s to accommodate more passengers, with new terminal buildings designed by Basil Spence, had to be extended within twenty years; the 1966 building can still be seen within the new one. Even heavy industry, like the great seaport, steel and energy complex at Hunterston can fall to international investment shifts, and enormous military installations such as Holy Loch and Faslane can decline from operational activity to abandonment in a few months.

On a scale that is almost comic, there is the vernacular entrance to a Scottish regional government bunker, a vast underground warren now seeking a user.

A perhaps unexpected casualty group has been churches and religious buildings. The fate of St Peter's College, Cardross has been recorded in a recent report by the Scottish National Group, but other post-World War II churches, like these in Glasgow; St Benedict's, Drum-chapel by Gillespie, Kidd and Coia, and Cordiner's Church of the Immaculate Conception have succumbed to high maintenance costs or development pressures.

St. Peter's College, Cardross, Gillespie, Kidd and Coia, 1962.

These are examples of short-lived buildings, where loss or transformation has usually been unexpected. Some have passed unnoticed, others have been recognized and one, St Peter's College, is a monument of international status. I now pass to the more ordinary.

Scottish administrative and building history has an important civic dimension. Scottish burghs, many planted as new towns from the 12th century onwards, were incorporated in the national constitution and powerful in the land. Feudal tenure, granted in perpetuity, implied permanence of building and the burgh's importance was reflected in the town as monument. The tradition of burgh architecture is respected and remains; the most ordinary buildings considered seriously in their contexts, as if built for ever. Examples show cooperative stores, public lavatories, electricity substations, water towers, not concealing their modernity, but responsibly designed as parts of the urban whole.

An important and literally ephemeral field is comprised by the images, realizations and by-products of the building process. The reconstruction of Oud's site office has been reported by The Netherlands group, but only in contemporary photographs can we see it in context. Large engineering projects are usually recorded by progress photographs; we all know the remarkable sequence of the construction of the Forth railway bridge more than a century ago, and we have recently seen an interesting film of building Tait's Tower at the 1938 Glasgow Empire Exhibition transferred to video tape. But it has proved hard to find a photograph of the 5-storey aluminium screen that covered scaffolding for the new Marks & Spencers in Edinburgh's Princes Street in 1957-1958.

Record the ephemeral: record the ordinary! At this point I might seem to be in danger of advocating the recording of everything. That is done anyway, for building control or local taxation, but in records that are unmanageable for our purposes. It is still necessary to be selective, as the RSC on Education has said, both for practical reasons and to maintain intellectual clarity. We need a simple format for new building record, applying the innovative tests but initially without agonizing about 'is it architecture?' Documentation should begin with the earliest record and ideally all significant buildings should be 'noticed'. The need is for an 'archaeology' of building provision. The term 'archaeology' is used, not to imply the study of what is ancient, but in the sense that archaeological selection is value-free, noticing all that is important and accepting that contextual significance will be assessed elsewhere.

Such an objective must be approached with caution because there are contradictions here; 'archeological selection is value-free' but it is necessary to be selective. An obvious prerequisite is that we should ourselves have experience and confidence in applying the criteria of modernity which can be disseminated by publication and educational initiatives. To that end I look forward to comparative evaluation of

submissions to the International Register for discussion by national groups and International Specialist Committees. I would also expect first efforts to be directed towards selected building types or in specific locations, which might be decided at national level.

For the purpose of statutory protection, English Heritage is proposing a general scrutiny at fifteen years' range applying criteria specifically related to building types. Their experience, in the broad category of educational buildings, was briefly discussed by Dr Diane Kay in the DOCOMOMO-UK *Newsletter* last year and their very full notes, with criteria for evaluation, are seminal to the discussion of selection. I hope that relevant work in other countries will be mentioned and made accessible after this conference.

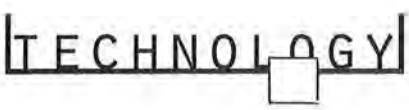
The next problem is the form of notice, the fiche-minimum, and here we can look at some precedents. In the mid 60s the UK National Record of Industrial Monuments prepared a standard record card to be used as a report form by voluntary reporters. Resulting reports were very variable in quality: this example is obviously a professional product, but all the collected cards, coded and classified, are now retained in their respective national monuments records.

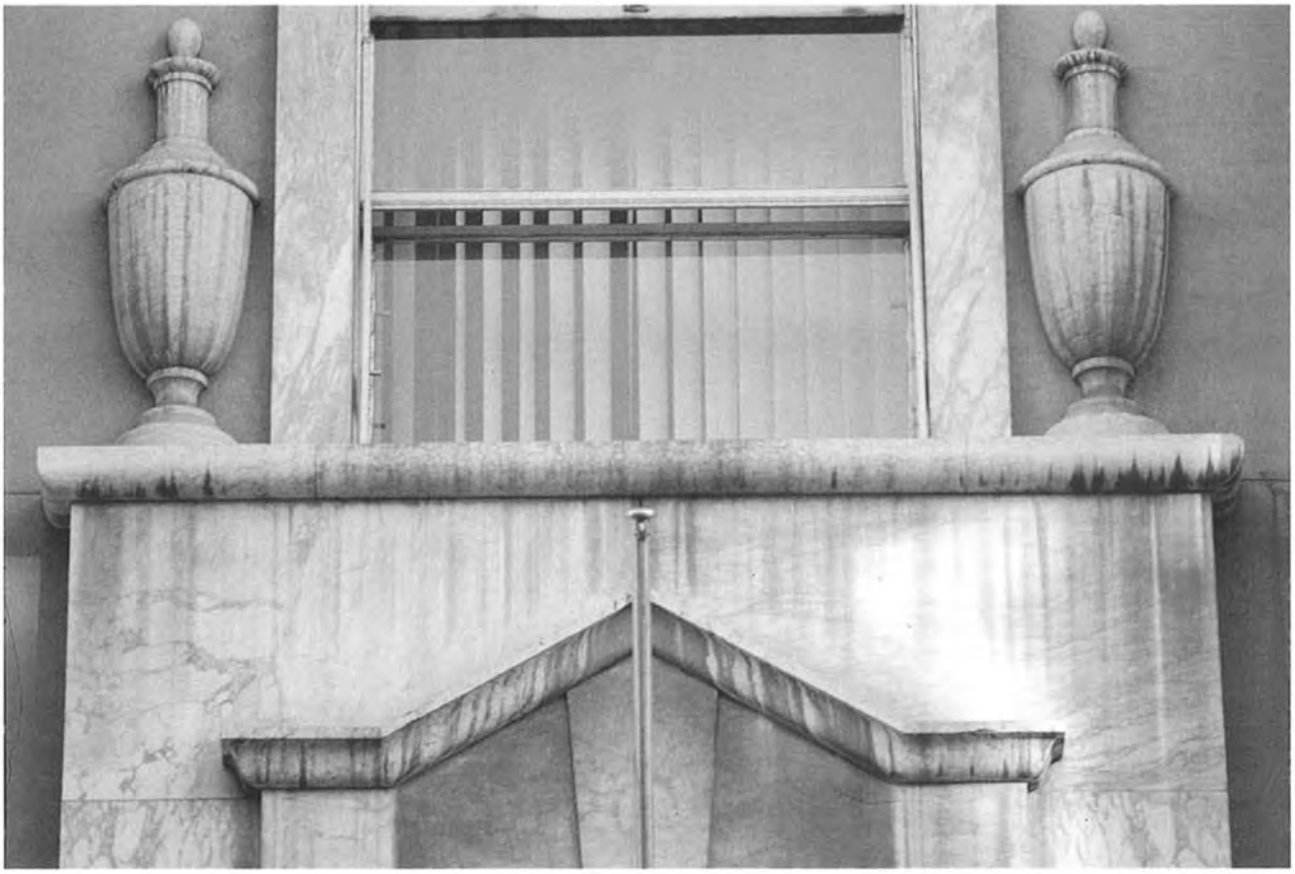
More recently the Council of Europe has promoted work on a minimum set of data elements for recording historical buildings, basically comprising address, unique reference number, location, building type and present use, date of building, designers and clients, construction and present condition, as shown in this French example. I would accept this set of core data, with the addition of evaluation by our three criteria of modernity, technical, social and aesthetic, and importance in context, on a simple A,B,C,D scale and space for supporting notes. Provision should be made for manual access and computer coding, and questions such as location decided locally.

While there will probably be general agreement that evaluation is required at different levels, and that the International Register fiche is really not practical for wider use, these proposals might seem to be over-ambitious. An over-enthusiastic response would probably lose its impetus, and leave us with data of variable quality, possibly in a flawed format. But pilot testing, as I have suggested, on specific building types or in selected localities should be within the capacities of the present DOCOMOMO groups, and could be a vehicle for extension of our important public objectives. Ground-level survey has great educational potential, not only in architectural training, but in high-school art history and local studies where it would promote awareness of the purposes and principles of modern design and provide bases for questioning some current trends in local planning control. On a personal level I see the discipline of the fiche-minimum as a way of making sense of the often undirected photographs we take on our travels.

I conclude by restating my conviction that ground-level recording is the foundation on which systematic documentation must stand, and commending to this conference the importance of noticing the ordinary.

St. Peter's College in 1992.





Reale Mutua Assicurazione building, G. Pagano, G. Levi. Dust and pollutants on marble of main façade.

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Specific Technologies for the Maintenance of Modern-Movement Architecture

Foreword

The opportunity to restore the fronts of a building designed and erected during the 30s in a style ranging from Art Deco to Rationalism and of great importance for the town's historical tissue leads to several remarks on architectural philosophy and restoration techniques.

Its architectural features mark the building as a significant example of the cultural panorama of those years in Italy, Turin particularly. It features a wide range of different and faraway but extremely significant approaches.

In 1929-1930, architects Giuseppe Pagano and Gino Levi Montalcini designed the office building commissioned by Riccardo Gualino that represents the most convincing archetype of modern office blocks.

The building for Società Anonima Edile Torinese was created in 1928-1931 on a design by the engineer Giuseppe Momo. Its plans, volumes and the reinforced concrete front are overtly functional, but the building itself is still clearly tied to art-deco motifs.

The Lancia building, designed by Michele Frapolli was erected in 1930 to satisfy the requirements of a well-to-do businessman and echoes 2th-century Milanese motifs in an elegant and cultured fashion.

The present head office of Istituto Elettrotecnico Nazionale Galileo Ferraris, designed by Eugenio Ballatore di Rosana, dates from 1931-1933. It was immediately criticized at its completion for combining eclectic motifs with a very original interpretation of Art Deco.

Then came the 1929-1933 restructuring of a vast area of the urban tissue (a true demolition job) to erect the central offices of Cassa di Risparmio di Torino, completed by the engineer-architect Giovanni Chevalley, lucidly consistent in opposing local avant garde groups with a neo-baroque proposal for the bank.

In this brief and certainly incomplete overview, the head offices of Reale Mutua Assicurazioni can be classified as a continuation of the most celebrated work by Pagano-Levi, in that it offers careful observers some 'modern' suggestions not yet present in Palazzo Gualino. As mentioned in the publication *Torino qual'è e quale sarà*, written together with Pietro Betta and published in 1927, Armando Melis de Villa (a 1926 newcomer to the Architects Association) proved that he agreed perfectly with the modernness of the more recent architectural artifacts. He was open to art-deco suggestions, as proven by other works of his in Turin, and he approached the topic suggested by the commissioning party with a spirit that was certainly in tune with his times. He was openly sensitive to the issues raised by the projects for the modern Via Roma and had no objection to demolishing a whole complex in the town's historical centre; indeed he proposed it as renovation, thanks to the widening of Via Corte d'Appello on the main front.

The use of metal bearing structures in modern offices, a long-established technology in other European and North American countries, was the first documented Italian case of its application in a building not planned specifically for office use. As declared in an article by Melis himself, the solution was the outcome of agreement with a strong-willed client. Plans and volumes are consistent with office building canons, with open space work areas, as yet not even present in Palazzo Gualino; the choice of 'recumbent' windows (placed horizontally instead of vertically) represents perfect continuity with the decisions reached by Pagano-Levi. The architectural elements have often perhaps preconceivedly overshadowed judgements passed on the building (the monumental order of columns supporting the great interrupted tympanum on the main front, for instance). On restoration attempts however, they reveal extraordinarily rich colours and décor that confirm art-deco choices for the front and integrate very well indeed with the solutions applied inside the building. The photographs taken at that time show a public foyer completely lined with marbles, stainless steel fittings and ornaments worthy of the office entry lobbies of contemporary British, French and us offices. From floor-lamps to stairway banisters, from skylights to metallized chalk square tile false ceilings, this building presents with the brilliant new light of art-deco, interpreted according to the more sedate canons of 20th-century style. This may be due to the presence of the Law Courts opposite or pursuant to the owner's wishes. It does not seem to be lesser architecture nevertheless, as it might be classified by the consolidated taste of supranational reviewers, but rather the expression of a taste and cultural milieu that was experimenting with new solutions and outcomes simultaneously permeated with presences and traditions belonging to a historical dowry that was not be abandoned altogether.

We do not intend to totally refute criticism on the building we are investigating, but rather underscore how much attention should be devoted to studying the details and nuances that make up the 'un-classifiable' features of an architecture such as that of the main offices of Reale Mutua, for a new

account of the outcomes of a hitherto unwritten definitive history.
Specific technologies and the use of metal structures and stone material linings in particular led to new technical building solutions that raise interesting restoration issues today.
It will be stated later on that the exasperated determination to adopt typical autarchic solutions induced by the political climate of that time, together with a sound knowledge of service behaviour of certain products, raises serious problems today in deciding on restoration alternatives.
The approach of only attributing as much importance as possible to the respect for materials used in the original artifact could not be followed in the case under review.
In particular, the report will point out that the properties of one of the stone materials used are not such as to guarantee long life.
Nor was respect for restorations performed during the course of time possible. Distribution inside the building, that hosts continually changing service activities, has been modified several times in just sixty years, with sometimes unacceptable operations, such as redecorating the paste coloured Terranova plaster and even painting over some marble artifacts. Eliminating these decorations raises serious restoration issues today.
The project was based on comprehensive design applied to restoration. Surveys started with in-depth historical research, analysis of the different operations completed on the building and a map of individual front element decay; alterations present were diagnosed, and an operating project was eventually drawn up and completed together with a real and proper individual corrective action programme, based on a series of tests. Different operational alternatives and technical details were considered and continually refined with constant reference to initial plans, to come up with an overall project covering reversibility of products used and future maintainability, more in general.
The project is of course susceptible to further refinement during preliminary restoration yard operations, once complete accessibility to the fronts with all the scaffolding available makes greater in-depth analysis of each individual point possible. Product selection, operational decisions and building detailing can therefore be refined further.

Story of the building and its project

The building was erected after demolition of most of a block inside the oldest core of Turin, during a period of our architectural history when individual 'pieces' such as the adjacent Palazzo San Giorgio di Biandrate or the building cells completing the unit front of Via Garibaldi were safeguarded, but little or no importance was attributed to the real values of an urban tissue, even though a new sensitive approach in this direction was already contained in some passages of the Athens Charter.

The complex consists of a 30 m high eight-floor central building overlooking Via Corte d'Appello, two underground levels and two wings on side streets. The building front stands back from the street line.
The Via Corte d'Appello front that faces the former Senate building, an imposing architectural work started by Filippo Juvarra in the 18th century and completed during the first decades of the 19th century by Engineer Ignazio Michela, divides into two wings, standing back from the steet line and a central body, that lies even further back.
The width of Via Corte d'Appello goes from 11 to 17 m and then 21 m and radically modifies street continuity. The ratio between the number of floors and road width did not comply with municipal regulations. Some variations were allowed because of the project's monumental nature: this is why the town authorities required designers to use quality stone materials for the front.
The front includes materials typically used in buildings of those times, such as Terranova Plaster, and conventional materials such as stone applied with 'modern' techniques. Nine different type, different colour and working stones are the typical elements of the architectural solution applied.
The main common one is the high Finale Stone skirting-board above an underlying Balma Syenite plinth. In the main building, where it incorporates the first two storeys, the skirting-board is about 9 m high; height in the wings is 6 m.
The Arabescato Corchia ground floor window sills bear on the plinth without protruding above ground level. The protruding sills on the upper storey are of Finale Stone.
A Finale Stone fascia between two protruding seams above the skirting-board runs all around the building.
Four floors underlined by groups of windows connected by Verona Red seams that divide this part of the front horizontally are placed above the side blocks.
Window sides and tops are contoured by Arbescato Corchia slabs; the composition is completed by a jutting Verona Red cornice.
The typically vertical central body is two storeys higher than the rest of the building. Four 22.00 metre high protruding Finale Stone half-columns define three different fields containing three main entry doors, preceded by a wide Balma Syenite stairway. The half-columns are surmounted by great Verona Red cornices, that make up a triangular frontal interrupted by a protruding balcony at its top.
The entry doors are framed by Arabescato Orobico cornices and are surmounted by semicircular lunettes, that are actually upper floor windows but present as a single integrated design when viewed from the front.
The central and plastic appearance of this part of the front had been cleverly underscored by the designers with a system of lighting bodies incorporated into the 6th storey passageway floor between the four half-columns, which illuminate this part of the front with incident oblique light.
Finale Stone pilaster strips jutting slightly from the plaster line distribute the front on both sides of the

half-column group and contribute to accentuating vertical scanning of this part of the front.
The side wings are integrated into the main building by the still imposing though lower Finale Stone skirting-board.
These fronts are greatly simplified versus the 1931 project and present regular scanning of the windows, united together with Verona Red seams.

Detailing choices

Materials and building detailing were selected based both on innovation and consolidated building experience. Designers constantly checked out mutual compatibility and performance.
The most crucial decision was about structures. A system of multiplane transversal metal frames connected longitudinally by runner and floor beams was adopted to satisfy space distribution and flexibility requirements.
The design and implementation of this solution were strongly advocated by the commissioning body and contracted to Società Nazionale delle Officine di Savigliano, a company with great metalworking experience and expertise.
The new thing for Italian architecture was the use of a metal structure for a non-industrial building, where arc welding technology for section rod connection is normally resorted to.
Other detailing choices were consequent on the use of the metal structure, outside curtainings especially, designed as a light-weight insulation cover to accommodate heating and conditioning system piping.
New problems arose for designers and builders from the use of metalwork and the choice of 'light' curtaining. Stone lining was traditionally part of wall support work. Faced with new tehnological solutions, designers and builders decided to anchor linings with wall curtaining, sometimes directly to the metal structure with often non 'linear' solutions, though always with overall top quality craftmanship.
Double wood frames with horizontal cross members were an interesting solution. The window opening is quite complex and requires upsettable fixtures for cleaning, latch movements, transom windows and the like.
They were first introduced in Turin building practices at Palazzo Gualino, and since became typical of the architecture of those years.

Materials and operating technologies

* Syenite is a massive structure, granular texture, average grain size intrusive magmatic rock. Balma Syenite is quarried in the Cervo Valley of Cuneo Province and consists of purplish feldspar, hornblend crystal prisms, some plagioclase, quartz and interstitial albite.
* Diorite (or Greenstone) is a plagioclase and hornblend intrusive magmatic rock, with titanite, orthite and quartz inclusions. Its colour ranges from dark to blackish grey. Its massive structure is medium to large grain size. Anzola Diorite was quarried from a site close to Ornavasso in Novara Province until the end of the 60s. It is a black material with white spots. The physical and mechanical properties of Syenite and Diorite are similar to granite; they are high stress and excellent weather resistance hard rocks.
* Finale Stone is a fine grain size crystal-like calatocement bioclastic limestone with a usually small terrigenous fraction. It consists mostly of calcite. This yellow-pink rock includes nearly always fragmented large size fossils and small cavities left by dissolution of the smaller ones.
* Verona Red is a compact limestone, consisting of lighter colour mycritic nodules immersed in a very fine grain size matrix. Calcite is associated with clayey minerals and a more abundant haematitic pigment, that gives it a darker red hue. Verona Red is also known as 'ammonitic limestone' because of the presence of even large size fossils of this type. An another kind, more dark, it is called Porfirico Ramello Red. It is commercially classified as a marble, since it is a polishable limestone, unlike Finale Stone, which is classified as a 'rock'. Verona Red is distinguised by the presence of clayey components, which limits its possible use to outside applications especially.
* Arabescato Corchia comes from the Province of Lucca. It is a breccia of white marble particles varying in size from a few to over 50 centimetres in a dark grey colour cement. It is prevalently calcite, associated with crystal pyrite.
* Arabescato Orobico comes from Lombardia (Northern Italian region). This marble may be red or grey. It is a very precious material because it is available only in small quantities. When polished it is better to use it for the internal design.
* Artificial stones should be mentioned separately. Artificial stones were used for the cornice of the building under review, to imitate Finale Stone. Laboratory tests, so far unprogrammed, will be required to ascertain their exact composition and preparation methods. The techniques used most commonly during the 30s consisted in forming agglomerates with standard or magnesium cement, or with slaked lime or gypsum, together with marble powder or stone fragments. Artifacts of these materials were produced both industrially and at building yard sites. The configuration of finished parts was not necessarily final, since some varieties of artificial stone could be worked in very similar ways as natural stones.
* The Terranova Plaster that covers several areas of the front consists of lime and cement mortars coloured with natural pigments when in paste. The filler is a varied grain size and nature stone material, that gives the plaster its colours and hues. At that time, mortars were supplied in ready-to-use packages in three different grain sizes: fine, medium and coarse. The end product is an ice and weather resistant plaster with very durable colouring guaranteed by natural pigments.

Decay analysis

Preservation of the materials used in the outside covering of the building under review, together with

geometric and dimensional measurement of the architectural elements, was assessed to formulate an exact diagnostic picture of the deteriorations and alterations affecting the building's outside shell. The investigation methods followed were based on the twenty years of experience acquired by the NORMAL-CNR Commission in their study of alterations to stone materials and the control of preservation treatments of historical and artistic properties of national interest. Graphs were prepared together with material preservation records, as suggested by Normal Recommendations (Documents C79/26 and 17/84 particularly).The terminology used and the various items of the cards used for this research work were based on the Normal model, though with some modifications and simplifications the specific nature of the project demanded.
Individual card items offer useful information on:
- the urban and topographic features of the artifact site;
- artifact geometry and size, complete with historical information wherever possible, to perform a philological reconstruction of the original conditions or project;
- the features of constituent materials, complete with data on their source, quality and working characteristics;
- any macroscopic colour, chemical, physical, mechanical and biological alteration to materials.

Principial causes of stone cladding damage

Knowing the mechanisms of rock alterations and their causes is basic for properly programming any preservation action and gives useful information as to the optimum use of a given material. A distinction must be made between natural rock alterations such as the geochemical rock transformation cycle that produces solutions and sediments, and the deterioration of rocks inside buildings.
Many rocks already undergo chemical and mechanical alterations when first formed. Granites and other intrusive magmatic rocks can present alterations that cause them to transform into clayey matter; they can develop real and proper webs of microfractures during the magma cooling that brings about their formation. Some rocks are therefore less durable than others, because of their very nature; others are more readily attackable by the deteriorating effects of different Earth environments and climates.
The intrinsic characteristics of rocks, such as their chemical and mineral composition, plays a very important role in alteration. Carbonatic rocks are more vulnerable than silicate ones in an acid environment, for instance; compact rocks are more durable than porous ones with the same mineral composition; isotropic texture rocks have no preferential fracture directions.
The alterations affecting rocks during geological formation occur over very long periods of time, however, and are much less significant than those that may originate during quarrying. The mechanical stresses induced when detaching a rock from its bed can cause the formation of latent fissures that may become preferential decay sites after the stone has been emplaced in a building. Even excess stone working can induce the formation of surface microfissures that cause subsequent alterations. Decay can be due to improper emplacement, by setting the block out of conformity with its component stone texture, for instance, thereby favouring the formation of preferential fissures that can cause separation of large fragments or splinters. Other causes may be induced by matching with unsuitable materials, such as the improper use of iron stays for anchoring, for instance. Further important causes of stone artifact decay after emplacement are temperature variations; daily temperature changes of the order of 40-50°c (as can easily occur in the Mediterranean area) can lead to deformation of a few millimetres per linear metre. An elongation of this magnitude is negligible if the artifact is free to dilate but can cause serious internal stresses that translate into plate curving and typical warping effects or cracks if the artifact is thin and constrained rigidly. Today, the presence of aggressive pollutants in the air is another serious cause of alterations, alongside temperature variations. The quality and quantity of pollutants in any given area do not only depend on their source but also on site topography and weather. The pollutants affecting stone materials most are sulphur dioxide and particulates, mostly unburnt carbon particles. When associated with damp air and water, these elements are the main cause for forming what are called black crusts.
These are variable thickness and sometimes very thick greyish or blackish coats that cause stone fissures and fractures in time, followed by separation and fall of the more deteriorated parts. As will be seen later on, separation exposes to weather a stone layer that is more vulnerable than the original surface. This may lead to continued and progressive deterioration of the artifact. The most serious effects are seen on tender, mostly carbonate, rocks. The separations that occur frequently on stone coverings are often due to the different linear thermal dilatation coefficient of the mortar and stone. Humidity penetrating inside slab to slab connections favours water penetration into the underlying mortar layer and can cause the support layers to swell and give rise to a falling plate, together with temperature changes and freezing and thawing cycles.

Diagnosis and analysis of pathological causes

The most serious anomalies and pathological phenomena on the building's outside covering stone materials were the separation of fragments from the Verona Red and Porfirico Ramello Red fasciae and the formation of blackish coats on various parts of the stone material. Finding the exact cause of a defect is basic for formulating any proper corrective action plan. Clearly detecting the primary causes of the separation of fragments from the Verona Red element in this case

meant considering a wide range of possibilities, each of which was correlated with other petrographic, design and historical information to form an overall anamnestic picture of the building.

Primary and secondary causes of stone fragment separation:

* stresses, induced by structural settling of the building, anchoring collapse (and/or lack of lining to support adhesion), thermal dilatation of adjacent or nearby elements, accidental or wanton impact;
* chemical reactions between the rock and external agents, particularly reactions with rain or condensates, pollutants, or improper surface treatments. The situation can be worsened at unprotected points, such as protrusions or projections;
* freezing, combined with porosity, inhibition coefficient or exposure;
* original stone defects due to inclusions, quarrying, cutting or stone working errors.

After listing the possible causes of separation of parts of the fascia on the building main front in the most general way as possible, they were compared with other information from cards and specific investigations on materials.

Investigation on the origins of macroscopic decay, fragment separation, was thus performed by starting from the general to the particular and subsequently from the specific to the overall picture according to a logical sequence we could call 'tree branch style' that enabled the progressive exclusion of non-significant causes.

This investigation technique is based partly on deductive reasoning to obtain a specific consequence from a general principle and partly on inductive reasoning to formulate a general principle from specific experience. It is formalized and illustrated in the two enclosed graphs, entitled Error Tree and Diagnostic Tree respectively.

Investigation results enabled identification of the primary cause for fragment separation in rock mineral component instability, typical of Verona Red and Porfirico Ramello Red. These limestones consist of mycritic nodules (fossils) immersed in a very fine grain size clayey matrix. Discontinuity areas, consisting mainly of iron oxides, calcite and clayey minerals, exist between the matrix and the fossils. Weather and the aggression by pollutants in the urban atmosphere tend to create swellings and fissures with ensuing separation of parts in the materials under examination.

The areas found to be damaged the most were those unprotected by projections or protrusions and exposed the most to the direct action of winds and rainfall. The elements inside the main building body, enclosed by the Finale Stone half-columns and the seams placed on the top storeys on the Via Corte d'Appello front were damaged the least.

Proper corrective action must therefore be directed at:
a) the protection of elements at risk with suitable coverings, wherever possible.
b) the replacement of the elements damaged the most with similar materials, having greater mineral component stability and more suitable for resisting the outside environment.

TECHNICAL GLOSSARY ALTERATION, the modification of a material which does not necessarily imply deterioration of its properties for restoration purposes.

COAT, a material surface alteration not leading to evident artifact decay and due to:
1. natural alteration (alteration coat);
2. artificial alteration (coating).

COLOUR ALTERATION, an alteration that can present with changed brightness (brilliancy), changed colouring (tint) and changed intensity (saturation).

CONCRETION, a small size, generally isometric shaped deposit. It sometimes presents as a stalactite or stalagmite.

CORROSION, decay that always implies a chemical process.

CRUST, the superficial layer of a material, visually distinguishable from the underlying parts because of its morphology (and sometimes colour). Its chemical, mineral and physical properties are completely or partially different from those of the material it derives from and from which it can separate.

DECAY, a material modification that always implies deteriorated features requring restoration.

DECOHESION, not always visually appreciable decay, that presents with decreased cohesion and adhesion between structural components, increased porosity and slight deterioration of the material's original mechanical properties.

DIFFERENTIAL DECAY, decay that presents with different intensity in different areas, due to heterogeneous material composition or nature. It often exposes original structural or textural motifs.

DISGREGATION, an advanced stage of decohesion with the separation of granules or crystals under minimum mechanical stress. It leads to marked deterioration of original mechanical properties and increased porosity.

EFFLORESCENCE, a generally low consistency crystal formation of soluble salts at artifact surface, produced by migration and water evaporation.

EXFOLIATION, decay that presents with raising and separation of one or more parallel surface layers (flakes). Individual flakes are uniformly thin, of the order of a few millimetres. They consist of both apparently integral and altered material.

FISSURE, decay that presents with the formation of discontinuity surfaces in the material, with macroscopic parts separation (fissures).

FRACTURE, decay that presents with the formation of a discontinuity surface in the material, with or without mutual parts movement (fractures).

INCRUSTATION, a compact and generally adherent surface layer of low solubility compounds (prevalently carbonates), deposited on the surface by hard water.

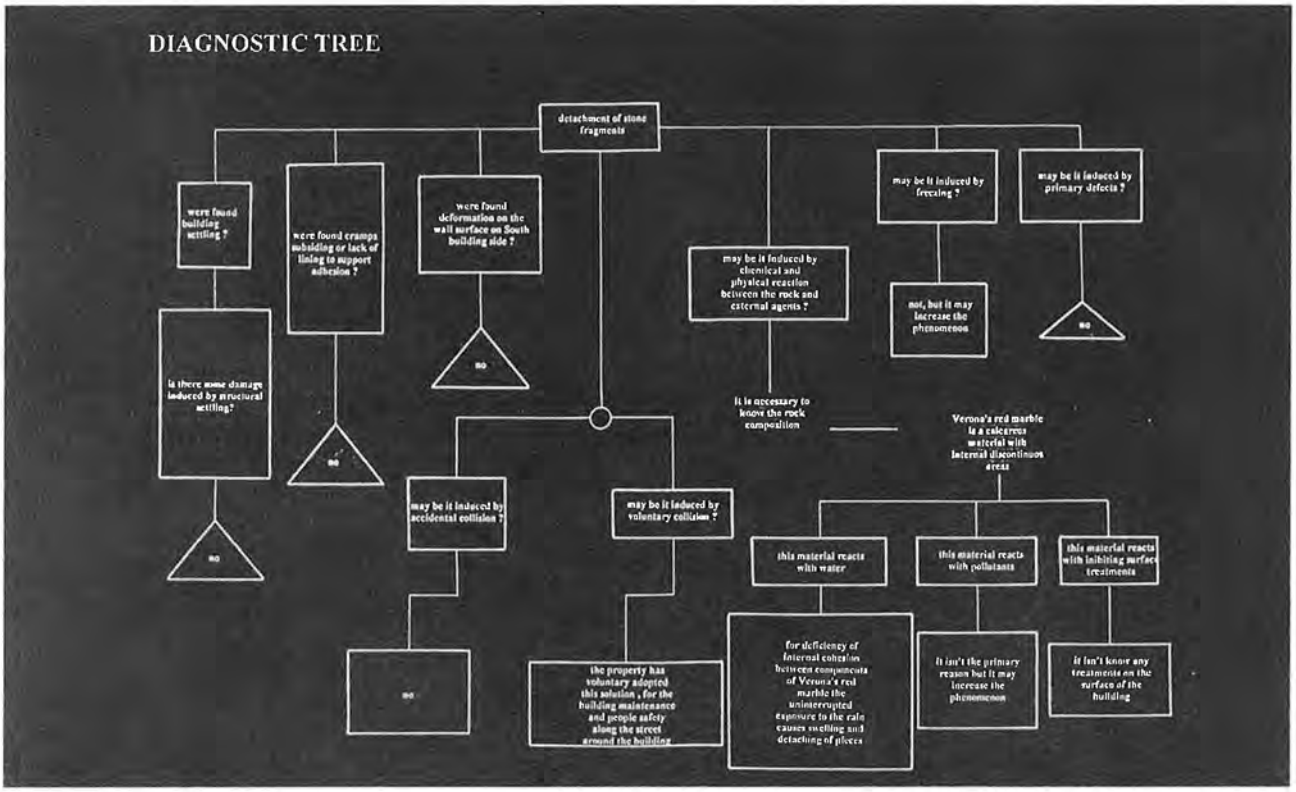
PAINTING, a thin covering over the material surface obtained with a pigment and binder.

PITTING, point shaped corrosion that presents with the formation of small cavities.

POCKING, decay that can present on high porosity materials, with the formation of often deep and interconnected pits, with walls covered in powder coming from the material itself.
PULVERIZATION, decay that presents by the sometimes spontaneous falling of material as dust.
SCALING, decay that presents with total or partial separation from the surface of parts (flakes) , often along continuity interruptions in the original material. Flakes vary in shape, thickness and size. They generally consist of apparently unaltered material.
STUCCOING, the filling of fissure and/or cavities and thick surface covering obtained by applying mixtures of binders with or without fillers.
SURFACE DEPOSIT, the accumulation of different foreign matter, such as dust, mould, pidgeon droppings and the like.

Cleaning tests

Tests on Finale Stone and Arabescato Orobico
1) Results of Cleaning Tests
Tests were performed on an area to the left of the left hand door on Via Corte d'Appello. Figure 15 shows the areas submitted to various cleaning methods. The procedures followed and results obtained in each area are given hereunder.
Area 1.
Material: ARABESCATO OROBICO
Surface finishing at emplacement: glossy.
Cleaning method: a low pressure (about 2 bar) water stream kept at about 1 m from the stone and applied for some 10 minutes.
Results: washing did not remove the surface layer created by a previous protection treatment.
Area 2.
Material: ARABESCATO OROBICO
Surface finishing at emplacement: glossy.
Cleaning method: dry microsanding with alumina powder.
Results: material decolouring and abrasion. This was to be expected as alumina is a very hard abrasive. This method is therefore to be considered unadvisable.
Areas 3 and 4
Material: FINALE STONE
Surface finishing at emplacement: fine ground.
Cleaning method: a low pressure (about 2 bar) water stream kept at about 1 m from the stone and applied for some 10 minutes.
Results: cleaning is satisfactory and the stone is undamaged (the surface maintains its pink colouring).
Area 5
Material: FINALE STONE
Surface finishing: martelined.
Cleaning method: a low pressure (about 2 bar) water stream kept at about 1 m from the stone and applied for some 10 minutes.
Note 1: water pressure is believed not to have been always under control and must have been much more than 2 bars. This is supported by the elimination of martelining traces and the flooding of several natural cavities in one part of the face.
Results: cleaning was satisfactory in the less pitted ares (though surface damage seems to indicate that pressure was too high - cfr. Note 1); dirt deposits still remain, especially in the smaller pocks of the more pitted areas.
Area 6
Material: FINALE STONE
Surface finishing at emplacement: martelined.
Cleaning method: 2 bar pressure water sanding with 0.5-1.5 mm size sharp edge quartz grains, followed by washing in water.
Note 2. The abrasive effect is too intense. Finer (0.5 mm) rounded quartz grains should be used for any further sanding test.
Results: cleaning is satisfactory, in the pitted areas too. The surface pink hue attenuated by martelining was further subdued. The overall result is acceptable, especially when account is taken of Note 2 on abrasive selection.
Area 7
Material: FINALE STONE
Surface finishing at emplacement: fine ground.
Cleaning method: 2 bar pressure water sanding with 0.5-1.5 mm size sharp edge quartz grains, followed by washing in water.
Results: greatly increased surface roughness with evident and unacceptable bleaching.
Nota 3. Damp sand cleaning of ground surface finished Finale Stone is advised against.
Areas 8 and 9
Material: FINALE STONE
Surface finishing: fine ground.
Cleaning method: water sanding was performed on the right half of the slab (8), as in area 7. Low pressure water was used on the left half (9), as in areas 3 and 4.
Results: Direct comparison of the two cleaning methods confirms the damage water sanding causes on a ground surface.
Tests on Arabescato Corchia
The lateral uprights of the third and fifth window from the corner with Via Corte d'Appello on the front towards Via delle Orfane were cleaned. These elements were covered in a uniform coat of grime hiding the original material design. All uprights present a fine ground surface finish.
Upright 1
Cleaning method: manual brushing with water and liquid soap.
Note 4. The test was performed with too high a concentration of soap. Use of a non-ionic neutral soap is advised for any further test, at a maximum concentration of 0.1% (1 millilitre of soap in 1 litre of water).
Results: cleaning was satisfactory as it removed the grey colour deposit covering the upright and exposed the material design. The following however appeared on the cleaned surface:



Diagnostic Tree.

* a chequered yellow coat, the residue of previous protection treatments;
* brown stains, close to the material's typical grey veinings.

The yellow coat was removed easily by soft abrasion with very fine sand paper.
The brown stains are believed to be due to the dispersion of ferric hydroxides derived from oxygenation and hydration of the pyrite present in the grey veinings. No corrective action to remove these stains is believed possible, as they are embedded deeply in the material.

Upright 2

Cleaning method: a low pressure (about 2 bar) water stream kept at about 1 m from the stone and applied for some 10 minutes.
Results: cleaning was somewhat inferior to the results obtained on upright 1.

Uprights 3 and 4

Cleaning method: the action of the water spray was simulated with a cellulose pulp compress kept constantly impregnated with a 0.005% watery solution of neutral soap applied for about 5 hours. Upright 3 was brushed manually for a short time, after compress removal.
Results: cleaning of upright 4 was unsatisfactory and good for upright 3, comparable with the results obtained on upright 1.

Suggestions for corrective action

The different front elements are considered separately, taking account of material nature, surface finishing and degree of grime.

Materials: BALMA SYENITE and BAVENO GRANITE

No dirt incrustations adhering to the support had formed, as the elements were in good maintenance condition and had preserved their glossy finish. Only very light cleaning was required with the prime objective of avoiding damage to the glossy finish. The use of chemicals or mechanical cleaning methods such as sanding is therefore absolutely prohibited. Low pressure water added with a 0.01-01% concentration of liquid neutral soaps can be used, followed by accurate final rinsing.

Material: FINALE STONE

* Martelined finish surfaces.

Cleaning with water sanding gave acceptable results in this case, so this procedure can be applied as long as the abrasive used is a very fine (<0.5 mm) size rounded grain quartz sand and stream pressure is kept at 1-2 bars maximum.

* Fine ground finish surfaces.

Acceptable results were obtained with low pressure water stream cleaning, but water sanding damaged the face surface. Strict yard operator control of water pressure is difficult however, and the stone might be damaged. A cleaning test with a low pressure (<5 bar) water spray is advised as an alternative, using the following procedure: water must reach the element to be cleaned as very minute droplets produced by a system of nozzles (14 nozzles per square metre of surface to be cleaned are generally needed, with an hourly water consumption of some 3 litres per nozzle). Cleaning effectiveness depends on gypsum solubilization by the water droplets (gypsum being the binder of

carbonatic stone and marble grime). Treatment should continue for long periods of time of 10 to 20 hours. Efficacy is enhanced by adding minimum amounts of liquid neutral soaps to the water in a concentration of the order of 0.01%; removal of the disgregated black crust is favoured by bland mechanical brushing with an Indian millet brush at treatment end. Rinsing with clean water is advisable as a final operation.

Material: ARABESCATO CORCHIA

Manual brush cleaning tests with soap and water gave moderate results. This method can be used when not too expensive, but the percentage of soap should be no more than 0.01%. Alternatively, a cleaning test can be performed with a low pressure water spray as suggested for the previous case, followed by short brushing.

Material: ARABESCATO OROBICO

This material is used for a very small number of elements, such as the half-column capitals and some cornice parts of the three doors on Via Corte d'Appello, added for decoration and now completely lost after previous rather radical corrective action. Such action however appears to have blocked decay, so no dangers of separation of parts exist now.

Local repolishing can be attempted to restore decoration motifs, of door frames especially. A polishing test should be performed on a limited part of an upright in this case, to asses results obtainable. No other action is possible, except replacing the damaged elements.

Material: PORFIRICO RAMELLO RED and VERONA RED

These two nodular limestones underwent the typical alterations they are subject to when used on the outside of buildings, namely decolouring by transformation of the red haematitic pigment into yellow limonite and the separation of parts caused by disconnection of the clayey matrix.

No corrective action can be undertaken on these irreversible alterations. Surface treatment to restore colour is advised against to correct discolouring, which only affects a decoration function anyhow; it is a short term and uncertain success beautfying operation.

Clayey matrix disconnection is much more serious, as it involves the danger of parts separation and jeopardizes safety. This condition is more frequent in jutting parts, such as cornices, window frames, sills and the like and rarer in more protected areas such as window uprights. This was to be expected, since the phenomenon is triggered off by humidity and water.

The taking of an exact census of the decay status of all Verona Red and Porfirico Ramello Red elements is advised after scaffolding erection. Corrective action to prevent contact and rainwater accumulation, such as resorting to coverings and fissure stuccoing, can be enough to slow down initial decay; replacement must be considered in cases of serious separation. Partial replacement, even with a lighter Verona Red variety, certainly creates striking colour contrast with existing non replaced parts; possible replacement of all parts protruding from the main front should therefore be considered as an alternative.

Covering the vertical face with small attached Verona Red slabs could be considered for cornices; this solution is probably much less expensive but could lead to other complications, such as attached slab separation.

Low clay content matrix Verona Red should be used for replacements and all provisions to prevent contact and accumulation of rainwater, such as coverings and silicon resin protection for instance, should be resorted to.

Conclusions

The most modern approach for restorers is substantial integration of knowledge on building history and culture, aesthetics and composition with knowledge of the most up to date technology and events.

The history of architectural and building science is one of the most useful and interesting contributions to the quest for optimum solutions, but further interdisciplinary integration is a must.

Technical architecture, building sciencies and technology, applied physics, hydrogeology, organic and inorganic chemistry and other disciplines are mandatory scientific and technical components for learning about the behaviour of a building or artifact in time, for diagnosing deterioration and deciding as to the proper corrective measures and their technical planning for maintainability in the future.

Contribution by petrography experts proved essential in our case, first to find out and classify the stone materials so massively present in the building, then to diagnose the degree of decay detected through the most significant cleaning tests and, last but not least, select corrective actions together with specialists in technical architecture and comprehensive design.

Chromatic values coming from the discovery of stone material real colours are all important for an architectural artifact such as the one under study. Orginal project colours had suggested careful coordination with the chromatic choices of the other front elements, such as plasters, wood fixtures, stainless steel gates and the like and with urban furnishings.

The philogical rediscovery of this original project approach has become the unreplaceable source of a new critical assessment of the building and its delicate restoration, as a consequence.

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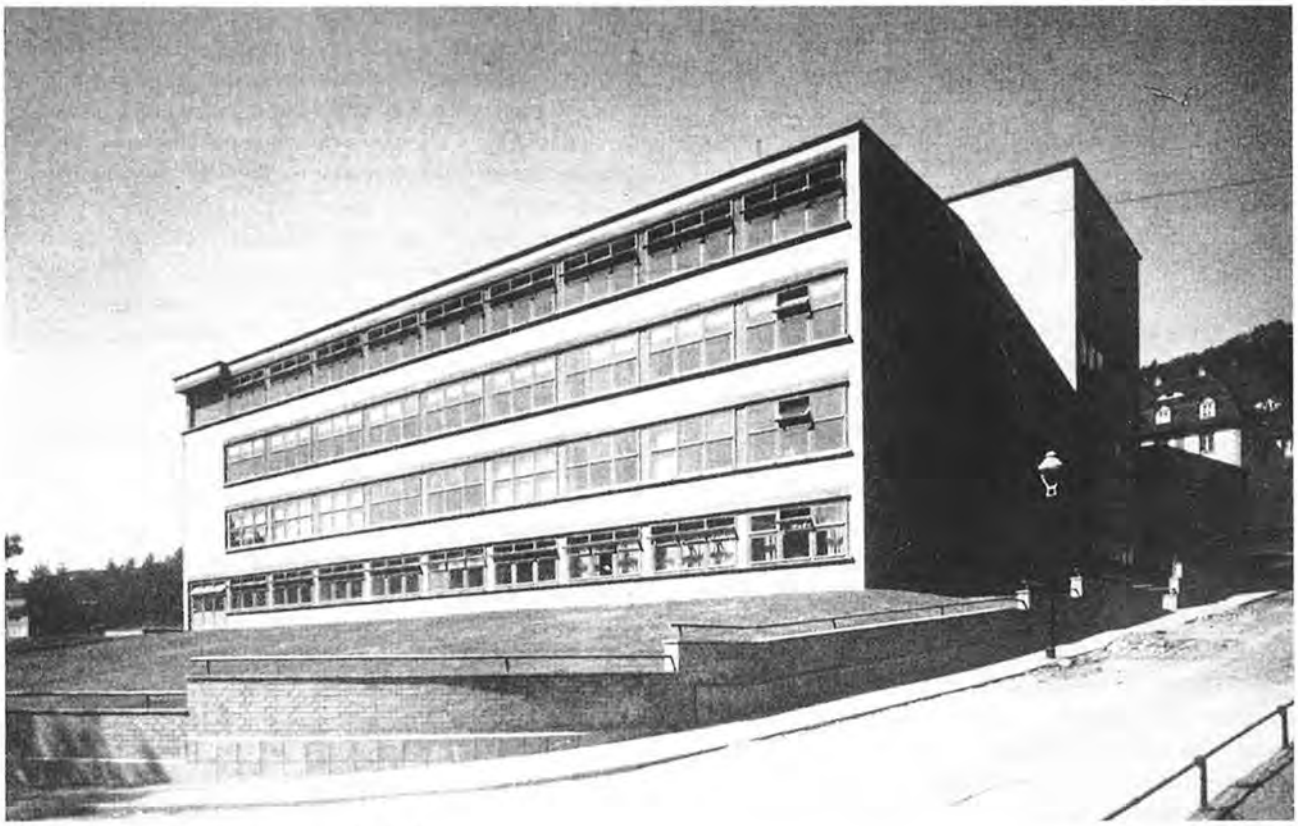
The Restoration of Two Buildings by Ernst Neufert in Jena

After Ernst Neufert (1900-1986) had apprenticed with a mason and a carpenter, he attended the Building Trade School in Weimar. The director of this school, Prof. Paul Klopfer, stayed with him in a fatherly connection after he had completed his studies and arranged his transition to the Bauhaus.
At the Bauhaus, Neufert was one of the first and sometimes the only student in the Building Department. Therefore he was given the opportunity to work in the private offices of Walter Gropius and Adolf Mayer. He collaborated, for example, on the Sommerfeld House and the Erlangen Philosophical Academy.
In 1920 Ernst Neufert travelled through Spain with two fellow students. He secured his first contacts and working opportunities in Barcelona with the help of the architect Josep Puig i Cadafalch (1867-1957). Neufert obtained access to the Institut d'Estudis Catalans of the Mancommuitat de Catalunya and he was entrusted with the task of surveying the Gothic buildings from the period of Isabel de Aragon. They went to Seville with the commission to make scaled drawings of the water systems of the gardens of the Alcázar. There Neufert collaborated also in the office of Ricardo Magdalena on the realisation of the Bank of Spain; an oil factory in Alcalá de la Real; and the project for a city theatre in Huelva.
In his sketchbooks Ernst Neufert captured the deep impressions made on him by Granada, Toledo and Madrid as well as the many other places he visited. Later he became honorary correspondent member of the Real Academia de Ciencias y Artes in Barcelona for over three decades.
In 1921 Gropius called Neufert back to Weimar, because he needed his assistance on some briefs. Thus he became building supervisor for the structural alteration of the city theatre in Jena and for several buildings in Alfeld in 1921-1922. In 1923 Neufert was promoted to chief technical clerk by Gropius in Weimar and, after Adolf Mayers withdrew, he became senior architect and chief clerk to Gropius in Dessau, where among other things, he was made responsible for the new Bauhaus buildings.
In 1926 Hans Poelzig recommended him to Otto Bartning and thus, at the age of 26, Ernst Neufert became one of the youngest professors in Germany and head of the Department of Architecture at the State Academy for Craft and Architecture, briefly the Weimar State Academy of Building.
A preliminary examination at a College of Advanced Technology was required for the two-year course and gave students the opportunity to participate in an active site office already by the second term. "On this occasion the most important advantage was the existence of real building commissions from clients with fixed requests, with building craftsmen and firms of suppliers which contributed to their experiences, with the engineer who provided answers to questions of statics, and all the other trappings, that constitute the wonderful atmosphere of an active site office."[1]
The instructors Bartning and Neufert acted as art directors while the students did the practical planning work. All revenues were used to finance the school.
The government of Thuringia assured Otto Bartning a certain percentage of public orders. The Student House in Jena as the first big public order was the responsibility of Ernst Neufert. Otto Bartning continued his architectural office in Berlin and in terms of education, he took care of both an administration building and the music in Frankfurt/Oder.
In October 1927 the Thuringian government first contacted Bartning about the project for a Student House, asking him to make a formal statement regarding a possible commission and particularly the site for such a building.
The decision by the Association for Student Aid in Jena to begin the construction of a Student House has a long history. In 1927 conditions were favourable to realize the idea, born in the hard times after World War I and particularly in terms of funding. In 1928 the government of the German Reich granted subsidies for student-house buildings for the first time, which were allocated by the economic aid organisation of the German body of students (Wirtschaftshilfe der Deutschen Studentenschaft) in Dresden, the predecessor of the German student welfare organisation (Deutsches Studentenwerk). At the same time as in Jena, new student houses were built in Karlsruhe, Breslau and Erlangen.
In the spring of 1928 the space required was allocated and the Carl Zeiß Foundation made the building site available. By April the first plan was under consideration. Later many modifications were made. Because of the limited budget, even an already officially approved project was once again reduced in volume. But this resulted in approval of the building's outward appearance.
The revisions were not completed until October 1929. Meanwhile Ernst Neufert and the active site office had undertaken another project in Jena - the Mathematics Institute named Abbeanum after the supporter of natural sciences at the university and founder of the Carl Zeiß Foundation, Ernst Abbe. The Carl Zeiß Foundation also fully financed the building. The promoter was therefore not committed to Bartning's contract, although positive experiences with the planning of the Student House and the aim to support the Academy of Building could have influenced the placement of the order.
At the beginning of September 1928 a first plan was under consideration. A variation of the plan dated -



Abbeanum, E. Neufert, Jena, 1928-1930.

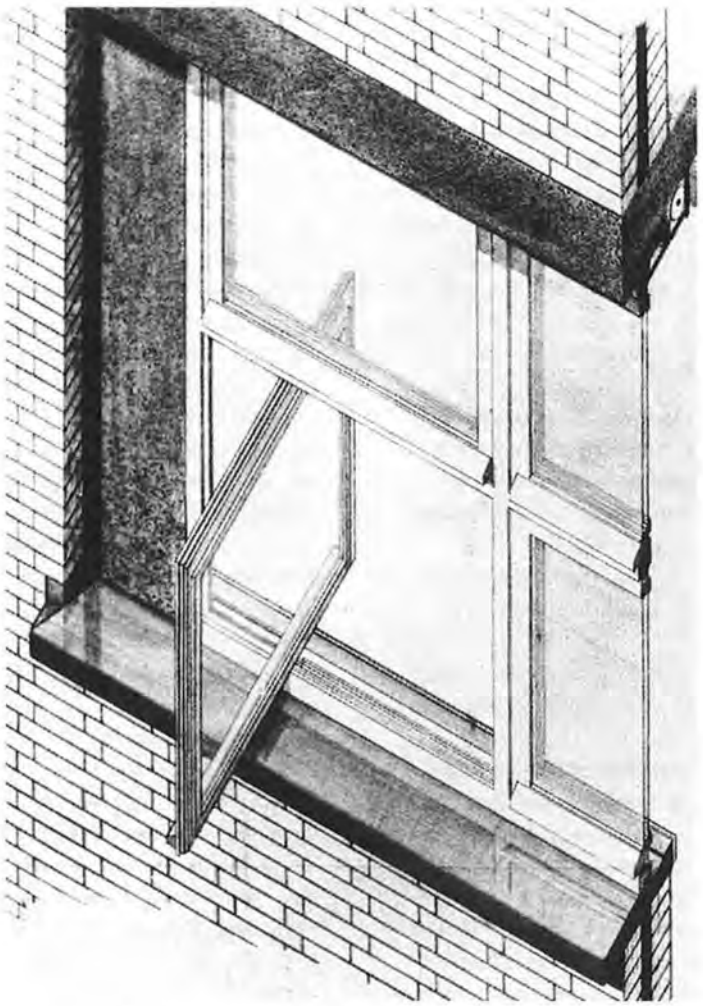
winter 1928-1929 was published together with the plan for the Student House in an advertising pamphlet by the Academy of Building in 1929.
At the Abbeanum the financing was secure and after some problems had been solved and the permit given, work started in August 1929. Excavation for the Student House did not begin before November 1929.
These two projects had been the first executed under the name of Ernst Neufert. "In close understanding and co-operation with the customer, he fixed exactly all details of the building, their realization and their price."[2] As staff members of the active site office an architect, Werther, and the building supervisor Willing were mentioned.
At this time Ernst Neufert was intensively considering detailed constructional improvements. The results had been applied to these two buildings and for some he took out a patent.
Especially worth mentioning are the swivel-swinging-seats (Student House), the universal window ledge and the ventipanes (Abbeanum and Student House), the banisters (Abbeanum) and the linoleum sectional sheet (Student House).
At the same time questions were under consideration of the building physics, of ventilation and efficient realization (doors in the Abbeanum), as well as the sound-proofing and the acoustics of the lecture halls.
The construction of the walls is double-leaf and consists of a weather shell made of clinkers (yellow for the Abbeanum, red for the Student House) and a lighter inner shell made of porous cored bricks with a hollow space of 6 cm between.
The construction of the flat roofs for both buildings had not yet reached full maturity as it is almost a characteristic feature of all buildings from the 20s.
The Student House includes a dining hall with a kitchen for 800 meals, offices for the students' self-administration, one big lecture and performance hall, a coffee house and smaller assembly rooms, workrooms, and sewing and relaxation rooms for women students.
Like the Student House the Abbeanum was a kind of tailor-made suit for its users, namely the Institute of Microscopy and Applied Optics and the Mathematics Institute. It contained the four desired lecture halls of different sizes and one large drawing hall.
Thanks to its skeleton system, it was relatively flexible as regards the partition of the other workrooms. This way the middle corridor on the lower floors is located on the right-hand side and on the upper floors on the left-hand side of the middle supporting row. Furthermore, the cross walls are not uniformly located 4 m apart like the column grid, but according to the space needs of the users. Separation of the lecture halls from the workrooms of the institute had been considered desirable. The special arrangement of the big lecture hall resulted from the possibility for extension of the building, planned at this point.
Both buildings reveal the architectural ideas of Neufert and the spirit of the Weimar Academy of Building, namely an unprejudiced approach with rejection of one-sided programmes and doctrines, as

well as an integration of function, construction and design through a careful 'insertion into the existing'. These are examples of modern-movement ideas which were well accepted in numerous circles at the end of the 20s and which could now be presented in a less spectacular but more solid and particularly better conceived manner.
This work should be highly acknowledged especially in view of the serious consequences of the world-wide economic crisis which also affected Germany. The forced resignation of Bartning and the removal of all the teaching staff at the State Academy of Building on March 30, 1930, under the pressure from the fascist right-wing coalition government of Thuringia, elected on December 8, 1929, were additional complications.
Evidence of the constructional solidity of both buildings is their intense and uninterrupted use over many years. The Abbeanum suffered serious damage from bombardments during World War II, but the damaged western half of the building was restored almost to its original form, an operation which lasted until 1951. The Student House was enlarged in 1954, an extension which by virtue of the red wall bricks used neither intruded into nor dominated the building's dimensions and layout.
Less solid than the design and the details was the execution. This was done by the firm Dyckerhoff & Widmann, which had already built some reinforced concrete buildings ordered by the Carl Zeiß Company in Jena as from 1906.
In the 80s it was possible to see the reinforcing steel of the window lintels, which had been laid bare.
In the summer of 1989 the Student House, which had hitherto been mainly used as the students' dining hall, was closed.
First of all the much deteriorated ceiling of the cellar under the kitchen had to be redeveloped, but slowly the dimensions expanded. Already in 1990 the fundamental restoration of the whole building and increase of the dining capacity to 3000 were under consideration, which resulted in the need to extend the building because of the required dimensions of the kitchen. This goal - usage - always stood in the foreground and substantial problems arose from this. Now, in addition, its preservation as a monument had to be considered. Because of the above reasons a consistent and faithful restoration was never contemplated, and the planning had become a steady search for compromise: what is technically possible and what can be afforded.
The Student House was the first building worked on according to new Thuringian building codes, resulting from the unification of Germany. Therefore the existing project had to be revised.
The fundamental refurbishment of the Abbeanum was begun in 1993, and here some experiences from the Student House could be drawn upon. Difficulties arose from the need for an extension to accommodate an elevator for handicapped people and a second escape route.
The damage to the concrete was mainly the result of processing failures. It turned out that the concrete cover of the whole construction was too small. An examination of the outer skeleton of the Abbeanum revealed very low-quality concrete. The stability under load of the whole building had to be tested again.
In the Student House all coffered ceilings (Pohlmann ceilings) were made of shotcrete, because after the removal of the permanent formwork some reinforcing steel was discovered which had remained uncovered since the construction time.
For the outer concrete structure, which had a very coarse-grained finish of washed concrete, still in 1990 there was only the possibility of a 4 cm thick concrete cover to ensure the cladding of the reinforcing steel, according to regulations. The result would have been either a change in the form of the projecting lintels or a change of the dimensions and a loss of original substance with a simultaneous renewal of the clinker façade. In 1992 other technologies were available with which the substance could be kept and only the necessary repair work done. Here the Sealcrete Unoment-System was used. The thickness of the coat is only millimetres and in this way the old structure was kept nearly intact. But it was not possible to preserve the stimulating colourfulness in the finish of the washed concrete. Unfortunately, carbonization of the concrete was much more advanced at the Abbeanum. Therefore the concrete had to be scraped off manually to a large extent. The reinforcing steel was coated with rust-proof paint and, by the placement of shotcrete, a new finish was created.
The concrete topping was removed from the roofs of both buildings and a new thermally insulated structure was applied. This way it was possible to open the overhead light of the hall in the Student House again and restore it but it was not possible to make the formerly walkable roofs publicly available once more because the parapet height was now too low.
Both the building's universal window ledges of black artificial stone were mainly still in good condition and had to be replaced only in exceptional cases. But in the planning stage much persuasive power and influence from the architectural preservation side were necessary for these typical thermal bridges to be kept.
The single windows were completely replaced by insulating-glass windows, at the Student House again with wooden window frames and at the Abbeanum with aluminium frames. Efforts to restore both buildings to their original form can be clearly appreciated, but in the case of the Student House the results were better. Also the doors were for the most part replaced. With this the fine details and the beautiful wooden veneers of the Abbeanum were unfortunately lost. Also existing hardware was not used again because of last minute financial

restrictions, the reason being that the Wagenfeld door-handles, designed by Wilhelm Wagenfeld as the head of the metal workshop at the State Academy of Building and used in the Abbeanum, belong today to the category of luxury goods.
These examples reveal the fundamental problems of reconstruction under normal conditions. For publicly owned buildings there is usually no money available for exceptional preservation measures. Therefore it was most important to keep as much as possible from the original building substance. On the other hand the equipment invariably has a limited service life. Hardware, lamps and furniture could always be replaced by copies of the originals.
In my opinion, it is crucial that a building be intensively used and experienced, rather than converted into a new museum. But it is impossible to acheive this without making compromises.

Notes

[1] Speech by Ernst Neufert in Darmstadt, 1947)
[2] Speech by Sieverts at the formal opening of the Student House.



Abbeanum, E. Neufert, Jena, 1928-1930. Detail.

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Industrial Thought on Technique as Seen through the Works of Jean Prouvé

The body of research by Jean Prouvé still appears to us today as a symbolic expression of the complex relationship construction materials have, on the one hand, with their structural laws and, on the other, with architectural forms. In modern architecture this set of relationships was linked to a desire for renewal in the means of production so as to reestablish fundamentals, and contributed to a reconsideration of the parameters of a project and of the role of the architect himself. Within this problematic context, reflecting on the works of Prouvé allows us to critically reexamine the use of new construction systems in relation to their capacity to deeply influence the methodologies of modern architecture. It has to do with emphasizing those aspects which differentiate between simple adherence to processes of modernization of construction where the use of new materials dictates form and the concept of modernity itself.
The concept of 'the machine' as the key for interpreting reality within an industrial system led the protagonists of the architectural debate to question the values and the very status of a project, the possibilities of giving shape to the multiple aspects of life, which never stops evolving and being transformed. In the formulation of the new industrial aesthetic, form becomes 'resulting form' which always expresses the reflection, each time differently, of a structure and an organization and which suit a constantly changing balance between function considered as an end, technical means and architectural form.
When approaching the work of Prouvé, we are confronted by a knot of problems contained within the very definition of his realm of experimentation which is 'at the crossroads' of the customary fields of competence attributed to different figures in the profession. Parallel 'knowledge' enriches his experiments and in architectural research engenders a set of influences of scientific methodologies much broader than that defined by technology only. Assuring, in turn, in the world of production the role of the craftsman, the businessman-constructor and the consulting engineer, he stuck to the conviction that "architecture as an agent is inconceivable except in the factory where materials are manufactured", and that therefore only the factory can maintain intact the unity of concept and construction, the link between the different phases of construction within the industrialization process desired by the building industry.

The process of prefiguration in prefabrication

Prouvé's research work, which one finds illustrated in his writing, seems rhythmical and filled with intuitions about the possible uses of new materials, giving rise to a series of experiments and a chain of causes and effects according to an apparently natural development. From the outset of the production process, Prouvé formulated a construction idea which was expressed, not intuitively, but in a clear, simple and coherently organized way, which did not require any adaptation or compromise with the materials whose capacity he had explored to their fullest. This allowed Prouvé to declare, "For me, there is no architecture without structure. Architecture is an object constructed in space. It must be structured." The construction is thus enriched by the means employed, by the constantly improved machines, even if the direction of his research regularly returns to its point of departure, that is, creative activity, which in turn enriches production by reconsidering certain structural themes in order to nourish them with new inventions. In a series of notes for the course he gave at CNAM from 1957 to 1960, Prouvé insisted that visual expression originated with an idea which must be adhered to throughout the construction process.'
In the work of Jean Prouvé, the technique of experimentation in the field of prefabrication in a continuing process of perfecting operational procedures gave a new temporal dimension to the architectural project, which, far from being limited to a single expression, became a theoretical 'prefiguration' of possible configurations and future transformations in space and time, which sought to rationally control a reality subject to chance, searching for a synthesis within the multiplicity of technology and architectural language.
Moreover the idea that a work can be perfected places the object in a process of continuous growth and evolution allowing us to follow more clearly the evolution of needs from the beginning when organizational rules were established in such a way as to regulate future adjustments.
In fact, within a process of experimentation and constant technical innovation in materials, the building, considered as 'system' and 'prototype', was always susceptible to subsequent evolution and so constituted only an intermediate stage within his research. In this sense, according to a more and more 'segmented' concept of the architectural organism, one sees the whole through an exact and rational definition of its component parts, minimal units of the system which guarantee its functioning in time. Moreover, the idea of construction as 'a system' took into account the prefabrication in the workshop, the provision for standard elements, the speed of mechanical assembly, the interchangeableness of

different elements within the framework of foreseeable evolutionary possibilities.
In fact, from the very beginning, Prouvé's industrial thought demonstrated the logic of different industrial production techniques which inspire and support new ideas and this allowed it to move coherently from structural intuition to a definition of prototype. In Prouvé's work, this receptivity to scientific methodology which allowed the construction process to become "the osmosis of science, the spirit and the hand" was apparently based on an overall control of the different phases of conception and execution. He defined a line of common behaviour for the various collaborators, a work process to take advantage of each new multidisciplinary contribution, thus avoiding any danger of parcelling out the project.
In the workshop, starting from the construction idea and through very technical sketches, an immediate dialogue was established among the collaborators which led to the materialization of the prototype or scale model and finally a series of "inquiries, trials, tests, corrections and only after this does one produce the blueprint."[2]
An analysis of the method he worked out in the factory sparks a still timely debate between rationality and empiricism. Rationality, on the one hand, in the prefiguration process of the prefabrication systems and in a mastery of the factor of chance in human activity, and in economical use of materials and in the phases of manufacture. In other words, architectural rationality is allied to technical rationality in the proposal of figurations that must become 'necessary' because they are dictated by the balance between the different factors which intervene in the course of elaboration and of the production processes.
Empirical procedure, on the other hand, which reveals itself as complementary and which is constantly experimenting with means of improving the object to be constructed, through a whole series of successive attempts based on the prototypes.
It is important to note that Jean Prouvé's structural intuition, which allowed him to conceive of his object structurally, always reveals his profound knowledge of the materials. He considered empiricism to be primarily of 'forms' rather than of conventional calculation to the point that he declared, "One does not calculate folded sheet metal, one puts it to a test."
He was constantly experimenting with some specific structural elements and taking the basic designs and enhancing them with new inventions. Thus, the same structural theme of the bearer function concentrated in a barycentric position to the axial portal will work equally well in dismountable pavilions and multifloor buildings.
Meanwhile, his profound knowledge of materials and of manufacturing procedures allowed him to develop the different articulations relative to the dimension of the structural types.

The universality of his concept which puts him at the heart of the industrial system can be traced back to his training at the Nancy School, to the teachings of Emile Gallé and his father, Victor Prouvé. After his apprenticeship in artistic ironwork, he spent the first phase of his career at the workshop on Général Custine street in Nancy where he produced his first designs of movable partitions, metal doors and sash-windows.
He later founded his own company, Les Ateliers Jean Prouvé on Jardiniers Street in Nancy which allowed him to experiment on materials and improve prototypes, research topics which he took up again after the construction of the Maxéville factory.
The workshop's technical equipment became decisive for him: from 1925, the use of electric soldering and the purchase of a large Pels folding press with a folding length of 4 m, allowed him to work with rolls of sheet metal which he used to produce entire sections of buildings, folded to form pillars, girders, roofing, partition facings and light façade panelling. Also, the constant experimentation at the workshop was regulated by the "raw material with which one had to do everything": 4 m long sheet metal with a thickness varying from 10 to 25/10º.
The lightness of the structures was one of the most interesting features not only because the saving of materials was considerable but also because it was easy to transport. This did not go against structural stability in so far as the folding of the sheet metal, which became more and more intricate and varied, reinforced the structures and increased their resistance allowing them to absorb the material's expansion of the building.
The experiments on light and dismountable structures, produced in the second half of the 30s, were put to new use in the Maxéville factory, thanks to the new equipment and the innovative form of project management based on an overall control of construction procedures.
The Maxéville factory, which at the beginning of the 50s employed three hundred workers, went through a sudden change in its management and production strategies with the investment of capital by Groupe de l'Aluminium Français, which tended to relegate Prouvé to the role of the inventor of certain industrial components, which afterwards were marketed individually.
For Prouvé, the rupture became inevitable in 1952 and his separation from the factory marked the beginning of a painful phase in which he would be consulted as an engineer for CIMT for his specific knowledge on the subject of curtain walls and where his participation in construction work was limited simply to quality control.

The construction of the Meudon quarter[3]

Looking at the new systems of prefabrication in the project for mass produced detached family houses reveals that, from the 30s to the reconstruction period, Prouvé continued his search for new technical knowledge. Indeed, because of its limited dimensions, the single family house provided a good testing

Le Quartier de Meudon, Jean Prouvé.

ground for new construction materials and for building numerous prototypes for mass production.
Already by the second half of the 19th century, research had intensified on the theme of light-weight dismountable housing like the prototypes of the 'all-steel' houses which were successful thanks to the possibilities of the use of sheet steel of which we still have examples in Poissy, Versailles and Jarville. These models were forerunners to a lighter-weight structure even if, in fact, the modernization of construction procedures did not imply a reconsideration of technical form on the whole.
From the end of the 20s, the concept of mass produced houses became more closely related to the research of certain leading representatives of the French 'modern' movement among whom were: Le Corbusier, Jeanneret, Brelet, Le Donné and Nitzchké, Beaudouin, Lods and Prouvé; all of whom went to industry to experiment.
We can glimpse, then, a parallel history of technical experimentation on the prototypes for detached family housing, often in addition to the better known production of these architects. This emphasizes their research for common significance, which led them to almost an anonymity of architectural language in order to avoid the technological rhetoric.
From 1936 to 1944, the Prouvé workshop produced numerous prototypes for the dismountable single family house with axial portals according to an essentially industrial blueprint, examples of which are: the 1936 BLP house, dismountable with the dimension 3x3 m; the 'holiday homes' on pilotis; the movable barracks for the Air Ministry in 1939; the wooden pavilion, the BCC building in Saint-Auban, the result of a collaboration with Jeanneret on mass production of single family houses, which lasted from 1939 to 1942.
The research developed from the relationship between the structure and the cladding. In the evolution of the Métropole model, the components, like the axial support, the system of covering panels, the roofing, the point where the insulation meets the framework, are complex parts from a functional and performance point of view but ultimately form a whole. In particular, in his prototypes of single family houses these are the elements capable of containing and expressing the spatial quality of the entire building which was continually being improved.
That is why the central axial support which bears the 'floating' roof could be modified both in its mechanical anchorage with the ridge pole girders, and in the form of the moulding section in the Meudon houses which plays a role in the arrangement of interior space and function.
Thus, the balance between the exact definition of the parts and the whole of the work is made clear in relation to the triple reality of material, energy and information within which the structural whole is resolved: material, whose utmost capacities he studied; energy, expressed by deformation and by structures in tension; technical information, contained in the components and in the structural expressions.
After World War II, in 1949, Prouvé was offered the opportunity to experiment in a first series of twenty-five low cost, mass produced single family houses. Meanwhile, the Métropole model with axial portal would never be used by the Ministère de la Reconstruction et de l'Urbanisme simply because after a first phase of research, developments focused on a

type of heavy prefabrication. The structures would remain unused for several months in the Maxéville factory till in 1952 Prouvé decided to put them up for a group of white collar workers on the edge of the Meudon forest according to the plan of the architects André Sive and Henry Prouvé. In this area he built four houses, developed from experimentation with the 'shell' structure.
The construction of the Meudon quarter bears witness to the importance Prouvé attributed to the research on mass produced detached family housing. In the field of housing, Prouvé's research tends to reverse the traditional temporal categories of duration and structural unchangeableness. While the 'heavy' house was planned to last through centuries without responding at all to the evolution of housing needs, thus 'freezing' the land and making it 'unsalvageable', mass produced houses, dismountable and movable, would be the expression of lightness and vitality capable of accurately responding to change. The extensive use of aluminium guaranteed the lightness of the hollow structures, which made them easy to transport and assemble.
The modular design also permitted the elements to be used flexibly and interchangeably to create a rhythmic variation. Indeed, a basic feature of Jean Prouvé's constructions is the underlying and constant perception of the physical and temporal definition of the building. The modular cadence of the supporting beams, the connecting joints for the facing panels are all expressions of the ritual of the assembly operation and the search for rhythm in the building. In a short essay written in 1950 kept in the Archives Départementales de Meurthe-et-Moselle in Nancy titled "Essais de modulation applicable à la préfabrication", Prouvé, starting from a model with a 1.20 m base, which he justified technically as the maximum quartering of resistant parts of the framework and the average dimension of the panels, emphasized the need for a harmonic progression by defining each component so that from the beginning the modular dimension did not necessarily impose its rhythm on the whole composition. Thus, Prouvé achieved a remarkable difference in the dimensions of the components, as much in the elements of the façade of sun-screen panels ranging from 30 cm to 240 cm, guaranteeing in the Métropole model a much greater flexibility in the cladding of the structure of the detached family house.
In the Meudon buildings, the Métropole models, 8x8 m and 8x12 m, were used. In the latter, a double bearing structure was incorporated in the plan. The Métropole model is characterized by many elements: the weight is concentrated in the axial support; the building's cement or metal foundation and the extended aluminium roofing which takes advantage of the deformation of the materials. The phases of construction of these light weight structures proves not the passive logic of purely mechanical construction, which is a simple juxtaposition of elements produced separately, but rather the construction of an organism calculated as an inseparable entity in its deformations and expansions, because each element in the construction necessarily participates dynamically in the resistance of the whole.
Indeed, from the very beginning, he obtained the balance of the structure by using deformation induced in the material. The sheet aluminium is moulded to form a resistant section that shows evidence of tensions, in a strict reduction of weights to take advantage of a clear separation of structural roles of the specific construction elements. The individual elements are thus describable through the assembly procedures. Also the numerous technical catalogues on construction had a publicizing and cultural objective in emphasizing the importance of communication within a technical reality in constant evolution.
In the first phase of assembly of the Métropole model, flooring plates were adjusted into position on stone walls of an average height of 2.5 m necessary to level irregular terrain. Then came the placing of the portal which became an independent part with an articulation pivot, fixed on the lower side of the ceiling, then the assembly of the ridge-pole girders bolted to the portal and with fixed gables at the ends. The gables were supported by panels and jointed together at the upper sides equipped with gutters. On the second day, the roofing, formed by self supporting aluminium plates, was assembled by overlapping the corrugations lined with a soft insulation which eliminated the use of a framework between the girders and the facing panels. The slope of the roofing was obtained through a tensing of elements by the tie-beams of the façade. The operation was achieved by positioning the facing panels then clamping them at the upper and lower sides and anchoring them with covering-plates. Particular attention was given to the system of fixing the panels that defined the building's 'skin'. Indeed, the panels, made of a hollow structure in sheet aluminium with layers of fibreglass inserted, present a variety of interchangeable elements among which are: window panels, port-hole panels, glass panels, green house panels. The window panels of the Meudon houses were constructed with sash opening and a metal shutter.
The Coque structure was used for the construction of four houses in Meudon. Both the simple 6x12 m model and the 5x1 m model with its roofs sloped in opposite directions demonstrate the assembly of Coque components on cement and stone walls. In the latter, the stone support is placed in a central position at the intersection of the different inclines of the Coque roofing elements.
Experiments with the Coque model originated in the re-use of procedures for industrial structures. As Prouvé said, "The first Coques were sheds, roofing for factories. I imagined making sheds with a new material, good quality sheet metal in large rolls."

He did this for the first time in the Mame factory in Tours in 1950.
In the more advanced experiments, the multi-functional Coque element, entirely factory-made, could furnish even the entire cladding of the house in which openings were then made. Despite the partial application of this technology in Meudon, the base structures were technically advanced and in relation to the central portal in the Coque house, the roof became a key factor in the whole and therefore more suitable for mass production.
In the first series of structures which measured 7x12 m with a base module of 985 mm, the roofing system is constituted by twelve Coque elements mounted respectively on the cement wall and on the facing panels. The Coque element was hollow, composed of a self-supporting steel chassis with two volumes of air and a thermic barrier covered with aluminium sheeting, the chassis was available in a variety of shapes and lengths from 4.80 to 7.20 m.
The best example is the section which shows the unity of space characterized by the Coque roofing elements with an internal height varying between 2.30 to 2.80 m.
The circulation of air in the interior with two aeration outlets at the ends of the roof was very important.
The house was behind a stone wall which separated it from the road below. The longest side of the house, consisting of 2.40 m high panels, opened onto the garden. This part of the house consisted of a living room and two bedrooms with sliding room dividers which used a system of flexible and variable panels to open onto a small loggia formed by the overhang of the roof.

The future of the Meudon quarter

To ask about the survival of the Meudon quarter means identifying technical values as well as construction

Le Quartier de Meuron, Jean Prouvé. Detail.

know-how which continue to be applied in contemporary buildings, be it in the continuing use of certain materials or in the conceptual legacy. It is an unarguable fact that the quarter has, still today, the character of a construction site-laboratory, which foresees the future reality of a particular form of the individual dwelling.
The houses, which at present mostly function as second or weekend residences, have often undergone slight modifications even if only no more than minor changes, like replacing the metal roof sheeting, maintenance work and painting the panels, in some cases, replacing the frames, resealing the stone facing and finally removing the revetment and internal partitions.
One must note, however, that the Meudon prototypes could be adapted by gradually substituting some of their parts without cancelling out the integrity of the whole: the degree of freedom the building possessed continues to be evident despite successive alterations.
The balance between perception and use is expressed through the extraordinary quality and the intensely tactile sensation of the material and also by the immediate perception of spatial and technical qualities and in the building's form.
Compared to the Métropole system, the Coque structure, thanks to a condensed way of thinking where the structure was based on one single hollow element, the roof, has been affected less by any modification which could have changed the original character. So the future maintenance should only involve improving component elements such as the roofing system and the mass produced panels, which would preserve this conceptual and cultural heritage.
The Meudon houses show, nevertheless, the unity of their composition in such a way that it is fairly difficult to consider them in terms of mass production. Indeed, with his industrial logic of perfecting prototypes, Prouvé always preferred prefabrication in limited production rather than mass production as shown by the pronounced variations of the types produced. That is why it seems to anticipate the process of technological de-standardization which followed the period of intensive mechanization.
Although, at present, the variations of models produced have become more and more numerous even in the production of single pieces, the continuity of production flow can still be guaranteed. Also, one can observe a separation and a very great specialization of the individual parts that make up the work: a multiple divisibility and a greater articulation, which are, in fact, contradictory to the desired flexibility of the operations and the possibility of an empirical verification. Within that problematic context, one must emphasize the validity of Prouvé's method which was expressed in a unalienable unity of idea and execution. In contrast to a sequential method of successive and autonomous phases, his methodology anticipated from the start a dynamic collaboration of the various fields which while resolving new problems, could cause the initial project to be revised.
This paradigm, then, appears to be very different from current technology because of the use of alternative construction techniques related to performance capacity. This has defined situations which are easily interchangeable from the technical point of view as opposed to technology based on necessity and coherence used by Prouvé for the different phases of construction. A new controversy has arisen in the world of architecture over the return to the use of materials for their expressive and technical possibilities as opposed to the predominant rhetoric of technological language.
In relation to these issues, the originality of Jean Prouvé's position lies in his vision of the new possibilities of architectural reality conceived and not completely contained within the limits conventionally attributed to the architectural discipline. It is a vision which combines the different fields and which places architecture in a constantly changing reality with its productive, economic and social implications.
Industrial thought on technique then becomes a desire to examine questions of technique and consequently the question of architecture in the complex web of dynamic internal tensions inherent in reality. To make the most of scientific methods he needed to be able to organize the different specializations so as to assure continuity and simultaneity of procedures according to their order of importance.
Overcoming the present marginality of architecture means resuming the dialogue with technological research which cannot be limited by the exceptional character of high-tech architecture but which, as opposed to the demonstration of a technical resolution, rediscovers evolution and the perfecting of the project as fundamental qualities.
The graphic material deposited in the Archives Départementales de Meurthe et Mosells (ADMM) has been collected in a Jean Prouvé archive, sub-series 230 J (material from his studio, rue de Blancs-Manteaux) and the sub-series 23 J (material from the Maxéville factory).
I would like to thank the Jean Prouvé family and Mr. Didier Berheim who gave me the authorization to consult the files of the ADMM in Nancy.

Notes

[1] Sketches and notes by Jean Prouvé, ADMM, Nancy- 230 J 145.
[2] Handwritten notes, Jean Prouvé CNMM course, 1957-1970
[3] Material referring to the Métropole and Coque models used at Meudon is conserved in the ADMM sub-series 23J and sub-series 230 J.
[4] Experiments on modular construction, 1950, 230 J 130

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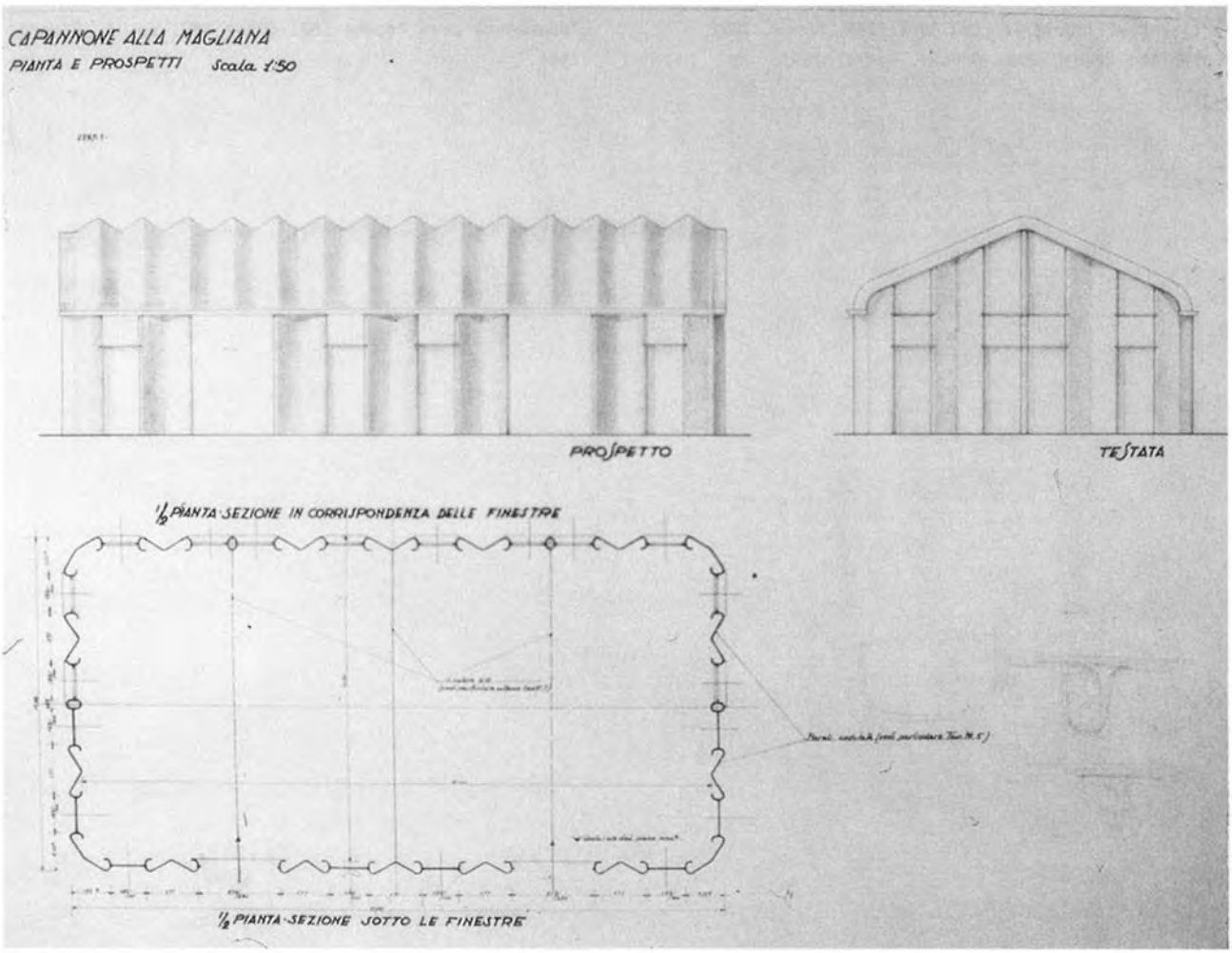

Experimental Storehouse, P.L. Nervi, Plan and elevations. (CSAC Archive, University of Parma)

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The Ferro-Cemento Experimental Storehouse by Pier Luigi Nervi

In 1943 Pier Luigi Nervi registered his patent for *ferro-cemento*, an extremely thin plate (30 mm) made of a certain amount of small-diameter wire netting fixed on vertical bars of a wider diameter, with cement mortar used as binder.[1]

It was war time. Pier Luigi Nervi was fifty-two years old and his career had so far been marked by successes and major achievements.

His name, associated with the Florence stadium, with its well-known helicoidal stairs, and with the Orbetello hangars, had become known worldwide.

The first phase of his career, during which the pioneering enthusiasm of this designer-engineer had produced some fundamental advances in the history of construction, was now over.

Nervi began his career in 1913, when he obtained his degree at the age of twenty-two. At that time, the reinforced concrete phenomenon was almost the same age, having started to increase in 1890. Since then, in fact, there had been a fast sequel of discoveries, patents and uses opening up and developing countless possibilities for this new material.

The enormous potentialities of reinforced concrete gave rise, either through the intuition or through the knowlege of single individuals, to a rich range of different types. However, these would soon coagulate around two main elements: the 'building material', with its characteristics of fluidity and mouldability on the one hand and the system of supporting ribs on the other.

It is certainly the huge variation and diffusion of the Hennebique phenomenon that rapidly imposed this system, identified as 'the era of reinforced concrete'. 'Beam and pillar agents', with their manuals and 'directions for use', invaded the entire world: all this was 'new', therefore exciting, and within everyone's reach.

The system gradually replaced brick walls, wood and iron, preserving their language in the beginning and then discovering its own: the language of lightness, of orthogonality, of essentiality that would later also become the language of modern-movement architectural culture.

The young engineer Nervi first studied and then started to work with the newborn 'reinforced concrete'. In the beginning, he became acquainted with the material working for the Società Costruzioni Cementizie Bologna and his unflagging enthusiasm for it led to numerous tests exploring the material's countless possibilities (among these, a rather original patent concerning a 'safe protective mould for private safes and treasures' made of cement and iron filings).[2]

Later he began to use the new 'Hennebique system' of building with reinforced concrete, adopted in Italy for reconstruction after World War I, on the Adolfo Coppedè Alhambra Theatre in Florence, 1922, several works with his society (Nervi & Nebbiosi) among which are the Cinema Augusto in Naples, the covering of a theatre in Prato and finally the Florence Stadium Competition. This project gave him the opportunity to challenge the possibilities of this new building system: the cantilevered canopy of covered tribunes and the helicoidal stairs were the first goals. Nevertheless, Nervi began to verify the limits of the system and from there arose two fundamental contributions to his subsequent work: one is the impossibility of calculating complex structures, hence the necessity to turn towards intuition and experimentation: the other, and more productive one, concerns the realization of free complex shapes, namely the big difficulties involved in building forms for casting.

We are already in 1935, at the height of the Fascist era, when 'the utopian or involuntary respect' for the regime of young rationalist architects started to wane. The illusion that the 'Fascist Revolution' could have been a parallel synonym for 'Modernist Revolution' was fading out and the reactionary choice of the regime began to stretch out towards a representative monumentality.

With his initial works, Nervi enhanced that misleading enthusiasm, but later his liberal spirit reacted to it and made him withdraw from the scene. In fact, Nervi was absent from the public eye in the years between 1935 and 1942: his activity was divided between industrial professional tasks (cisterns, silos) and experimental design of shapes in complete freedom enriched by technological inventions (monument to the Italian flag, exhibition buildings, the Arch for the E 42, the revolving house). During the war he would develop experimentation more and more in response to a new 'call' to the 'big tasks' of postwar reconstruction. Awareness of the problems hindering new progress towards the 'boundless posibilities of reinforced concrete' joined to a renewed youthful enthusiasm would enable Nervi to rediscover cement as a fluid and malleable element at the service of formal intuition.

Ferro-cemento

Nervi began to consider problems arising from the lack of material in the postwar period and those related to naval construction, which he had been studying for a long time. He sensed that the potentialities of concrete could be further developed and tried to modify the ratio between the two basic elements "exalting beyond any reasonable limits the amount of iron, thus reducing cement as a simple binder".[3] The

Experimental Storehouse, P.L. Nervi, Rome, 1945. During construction. (Archivio Antonio Nervi, Rome)

goal, first envisaged and finally reached, was that of creating a 'new material'. Not only a fluid and malleable reinforced concrete but flexible and shapeable *ferro-cemento*, the two materials so strictly bound together to become one only with the specific characteristics of greater stretching capability and less sensitivity to cracking.

He thought of different solutions with small slabs 10 to 60 mm thick, reinforced with layers of iron mesh, laid upon them in such a way as to obtain almost the same thickness as the complete slab, soaked in excellent-quality sand and cement mortar. This discovery and the first positive experimental tests infused Nervi with such enthusiasm that he greeted the event as a true revolution from both the construction and aesthetic points of view. This material opened up scenarios of shape resistant structures and of "membranes resistant to pressure and tension, corrugated and curved as one requires".[4] With his usual designing fervour, he produced a roof 300 m wide, big enough to cover the entire St. Peter colonnade in Rome, made from a 100 mm thick corrugated *ferro-cemento* surface, constitued by two sectors with nets similar to the small tested slabs and support bars in the middle.

The real progress, however, concerned ways of

building. Even there, it appears that freedom from casting forms was one of the main goals. I quote: "...the metal armour placed that way is capable of retaining cement mortar pressed with a trowel until it goes out from the other side".[5] Thus, the casting form became useless.

Ferro-cemento was tested in 1943 in the construction of three cargo ships and one 400-ton motorship, not completed due to the ongoing war. Immediately after the war, the 145-ton motorship "Irene" was built and tested, but the first use of *ferro-cemento* in civil engineering was the construction of a small experimental storehouse.

The experimental storehouse

The storehouse is a 21x12 m building on Nervi & Bartoli Company land in the Magliana area, Rome: the thin *ferro-cemento* walls had to be moulded to obtain with their shapes the necessary vertical and horizontal resistences. Nervi designed for the vertical wall, with the freedom provided by this particular way of construction, a peculiar corrugated profile, alternated with linear parts that allow windows or wide entrance doors.

These undulating profiles are the intelligent synthesis of 'static sensitivity' and construction technology and are generated by the building method. The first step consists in placing some vertical wooden posts, rounded to follow the wall curving; these pillars are like leaning points from which the steel frame, previously shaped on a wooden cast, unfolds. It is made of two horizontal iron bars 50 mm in diameter, every 200 mm spaced by small vertical wooden ledges, and by a steel-mesh weighing one kilogram per square metre, in a number varying from two for the walls, to four for the roof (less than in the experimental tests, due to the lower loads of the storehouse).

A vertical reinforcement of 80 mm diameter bars was added in correspondence to the wooden pillars just where the steel frame curves. The thin wall became orthogonal as to the elevation, in order to allow the positioning of the window frames.

This closed iron structure is covered with hand worked sand and cement mortar of good quality; the mortar pressed on one side fills up the spaces of the steel frame penetrating it just far enough to require a simple shaving to obtain the desired thickness of 30 mm and a good finish.

Particular solutions of the wall profile are designed for the corners and in the middle of the short elevations where a single reinforcing element has been inserted.

The undulation of the *ferro-cemento* for the roofing is simpler and is repeated according to the rhythm of the more complex vertical façade.

In this small building Nervi looked for maximum design consistency using the standard material thickness of 30 mm even in the architectural details: the gutter, the window sills and the reinforcing pillar on the short elevations. This goal is strongly aimed at even in the face of technical difficulties, as in the case of the reinforcing pillar and the anchoring of the chains, wind-bracing the building from inside: in the first case, with the standard thin wall of *ferro-cemento* he made a hollow element using the only disposable form obtained with vertical wooden ledges fixed onto horizontal moulding; in the second case, the anchoring of chains is achieved, acrobatically though correctly, with a radial system of iron bars on the 30 mm thick horizontal portion of the gutter.

The storehouse still exists and, together with other old ones belonging to the Nervi & Bartoli Company, is being used as a garage.

After fifty years, its condition is quite good and there are only a few damaged areas, due most of all to water infiltration: not many in fact, considering that, for testing reasons, no waterproof system has been used for many years.

Several tests on a structure sample have revealed the very good condition of the mortar and an almost complete absence of cracks.

This small building assured Nervi of the quality of his intuition and convinced him that "this type of structure would never have to fear any technical or economic competition in the important roofing field in its several construction and architectural shapes", as Nervi himself says in his book *Art or Science of Building?*, published in April 1945, the last technical chapter of which is entirely devoted to *ferro-cemento* and to his experimental storehouse.

With the knowledge acquired from the first works and with new discoveries, Nervi was now ready for the postwar reconstruction and for the series of great assignments and several works that would fully establish his fame.

* This paper was prepared with the active collaboration of Irene Nervi, who allowed me to study and use documents from her father's and grandfather's Archives (Antonio Nervi Family Archives, ANFA)

Notes

[1] Nervi registered two *ferro-cemento* patents. The first no. 406290 (requested 25/2/43 no. 1487) and the second one with some additions no. 426296 (requested 15/4/43 n° 3153). Unfortunately these documents were lost in the State Archives.

[2] Letter to Mr G. Ceccarelli, 10/4/21, Firenze (ANFA) In the writings of these years we also find news about different types of slabs (letter to Presidente del Collegio degli Ingg. Ancona, 25/3/21) and about "gazometri" in r.c. (letter to F.11/1/21) .

[3] *Nuove possibilità per le costruzioni navali in cemento armato* (Ed. by Nervi & Bartoli Company, Rome w.d.)

[4] *Arte o scienza del costruire?* (Rome, 1945)

[5] Idem.

Hanken building, Helsinki, 1953. Interior view of mainhall of auditorium.

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The Hanken Building- Swedish School of Economics and Business Restoration Principles

This article discusses one of the Finnish National Board of Public Buildings' current projects, namely the restoration of the Hanken Building, and describes the problems involved in preserving modern architecture as well as the solutions adopted for this particular undertaking.

Historical background

Firstly, it is essential to take a look at the kind of conditions which prevailed when Hanken was built. Already by the 30s, Functionalism had assumed the position of a national architectural style in Finland. When Hanken was completed, in 1953, the country was still going through the postwar period and the principles of Functionalism had become firmly established there. Hanken cannot therefore be considered a progressive building; on the contrary, it represents a Postfunctionalism in which Nordic stylistic features of the 50s can clearly be seen, particularly the softening details and selection of materials - natural-coloured wood and red brick - which, for the Finns, endow buildings with a more human feeling.

The country having long been a battlefield in the 40s, after the war wide reconstruction had to be undertaken in Finland. Furthermore, society was in the grips of enormous economic problems: large debts, more than half a million people who had had to flee Karelia, the breakdown of the agrarian social structure and a number of other changes at the macro level were the central issues. In this context, the economic basis for construction was weak. The building of Hanken and other universities in the 50s was an indication of the belief that the most effective way of fostering the nation's development was by investing in education and research.

In 1948 an architectural competition was convened and architect Kurt Simberg's proposal was declared the winner. However, due to funding difficulties and to the shortage of good-quality building materials, construction work did not get under way until 1951. Nonetheless, the planning of the Hanken project clearly reflects the need and will to make the building a work of art in which the ensemble, consisting of the buildings and structures, was planned in close cooperation down to the tiniest details. Under Simberg's supervision, the group consisting of interior designer Olof Ottelin, colour designer Yki Nummi, lighting designer Lisa Johansson Pape and textile designer Dora Jung - all well-known in Finland at the time - created a Hanken ensemble which has preserved its character to this very day. When the building was completed, it was felt to be very functional and the competition judges praised Simberg's project precisely for its rational setting out of functional areas, which took into account the provision of natural lighting throughout the building and sought to minimize the impact of traffic noise by making the lecture rooms, faculty offices and library spaces face the quiet side streets. The common areas and large auditoriums were given a central location in the heart of the university building, while the lower floors along noisy Runeberginkatu Street were reserved for business premises to be let and for student lodgings. These were built as a future investment to be put into use as the university's activities expanded.

The restoration project

The present restoration project was launched in 1991 when the Ministry of Education allocated funds for the design work. It was important from the standpoint of the building itself to define the restoration principles at the very outset of the project: we had to decide which aspects and parts of the building should be preserved for future generations. Here we ran into an inevitable conflict with a number of functional objectives. The university had grown to more than double its original size and the teaching and research methods had evolved in a direction that utilizes modern information technology and international data communications. It therefore became clear that if we were to preserve the building it would have to be modified.

When the planning stage got under way, the building's essential features were recognized. While we had our own preconceptions of the stylistic features of Classicism and Art Nouveau - decorative mouldings, colours, the shape of the rooms and so on - the basic question was: what are the significant factors of modern architecture? In the case of Hanken, these were the use of building masses, the division into rooms and the location of functions. Further problems were encountered, however, when the designers moved on to questions of detail and materials.

The aesthetics of the Modern Movement are based on minimizing the use of forms, details being employed primarily in the building's technical components such as lighting fixtures and their distinctive features. The overall aspect of a Hanken corridor derives from a certain quality of linoleum colour, thin floor mouldings, teak window sills and a distinctive series of lighting fixtures, as well as from the acoustic grooves in the drop ceiling. When architectural balance depends on small nuances, it can be disturbed by even the slightest change.

Restoring a modern building differs radically from restoring older buildings in one significant way: a modern building has never been renovated or modified

before. The building has been modified by small repairs, thereby guaranteeing its usability, while its basic aspect and character have been preserved as it was built. Consequently, we must face up to the fact that this renovation is the first and that everything we touch is original and authentic. The value of the older stock of buildings lies in the unbroken chain of use-repair-use-repair and so on. A modern-movement building's virginity - its untouched quality - disappears after the repair has been made. The importance of the first repair must therefore be appreciated and recognized, since here we define the trend of the building's entire future by beginning the chain of repair and use.

Building materials and constructional faults

All renovators or restorers have come up against the same problem with materials. Building materials that were manufactured forty or fifty years ago are no longer available anywhere, while 200-year-old or even 500-year-old building methods are still applied. Conventional building is characterized by the use of only a few different kinds of materials in a wide variety of forms. On the other hand, modern architecture is characterized by its sparseness of forms but abundant use of different kinds of materials. A further problem which renovators of modern buildings will encounter is that of constructional faults. Conventional building was based on a tradition of structural and engineering solutions that were decades or centuries old and founded on a collective accumulation of skills. The Modern Movement renewed structural engineering: designers competed in creating new innovations and it is precisely these details which have great architectural value. This nevertheless led to a great number of errors in the form of structural solutions that could not endure, a problem particularly pronounced in the Nordic countries with their severe climatic conditions. It is here that designers often come up against the most difficult problem: even though they would like to preserve and repair, this simply is not possible.

The design solutions at Hanken

The well-known Finnish architect Eric Adlercreutz was chosen to do the design work for the Hanken restoration project. During the design stage, the building was divided into three different zones and preservation objectives and the degree of conservation were defined for each of them:

1) the restoration area, including the external architecture, the main interior spaces such as lobbies, corridors, auditoriums, the library and a number of special areas. The objective here is to employ all possible means to preserve the building's original state and authenticity;

2) areas whose original use has been maintained while admitting renewals and new technical equipment and needs. In these cases, the surface materials are as a rule new, though adapted to the building. Included in this group are some lecture rooms, offices, the kitchen and the student refectory;

3) areas where everything will be changed and a thoroughly new layout built. The changes affect areas whose uses will be altered, for example, the boiler room and associated basement areas as well as the wing facing Runeberginkatu Street, where the architecture will be entirely new.

At the design stage pains have been taken to find the correct materials and to carry out the most suitable technical repairs. Noteworthy examples here are the lamps in the corridor, on which test repairs were carried out in search of the best solution.

Since the restoration plans for Hanken have been completed and the contractor selected, but construction works have yet to begin, a final assessment of how well the restoration and renovation were carried out and the preservation objectives met will have to be made in two years' time, when the restoration works have been completed.

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Renovation Problems of the Hans Scharoun Building on the WUWA Housing Estate

Introduction

Today we face a difficult revaluation problem with interwar buildings which belong to the vanguard of the 20s and 30s. One of them is the hotel-like building designed in 1929 in Breslau by the well-known German architect Hans Scharoun. This building was part of an exhibition entitled "Dwelling and Workplace" (wuwa - "Wohnung und Werkraum Ausstellung") organized by the Silesian Section of Werkbund. It was an experimental building conceived to test new materials, new technology and new tendencies in architecture.

Function and architectural concept of the building

Hans Scharoun designed a completely new type of apartment house for childless couples and single people. The building consists of a dwelling (left and right wings) joining 48 small split-level flats, a restaurant, recreation hall and rooftop garden. The right wing comprises 16 larger flats with balconies for childless couples (37 m^2), while the left one consists of 32 smaller flats for single people (27 m^2). The flat arrangement is original and bold. One corridor situated at the half height of the building serves two levels. From the corridor level there is an entrance to an anteroom and further down to a living room with a kitchen niche and down again (under the corridor) to a bedroom with a bathroom. In the adjacent module the room is entered from downstairs. The bedrooms are always situated in the northern part of the building under or above the corridor. That is why every flat covers the whole depth of the building, which allows ventilation despite the corridor. Bathrooms are situated between the bedroom and living room and are ventilated through the roof (by means of ventilating pipes), in the same way as the kitchen cupboards. Scharoun himself described his building as sort of a dwelling placed somewhere "between one-family house and hotel and between a shelter for settled people and nomads."[1] It was for doctors, students and research workers. The keys were left at the door-keeper's lodge and there was room service to clean the flats. Every flat had only a kitchen niche where breakfasts and suppers could be made - dinners were served in the restaurant. This building had advantages both of an individual house and a hotel.[2]

The architect decided not to design a presentable hotel: he reduced the corridor area, which let him extend the single flat area. He reduced also the elevation length assigning 3 m per single flat and 3.5 m per double flat. This was possible because rooms were not next door but one behind the other. Believing that "technology is the master of architecture"[3], and aware of the achievements of shipbuilding architecture, Scharoun designed an innovative building of an interesting, modern form. "The whole composition seems to glide over the terrain, taking the surrounding area into the wings."[4] The specific beauty of Scharoun's architecture was reinforced by light, steel pipe furniture (designed by Mies van der Rohe and Lily Reich in 1927, Thonet, No. MR 20 in the hall) and built-in furniture (wardrobes in the bedrooms, cupboards in the living rooms) designed probably by Scharoun himself. The rest of the furnishing was conventional.

Opinions on the building

Opinions on the building for single people and childless couples were divided from the very beginning. The building was praised for:

- the right proportions, which make these small apartments quite spatial and comfortable dwelling units;
- original and bold flat arrangement;[5]
- good ventilation and lighting of the flats;
- perfect social programme;[7]
- the right concept of flats for single people.

Critics, meanwhile wondered whether the money spent on the stairs inside each flat did not absorb all the savings made with the common corridors.[8]

On the other hand, Scharoun's house was attacked by critics because of its form and functional concept and also because of technical defects. It was written that "this building was an architectonic embodiment of unrest."[9] It was pejoratively compared with a steamboat or ship. "Does waste, made in the name of art, ill from birth, make any sense?" the traditionalists asked.[10] The opponents of *Neues Bauen* (New Building) criticized those formal ideas which today seem to be the most attractive elements of the building.

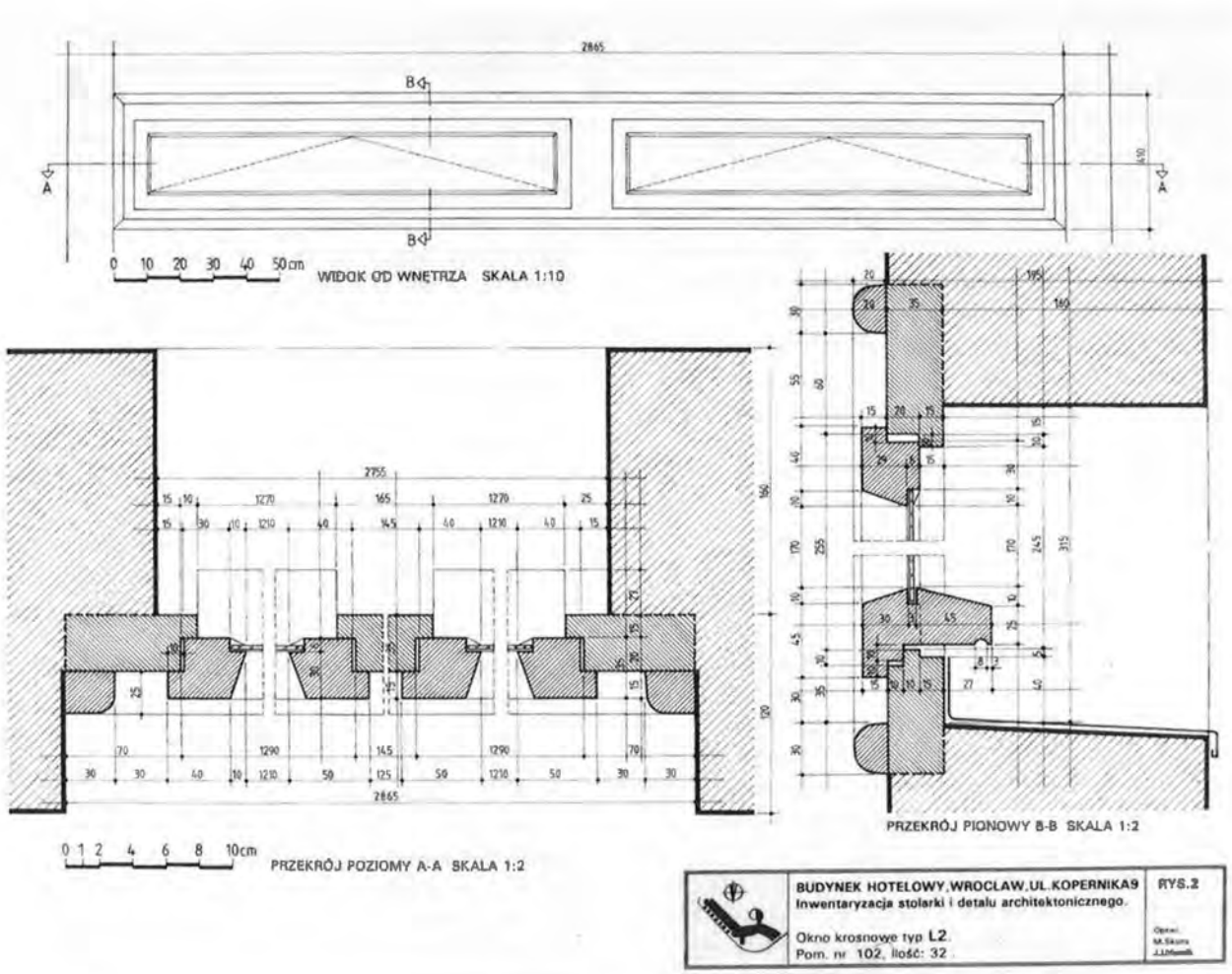
The building was criticized for technical defects and problems:

- unprofessional construction (cracks on the plaster after three years);
- wrong window fixation or inadequate drainage of terraces.[11]

Also criticized were incorrect functional realizations such as:

- incorrect placing of bedrooms above and below the corridor;[12]
- bad north-east lighting of bedrooms;[13]
- wrong flat arrangement;[14]
- lack of doors in the rooms and bad bathroom and kitchen niche ventilation;[15]
- stairways in the flats;[16]
- heavy windows.[17]

The flats, which were meant to be cheap, were in reality quite expensive because the costs of this



Multi-family house, H. Scharoun, Breslau WUWA Estate, 1929. Original corridor window.

Multi-family house, H. Scharoun, Breslau WUWA Estate, 1929.

experimental building, a prototype for future mass estates, were too high.

Construction and materials

Structural calculations were made by Dr. Marcus[18] and the building work by the Breslau firm Huta, Hoch- u. Tiefbau - Aktiengesellschaft, Beton-, Eisenbeton-, Stein- u. Holzbauten, Kunststeinfabriken.[19]

Construction - reinforced concrete framework ("Karteblattbauweise" type - card type) prepared on site in position, with frames put crosswise to the main axis of the building frame distance - 3 m and 3.5 m). This construction deprived the outer walls of their constructional function, which allowed the architect to design large window areas. Ceilings and floors are connecting members of the framework construction.

Floors - reinforced concrete, ribbed construction utilizing Ackermann's blocks (30 x 25 x 10 cm).

Outer walls - wall footing and the lower part of the walls are made of concrete while the upper part is built of brick. Above ground level there is a reinforced concrete framework filled with pumice concrete blocks. The wall below the windows and lintels were made of reinforced pumice concrete. Insulation: cork boards inside; outside, smooth cement and lime plaster.

Dividing walls - pumice concrete blocks.

Flashing - galvanized sheet iron.

Window joinery - typical except for the restaurant and living room windows.

Door joinery - in the common rooms was designed individually, wooden with large glazed surfaces (sliding - folding, sliding and swing doors), also steel doors made in ship style.

Technical flaws

After over sixty years of exploitation of the block we are able to evaluate the quality of building operations and the materials applied. In 1932, three years after the building had been completed, the first cracks appeared on the joints between constructional parts[20] (reinforced concrete frames) and their filling, consisting of pumice concrete blocks. The cracks were probably caused by concrete shrinkage or building setting.

The design of broken up masses, different weights of different parts with lengths exceeding 100 metres, did not take into account the proper dilatation of the building. Dilatation cracks came into being naturally at points of large differences in load or constructionally the weakest places (on the joints in the staircases of left, middle and right parts of the building, porch and chimney).

Wrong foundation and wall insulation caused dampness, rust and fungus on the walls; the direct contact of the building with the earth caused the plaster to fall off near the foundations.

Choked downspouts and ventilation ducts of bathrooms (not cleaned and partly concreted-in during roof repairs) caused dampness and the appearance of fungus on the inside walls of the building.

Incorrectly made roof slopes and downspouts in the wrong places plus wrong exploitation caused dampness and fungus on the staircases and hall walls which, of course, required terrace reconditioning and painting of the inside walls.

Wrong tightening of water drain from the right-wing balconies (two balconies connected to one downspout) and excessively thick gulley grating caused plaster flaking under the balconies.

Flashings made of galvanized sheet iron were supplemented or exchanged several times in the postwar period (in 1978 they were substituted by sheet copper which was too thin and too soft to serve its purpose). Carelessly made flashing of window sills did not protect them. Carelessly made gutter joints with reservoirs and downspouts caused dampness of the walls near the reservoirs - so far all of them have already been changed.
The original window joinery was made from bad quality coniferous wood and designed in such a way as to make its proper functioning impossible (sliding windows in the restaurant do not slide any more after being repainted many times; folding windows of the left wing living rooms, hung on small hinges, are falling down). Because of the draftiness of windows and placing window frames in the outside wall face without jambs, the windows warped. Windows, often singly glazed, have a high coefficient of heat penetration.
Elevation (floating and exchanging of plaster), window joinery and terrace reconditioning, done many times before and after 1945 prove the low quality of the applied building materials and also mistakes made during finishing work and reconditioning.
The quality of workmanship was also influenced by the duration of the construction process (3 months) and the attempt to realize an idea of inexpensive dwellings for the middle class.

Revaluation problems

It seems this is the only building from the wuwa estate which has remained an excellent example of modern architecture, although its present technical state is not very good. Today it looks more or less the same as it did many years ago. Some original details prevail like window and door joinery, steel railings, door handles, etc.
The only changes being made are: elevation colouring, additional window division, change of downspout form, building of garages and additional entrances in the basement, rebuilding of the space under the overhang (from the street side in the middle part of the building), doing away with trellis, plant boxes and stairs on the sunny terrace of the left wing of the building.
The function of this building has not changed much, either. Between 1932 and 1943 it was a hotel (Parkhotel), while after the war it was a boarding house and the hotel of the National Labour Inspection Office.
Perhaps this is our last chance to save this architectural legacy of the Modern Movement. This building deserves to be preserved with care, although lack of experience in the revaluation of modern movement buildings makes this work more difficult.
Because this building figures in the Monument Register as number 283, its solid construction and functional arrangement will be preserved. The only possible changes are those which will make it resemble the original version. In order to fix the original appearance of the building from 1929 and point out the changes made during those years it was necessary to make a very precise and detailed historical-preservation study of the building.
Because there is a lack of archive material in Wroclaw, we had to make use of the Berlin archives and libraries. The only preserved photographs of good quality are in the Akademie der Künste Collection. They are often the only source of information concerning the appearance of the building in 1929.
The best preservation method seemed to be reconstruction of the previous historical form and removal of all technical defects. One of the most important issues was to establish its previous form as regards the colour scheme (the original colouring of the joinery and the building as a whole).
The only reference to the interior colour is a fragment from an article by Edith Rischowski: "In the background of the dark azure hall, shiny armchairs made of steel pipes shed a silver reflection. The restaurant is dominated by different shades of red."[21]
There were assumptions, pointed out in some theoretical studies, that the building could be included among pieces of "white architecture". However, these assumptions became doubtful during the building revaluation process. Scharoun himself was not connected with the architects belonging to CIAM propagating the new International Style, although his realizations can be treated as part of this trend.
Because of the lack of detailed information concerning the colouring of the building, stratigraphic examinations were made. It was stated that the building exterior was light ochre with grey window joinery.[22] The same range of colours is also visible in Scharoun's watercolours painted in that period.[23]
Because it is impossible to make a complex overhaul of this building (the building must be used due to budget conditions) the reconditioning must be done in several stages. In the first stage, some activities which are to protect the building from further deterioration and limitation of exploitation costs have been undertaken. They are as follows:
- reconditioning of rain water drain installations;
- flashing substitution;
- resurfacing of terrace floor on the roof and roof reconditioning;
- window joinery substitution;
- plaster replacement (according to the original colouring);
- foundation insulation.

All the work concerning the external part of the building is based on its original appearance. All the changes made after the war are being removed where possible.
The second part of the overhaul concerns the replacement of water supply and sanitary system and creation of a new functional programme for the basement level (today partly disused).
The third part of the overhaul concerns the reconditioning of the inside of the building with regard to the original appearance of the common use

rooms (restaurant, hall) and some dwelling sections, taking original details into consideration).
This building is under curator supervision which must take into account both the financial situation of the owner and adaptation to present needs and building standards. The building must be of sufficient standard to fulfil its function. Moreover it has, at least partially, to pay its own way as a hotel.

Problems which appeared during reconditioning

A lack of the materials made and used before the war (they are either not produced any more or are unavailable in Poland) causes many problems when it comes to returning to the original form of the building. The fact that old materials were not always used properly justifies the usage of new materials resembling the old ones.
Pumice concrete blocks filling up the reinforced concrete construction are a very soft and absorbent material, which is why they are conductive to dampness and fungus. It is necessary to dry the walls, get rid of toxic deposits, change the plaster coats of paints, allowing the walls to breathe and dry out.
The thermal insulation of the walls is (from the present point of view) seen as a technical defect. The cork plates were fixed inside, not outside as is done nowadays. The heat penetration coefficient of the walls is therefore incorrect and the wall and plaster are spoilt faster. The application of new outside insulation and the fixing of the windows in the elevation consequently present difficulties.
The preservation of the concrete parts (eg. spiral stairs on the roof), which after cleaning must be secured and supplement the loss of exposed concrete reinforcement, is a major problem.
All the metal parts (barriers, downspouts and reservoirs) should be supplemented or changed according to original patterns (not according to contemporary building regulations) or cleaned and preserved if they are still in good condition.
Choked gutters and downspouts (situated partially in the building) needed reconditioning of the total installation in order to prevent further dampness, disintegration of plaster, and appearance of fungus. Instead of galvanized sheet iron, which rusts very quickly in the Silesian climate, rust-proof sheet zinc was applied.
Before the resurfacing of the terrace floor (terrazzo made after the war) expert appraisement was made of the floor durability and behavior of the moisture-proof insulation.[4] The examinations proved that the condition of both the construction and insulation layers (pressed pitch - 3,5 cm) is perfect. It was necessary onlyto reinforce the joints between the floor and walls because during some reconditioning operations, the insulation layer was damaged. It was impossible to preserve the original terrace floor, so ceramic slabs (40 cm x 40 cm) resembling the original cement slabs were applied.
The inefficient window joinery ceased to function properly. Excessive loss of heat caused by draftiness and single glazing considerably increased the cost of maintenance.
According to the stratigraphic examinations the windows from the outside were grey, from inside ivory (except for the balcony door of the right wing) and from outside light ochre; the restaurant windows from inside where pink and the corridor windows from inside light grey.[5]
A detailed inventory of the original wooden window joinery has been made and used as a model for the choice of new joinery. In our preservation conclusions we suggest replacing the joinery by the original wooden one, with double or triple glazing, and returning to the same window form. It is even allowed to apply PVC joinery provided that the original form and colouring prevail, which causes some technological problems. The cost of wooden windows is two or even three times higher than PVC ones. Economic factors and investor's preferences have influenced the change of the material, which is why new problems concerning the adjustment of new double glazed profiles to the old form of wooden windows and to different colouring from inside and outside have emerged. The old division of the windows has prevailed, as can be observed in the balcony windows of the right wing, where the new division has already been done away with and all the window panels have been restored.
Plaster replaced many times becomes dilapidated and falls off during window substitution. The instalment is very difficult of new window joinery in narrow outside walls without jambs, made of pumice concrete blocks, in the direct vicinity of the reinforced constructive parts.

Conclusion

Today it is a fact that both the building designed by Hans Scharoun and the wuwa estate, unique in the European scale, are practically in their original form. They deserve special attention and protection in order to halt the process of deterioration. They are still an excellent example of the new architectural and technological trends of the 20s.

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ARCHITECTURAL HISTORY

Shanley building, H. Armstrong, St.Louis, Missouri, 1935. Waiting room. (Washington University School of Architecture, Armstrong Archive)

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The Sixth Plane and Illumination

I wish to discuss two elements of modern architecture that have received little attention: the ceiling and the electric light.

I have been working under two assumptions. First, that the illumination of space is a means of bringing order and a conscious effort on the part of the architect to organize inhabitation. And second, that man-made light tends to be given symbolic form as it is a phenomenon which touches us physically, spiritually and intellectually.

The search for appropriate form was tempered by the functional, aesthetic and theoretical issues of the Modern Movement. Architects shaped the appearance of light, whether choosing to reveal or conceal the source, and the ceiling became the primary surface of illumination. These two elements, though quite different in physical nature, were closely related to mimic the effects of natural light.

No clear theories on artificial illumination were written by modern architects. Natural light was a primary concern, while electric lighting was mentioned in the margins. Its form and effect went largely undiscussed. For this reason, theories on artificial illumination must be pieced together from writings about natural light, comments on the related topics of construction and form, and from the historical context in which they were designed. The most important evidence was manifest in the built work of these architects, in the relation of the sixth plane to illumination.

I wish to illustrate how these elements were manipulated beyond mere function as part of the debates on the industrial standard, plastic composition, organic expression, and the virtues of structure and materials. I will do so by discussing the work of many of the important architects of the 20th century beginning with Le Corbusier and ending with the legacy of Mies van der Rohe.

The type object and standardization

The bare bulb appeared in the work of Le Corbusier and Walter Gropius as an icon of modernity. Le Corbusier considered the bulb less for its inherent illumination than for its formal simplicity and association with industrial production. In its naked state the bulb looked like no other traditional source of illumination and was an unrivaled statement of technology to bring the machine age home. The bare bulb shone in most of the projects until the late 20s. It stood as a type object in the landscape of the interior.

Le Corbusier most often cantilevered or suspended light fittings as they could not easily be recessed into concrete construction. He placed fittings beside windows or skylights to juxtapose man-made illumination to the natural and to fix the location of the light both day and night. The wall became a diffuser and a datum against which fittings stood like sculptures. They projected into the interior to establish foreground elements in contrast to the deep views provided through windows.

In the La Roche gallery, after complaints from the client about inadequate lighting, Le Corbusier placed two cantilevered fittings, a long planar trough under a strip window, and a single bulb, mounted on a stem, over the balcony door. Each fitting provided illumination in approximate proportion to the related daylight opening. The trough was functionally far better and less damaging to the eye, yet the odd bare bulb stood as an icon of vision for the new architecture. The tendency to bring symbolism to purist painting through the subject matter of everyday objects carried into the selection of fittings for the interior. As Le Corbusier wrote: "When an electric light bulb is at last weighed...in the design office of a manufacturer of chandeliers, its 50 grams will weigh heavily in the scales that determine the fate of industries doomed to disappearance; the technological firm will replace the artistic; so it is written."[1]

In spite of his pronouncements for technology and engineering Le Corbusier maintained that architecture was to satisfy more than functional requirements; it was also to touch the emotions. He conceived of the flat roof as a place of idealized inhabitation. The roof garden made living under the light of heaven possible. The roof was also a means to bring light into spaces below and a physical linking of the roof garden with the ceiling. Through the double sided character of the slab, earth as roof garden was linked to heaven as ceiling. In the 20s he usually painted the ceilings white, but on occasion he painted the ceiling blue as a reference to the dome of heaven which the roof obscured.

The flat roof became a standard element of modern architecture as did the planar ceiling by consequence of construction. In the Bauhaus building by Walter Gropius (Dessau, 1925-1926) the opacity of the roof was countered by the very transparency of the walls. Glass was a material expression of the new architecture and allowed natural light to flood the building. But the abundance of glass undercut the rational polemic of the planning. While the disposition of spaces was pragmatic, their solar orientation was crippling. Function was hindered by the difficulties of heating, cooling and controlling illumination.

Inside the building fittings designed by the workshops were used repetitively and in clear alignment. Special fittings for the theatre and its vestibule were composed of bare linear bulbs supported by metal armatures. They formed both a functional and

sculptural relief. The lights became one of the essential ornaments of the concrete structure. The demand for rational components and refined type forms guided the workshop production. As Gropius wrote: "In all great epochs of history the existence of standards- that is the conscious adoption of type-forms- has been the criterion of a polite well-ordered society; for it is a commonplace that repetition of the same things for the same purposes exercises a settling and civilizing influence on men's minds."[4] The metal workshop in collaboration with industry, produced the fittings used in many expositions and new housing estates. The predominant features of these interiors were the white ceilings, an abundance of natural light, and the adjustable fitting designed as a machined tool of the interior. Doubtless, the fittings always looked better in daylight than illuminated by their own harsh brilliance, yet their insistent presence underscored their importance.

The planar interior

Gropius' early work was influenced by the de Stijl group, particularly by Gerrit Rietveld's designs for lighting. His hanging lamp (1920) was a set of dynamic lines hovering in space and subverted the traditional chandelier. His Schroder House (Utretch, 1924) was the perfect illustration of elementarist, plastic architecture. Every joint and surface was reconsidered. The white ceiling was freed to flow past exterior walls. Interior walls were reduced to sliding partitions on coloured rails. The sixth plane became a sign of continuous space and a modulator of light and form. It provided a neutral surface from which natural light was reflected, artificial light was suspended, and shadows were projected.

American Stove Building, H. Armstrong, Collaboration of Izamu Noguchi, St. Louis, Missouri, 1947-1948. (Hedrich-Blessing, Courtesy Chicago Historical Society)

The abstraction of the enclosure into planar elements afforded modern architecture with one of its most expressive means of form-making.
Artificial light when slipped between layered planes became ethereal. Illumination washed evenly onto ceilings causing them to appear weightless and immaterial. Abstraction became the means to transcendence. As techniques of built-in lighting advanced, direct references to technology retreated and the fitting disappeared. The work of William Lescaze stands as an example. (Field House, Hartford, Connecticut, 1932, and the Loomis House, Tuxedo Park, New York, 1939).
Harris Armstrong illuminated a waiting room in a similar way (Shanley Building, St. Louis, Missouri, 1935). However, the blank soffit became a plane of representation in a more literal reference to natural phenomena. A constellation, painted on the underside, inserted an element of night sky into daytime activity. This reference to a world outside the architecture of the white box represented both a criticism of Functionalism and the influence of Surrealism.

The organic expression

In the postwar move toward an architecture more expressive of materials, form and their psychological effect, the ceiling gained a new connotative dimension. In the American Stove building by Harris Armstrong (St. Louis, Missouri, 1949) the ceiling was fashioned after a plaster cast by sculptor Isamu Noguchi. The resultant insertion was disarmingly surreal. Light emanated from an alluvial landscape, pouring through voids carved by light. Noguchi's commentary is of note:
"Now with the thinness of magnesite, I thought of sculptures in which the light source was integrally imbedded. More and more we live indoors; perhaps soon, in the atomic age, we will all live in caves. Already the outdoors is missing where sculpture should be seen. They are indoors and artificially illuminated... I thought of a luminous object as a source of delight in itself- like fire it attracts and protects us from the beasts of the night."[1]
There was an underlying anxiety surrounding technology as both a transformative and destructive means. In Italy there was the miraculous economic recovery coupled with the lingering shadow of Fascism. In this context Luciano Baldessari worked with several artists to create an atmosphere of rupture within the entrance to the IX Triennale (Milan, 1951). Baldessari and collaborators created an environment of disparate elements. Floor, walls and ceiling were shaped, painted and pieced together. Light poured through clefts in the ceiling and above the grand stair a light sculpture by Fontana was suspended. Light became a drawing in space.
These luminous sculptures juxtaposed biomorphic form to rectilinear geometry as sensuous insertions. The ceiling was not a floating, celestial soffit but a hovering topographic garden questioning normative orientation. Where did the space occur within the building, was it below ground, and what was the nature of the floor above? Because each of these ceilings was limited by the building shell, neither had a physical counterpart on the floor above. Neither was the literal underbelly of a roof garden. The exploitation of the section was limited to the theatre of the interior.
The shaped section as a regulator of light and determinant of form was cultivated by Alvar Aalto. The floor provided the absolute horizontal against which shaped spaces and variegated surfaces were played. Through the section, space and light were projected over, around and sometimes through the floor plane. In the church at Vuoksenniska (1957-1959) the affinities between plan and section can be seen and were echoed in the design of the pendant lights. A light canon was placed in the ceiling to bring the symbolism of light and spirituality into clearer focus over the altar area. Aalto placed an electric fitting in the canon thus coupling man-made with natural resources. While this was of clear functional value in providing light at night or during the long, dark days of the northern climate, Aalto's consistent placing of visible fittings in skylights was a philosophic positioning. Technology stood ready to compensate for nature's deficiencies. The fitting stood in place of the sun as its rival, and human artifice provided the reference for contemplating the heavens and the nature of light.
Aalto's sensual ordering of surfaces and space dominated the ordering of structure. Certainly he understood, as Louis Kahn did, that light was responsible for giving form its appearance, space its tonality and material its shadow. However, for Kahn in the framework of structure lay the determinacy of light. In his words:
"Structure is the giver of light. When I choose an order of structure that calls for column alongside of column, it presents a rhythm of no light, light, no light, light. A vault, a dome, is also a choice of a character of light."[1]

The rationale of structure and materials

The reflected ceiling plan of the Yale University Art Gallery (New Haven, Connecticut, 1951-1953) was Kahn's preferred drawing of the building. It emphasized the important aspects of the space-geometry, structure and technology. Within the depth of the triangulated space frame, the mechanical and lighting systems ran exposed. The coffered ceiling formed a rich three dimensional pattern articulated by light.
In other work Kahn took care to minimize the presence of light fittings while not undercutting their ability to function properly. They were most often integrated into the geometry of the plan and complementary to the structural system. The fittings existed as elements because of their necessity, and were rendered anonymous, stripped of ornament and reduced to an essential state just short of the bare bulb.
Structure and technology were essential to modern architecture's definition. It was through differences in theoretical approach that the appearance of light

was most affected. Kahn's interpretation of structure as surface led to the material presence of the fitting. It occupied the space it made apparent as a sensuous counterpoint. However, Mies van der Rohe's interpretation of structure as a reductive steel skeleton led to a disappearance of the fitting. The walls and floors were the obvious surfaces of light. Through transparent glass cladding, the exterior wall lost its capacity to control light. Glass not only allowed natural light to flood the interior and lessen the need for artificial illumination, but its properties of reflectivity, luminosity and mirroring allowed it to became an expressive means. As Mies wrote:

"[Glass walls] are genuine building elements and the instruments of a new building art. They permit a measure of freedom in spatial composition that we will not relinquish any more. Only now can we articulate space freely, open it up and connect it to the landscape. Now it becomes clear again what a wall is, what an opening, what is floor and what ceiling. Simplicity of construction, clarity of tectonic means, and purity of material reflect the luminosity of original beauty."[5]

In the German Pavilion (Mies van der Rohe, Barcelona, 1929) the intensity of the natural light created a resplendent articulation of polished surfaces. The walls and columns were highly reflective while the ceiling was a matte white plane which softly diffused the light. The roof structure was concealed by the surface of the ceiling.

The most important concept of the sixth plane to emerge from the skeletal construction method was the literal suspension of the ceiling. Developed in tandem with the curtain wall, the curtained slab hid any number of functions and mechanical devices deemed unworthy of appearance. Light fittings, ventilation ducts, sprinkler pipes, surveillance cameras, and musical speakers were concealed. The messy and sinister side of modern existence was simplified by lightweight materials and technical innovations. While pragmatists burdened the ceiling, the urge to abstract its surface, to create a *tabula rasa* of the overhead field, prevailed.

Conclusion

In the 20th-century interior, artificial light played a critical role in constructing the image of modernity. It significantly transformed the character of the environment, giving shape to fantasy and structuring the daily inhabitation of space. It was through the mundane physical encounters with lighting devices that their form was pragmatically developed. Out of design advances in lighting equipment, architects altered the appearance of space, adapted construction methods to realize form, and influenced inhabitation through the placement furniture. The sixth plane became the most important vehicle for making the vision come to light.

Notes

[1] *L'Art decoratif d'aujourd'hui.*

[2] *The New Architecture and the Bauhaus.*

[3] Isamu Noguchi: *A Sculptor's World.*

[4] Louis Kahn, *Between Silence and Light.*

[5] "What Would Concrete, What Would Steel Be without Mirror Glass?"

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The Paradox of the Modern Movement: Fifty Years of Reconstruction and Conservation in The Netherlands

Reconstruction and conservation in The Netherlands

The legal protection of historical buildings and townscapes is relatively young in The Netherlands. Although academic interest in historical buildings arose in the 19th century, it was not until 1961 that the first Monuments and Historical Buildings Act was passed by Parliament. The administration and execution of this law was the responsibility of the central government. It implied the setting up of a list of historical buildings and townscapes and the establishment of a system of special permits for alterations or demolishment of historical buildings. The listing of protected town and villagescapes carries with it the obligation for the municipality to establish a protective land-use plan.

At this moment about 43,000 buildings and 320 town and villagescapes have been listed. Most of these date from before 1850; from the period 1850-1940 only some highlights of modern architecture have been listed. A national inventory programme is now being carried out in order to extend legal protection to this episode of our architectural history.

The Housing Act in The Netherlands originally dates from 1902 and covers the technical, social and planning aspects of the built environment as a whole. It regulates building permissions in general and aesthetic building control, and obliges the municipality to draw up urban extension plans and - nowadays - urban renewal plans (separate legislation in the field of physical planning and urban renewal was established in the 60s and 80s).

The execution of the Housing Act is the responsibility of the local authorities. In the first half of this century the Housing Act and the connecting regulations enormously influenced the appearance of the towns and the countryside in The Netherlands: the growth of cities in particular was substantial in that period. The predominant social-democratic policy stimulated new ideas in architecture and town planning: the ideas of the Modern Movement, that aimed to break with traditional development, gained a foothold, especially in the larger cities.

After World War II a beginning was made with reconstruction of the damaged and neglected city cores. Two main streams in architecture existed side by side: the traditional school and the Modern Movement. The postwar reconstruction of historical buildings however was mainly done in a traditional way, as if denying the war damage.

When modern streams in architecture and town planning came to prevail in the 60s and 70s, the conservation policy was still predominantly conservative. Due to the fact that the execution of the Monuments and Historic Building Act was organized at a central level, public acceptance was poor. Conservation remained a more or less academic action and saddled the owner with high costs of reconstruction, repair and maintenance. Therefore the first registers of listed buildings met much public opposition.

The protection of town and villagescapes (with the obligation of drawing up a protective land-use plan) appeared to meet more public acceptance, probably because this was related to the local planning and urban renewal policy. Although the first concern of urban renewal is the improvement of poor living conditions, it can go hand in glove with conservation of the historical urban fabric and building structures. This fact stimulated the Netherlands Ministry of Culture to support the urban renewal of historical city centres. Not only by reserving special funds to lighten conservation costs, but also by actually stimulating municipalities (in close co-operation with the Ministry of Housing and Physical Planning) to draw up protective urban renewal and development schemes.

In order to achieve this link between urban conservation and renewal, the Netherlands Department for Conservation provided a 'historical interest map', a cartographical representation of the cohesive cultural historical values in the built environment (listed buildings, other important buildings/ structures and public open spaces). In combination with other inventory data such as the technical quality of the building stock, current use and functional zoning and the clearance or redevelopment areas and public works, the local authorities could easily design a development plan and an annexing multi-year execution scheme to improve the functional conditions with optimal use of the historical building stock, to be approved by the town council.

Within a period of fifteen years most of the historical cities in The Netherlands have been renovated, not only from the architectural, but also from a social and economic point of view. The protection of historical values in the built environment has therewith become a stimulus for local conservation policies and the development of new high quality architecture in redevelopment areas.

Inspired by the positive social and economic effects of the improvement of historical city centres, and also by the rather simple implementation method, a

similar but improved system of historical town and country quality management is now in development.

Conservation today

Today's conservation policy is aimed at enhancing the historical factor in landscape development, urban planning and architecture: in fact it is focused at a history-conscious redesigning of the present urban and rural environment. The cultural component of the built environment has become an inextricable part of the physical planning process.
In order to locate the strong and weak points of the present cultural identity of a place, in the perspective of the desired socio-economic development, the instrument of cultural historical explorations has been developed. On the basis of a rough survey of the historical development, the opportunities and risks of further development scenarios can be analyzed. The result of this analysis is a theoretical founding of political decision making. Together with other analyses in the field of social and economic development, the feasibility of a combined conservation and development policy can be determined.
The most important condition for a successful conservation policy is a politically accepted development plan in combination with a multi-year execution programme. Although the town council must be prepared to take full political responsibility for the completion of the plan, the actual execution can be assigned to private developers (public-private partnerships). By doing so, conservation as well as development can be approached in a commercial way, each with their own financing possibilities. Only in the interest of social housing or uneconomic monuments does the government have to intervene with extra financial support.
During the last decades conservation in The Netherlands has in this way developed from an academic and technical preservation of historical form towards a striving for spatial, functional and social integration of historical objects and structures in a changing living environment. Conservation has developed from a static to a more dynamic approach that does justice to historical and social stratification, to urban complexity and to the fact that the built environment is the result of ages of change, development, adaptation and addition.
This integrated conservation policy proved to be successful in the 80s. A fine example is the rehabilitation of the inner-city of Maastricht. In the Boschstraat Oost and Jekerkwartier quarters a balanced mix of interventions, from restoration to new architectural exercise, can be found. From a very small scale, like urban surgery, to a large scale in a demolition area, where it has been attempted to create an architectural image that has been inspired by the historical image, without becoming a pastiche. The new buildings of parliament in The Hague stand as an example of the way in which a large-scale function can be integrated in the historical urban fabric. When the Houses of Parliament needed to be modernized, it was a basic assumption that they had to stay situated in the city centre. With a minimum of demolition the architect has succeeded in as it were weaving a new structure into the historical environment, giving a new and adequate housing for a very complex functional programme.
Another example is the rehabilitation of the Lower City of Nijmegen, where after large scale demolition the original social housing function, as well as the local economic basis, have been re-established by a balanced combination of restoration, renovation and redevelopment. Also in this case the architects and planners have tried to grasp the essence of the historical city by using contemporary architectural forms. The above mentioned examples are to show that conservation in general has a social basis and can serve itself of different levels of intervention, depending on the actual situation. The integrated conservation practice that has developed in The Netherlands has proven to be rather successful.

The paradox of the Modern Movement

There is an essential difference between the approach mentioned and the urban plans that have been realized in the years 1945-1970, based upon the principles of the CIAM. The postwar reconstruction had to provide quick and adequate housing with - as is well known - scarce materials. Modern methods of allotment and industrialized building techniques, that had been experimented with in the 30s, could be applied on a large scale now, in order to rationalize and speed up building production.
The euphoria of postwar social, economic and urban reconstruction was a good breeding ground for bringing the ideals of the Modern Movement into practice in the field of architecture and town-planning. Especially on the 'new land', the large IJsselmeer polders, and in the large town-extensions, new functional and spatial concepts could be realized. The most important principles were those of concrete constructions in open building strips. The new city was presented to and accepted by the public as a new, clean and healthy environment for happy family life. Contemporary pictures invariably show smiling people.
In general the construction of these new townparts took place in a *tabula-rasa* situation: new polders or building lots outside the city, on flat land where the new infrastructure and building pattern could be projected at will. On the one hand, this made a pure application possible of the functionalistic design principles of the Modern Movement; on the other, however, this meant a break with the tradition of historical stratification in urban development in The Netherlands. The occupation of the 'new land', the making of the new city was realized in one go, without a relation with underlying historical physical structures. As it seemed, the existing social connections could easily be transplanted to the new rational residential suburbs. Society was still makable, at least that is what planners, sociologists and architects thought.

Fine examples are the small new-town Nagele, the larger new-town Lelystad, both in the Ijsselmeerpolders, and the Bijlmermeer in Amsterdam. The small new-town of Nagele was designed by Aldo van Eyck (based upon an original concept by Cornelis van Eesteren) and was built in the 50s as a CIAM settlement in the Noordoostpolder. The aim was to create a new settlement in a new landscape. It is characterized by a very open allotment, closely related to the wide surrounding landscape. We find the same ambitions in Lelystad, which is situated in the polder Flevoland. Lelystad was developed in the late 60s, also on the basis of a plan by Van Eesteren. The urban layout is based upon a number of 100.000 inhabitants, with a regional service function. The Bijlmermeer is a well-known example of an exemplary large urban extension plan, based upon CIAM priciples. The eye-catching honeycomb pattern of the building blocks and the strict separation of motorized and pedestrian traffic are the main features.
For a good understanding it has to be stressed that these neighbourhoods have not (or at least not yet) been listed as protected townscapes. Therefore consolidation cannot be enforced on a legal basis. They are just used as an example to show that an integrated conservation as is common practice in The Netherlands is not applicable there.
Of the social idealism of those days not much is left. The ideal city of the 50s and 60s has become today's ghetto. It is especially in the postwar residential areas that social, economic, psychological and functional problems of the city are concentrated. High unemployment, ethnic tensions, high crime rates, declining public facilities and technical decay through lack of maintenance are the symptoms, as is well-known in urban areas all over the world. The ideal city of the Modern Movement has in many cases not even lasted forty years.
For our examples (Nagele, Lelystad and the Bijlmermeer) this means the following. Nagele, which has less than 1000 inhabitants, is now suffering from a strong increase of the ageing population. The number of unemployed people and other people with low income is relatively high. Local shops and public facilities are difficult to maintain. The usual urban compensation processes do not occur, due to the isolated situation. There are plans to extend the village to the southeast.
Lelystad also is suffering from a limited (one-sided) residential stock and growing unemployment. The image

The Bijlmermeer, Amsterdam.

of Lelystad as a green and attractive new town has been severely damaged by bad press over the years. The same goes for the Bijlmermeer in Amsterdam, where the potential of an attractive living climate appeared to be no match for the social and economic decline during the past twenty years. Today the Bijlmermeer is one of the weakest neighbourhoods of Amsterdam and there are even plans to demolish part of it.
The conclusion must be that in many cases the rational layout of these neighbourhoods, with separated functions (based upon the stable social conditions at that time) bears the seed of its own decline: many CIAM neighbourhoods have outlived themselves. They no longer fit in the present reality of society. Let me stress that not all of these suburbs have failed. On the contrary many have survived and still provide agreeable living conditions, mostly for mobile families with young children. But the problems of our present urban society tend to concentrate in the old townparts and in these postwar neighbourhoods.
Technical repair and social recuperation by the integrated approach that has been put into practice in the historical inner-cities and the 19th-century town extensions cannot be applied in these neighbourhoods without affecting the essence. They were built as a unity, a coherent concept of function and form that cannot be changed without suffering adverse effects.
It is precisely here that the paradox lies of the conservation of the urban heritage of the Modern Movement. The urban matter of the 50s and 60s and present society no longer fits. We have the technology to preserve and prolong the life of constructions endlessly, or if not we can make them again, but the programme is no longer current.
Programmatic adaptation means a physical intervention that is often not reconciled with the purity of the original meaning. An integrated revitalisation based upon an uninhibited handling of the built environment can destroy the original concept of carefully planned and placed infrastructural and built elements.
In fact we must fall back on the methods and techniques of old-fashioned academic and technical conservation practice from the past in order to cope with the restoration problems of the Modern Movement today. In this approach the object plays a central role instead of functional continuity and the social context. The building itself is 'sacrosanct' instead of regarded as part of a larger urban system.
Unfortunatly this old-fashioned approach seems to have no basis in present society. This can be seen by the contorted way in which the debate on the preservation of some important modern-movement buildings in The Netherlands is taking place. For example, the restoration of the Bergpolderflat in Rotterdam was only feasible by a dramatic change of the interior and of the façade details, which caused great opposition. The Olympic Stadium in Amsterdam by Jan Wils from 1928 could easily be given a new function and be renovated, but there appeared to be no political support for that. The famous Zonnestraal Sanitorium in Hilversum by Jan Duiker is still in decay, although it seems that a possibility of restoration is near.
It appears that public appreciation for the Modern Movement is not very big: the buildings and the urban environment are mostly regarded as ugly. There is no large public affection, as with older historical buildings. The will for preservation is often considered to be an academic peculiarity and it has no substantial political acceptance.
There is only one solution: to find a compromise between historical integrity and the need for functional and social adaptation and change.
Conservation with consideration for the original intentions is not always possible, but we can always try to bring new life and a new meaning to these neighbourhoods with respect for the underlying range of ideas and using the potentials for further development. Doing this we must not be too dogmatic about the concepts of Modernism or Functionalism, but we must try to be open-hearted in building on the present historical basis. The renovation of the Kiefhoek in Rotterdam by J.J.P. Oud is a good example of such an attitude.
But the way Lelystad is studying ways of urban improvement that pay respect to the original ideas of the CIAM is also an interesting example. The task is to realize a new functional programme, in building and in infrastructure, using the means of today, within the framework of the original characteristics: functional separation, optimal accessibility, openness and a functional composition of the building pattern.
The studies by the Berlage Institute in Amsterdam for the Bijlmermeer are another good example. These studies have been conducted within the context of the debate on the future of this townpart, in which the choice seems to be between radical change or demolishment. One of the interesting developments in thinking about the future of these CIAM neighbourhoods is the reconsideration of the allotment principle of free-standing building blocks surrounded by public greens. Nowadays the principle of the closed building block with a quiet and semi-private inner open space is being revaluated, because it provides privacy and safety. But it is of course an essential divergence from the original features.
This is not a plea for an unquestionable approach, for uncritical change, squandering the urban heritage of the Modern Movement. The point is that it is very possible to further develop the modern-movement neighbourhoods, as there is no point in preserving them as they are.
This can be done with respect for and use of the major leading principles of the Modern Movement, namely sobriety, economic use of resources and social and technical integrity. These principles are still of topical interest. A contemporary application of these principles can save the urban heritage of the Modern Movement as a social, economic and cultural asset.

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Aviation Architecture and its Message of Modernity

If anything can be marked as a symbol of modernity, it is aviation. Already in the 20s several architects used pictures of planes to give their building designs a special suggestion of technical and social advancement. In this way, aviation served the Modern Movement in architecture. But I discovered through the examples of the Dutch airports Schiphol, Ypenburg and others, that there is also an opposite relationship: modern-movement architecture serving the various purposes of aviation by virtue of its modernistic character.

Building for aviation

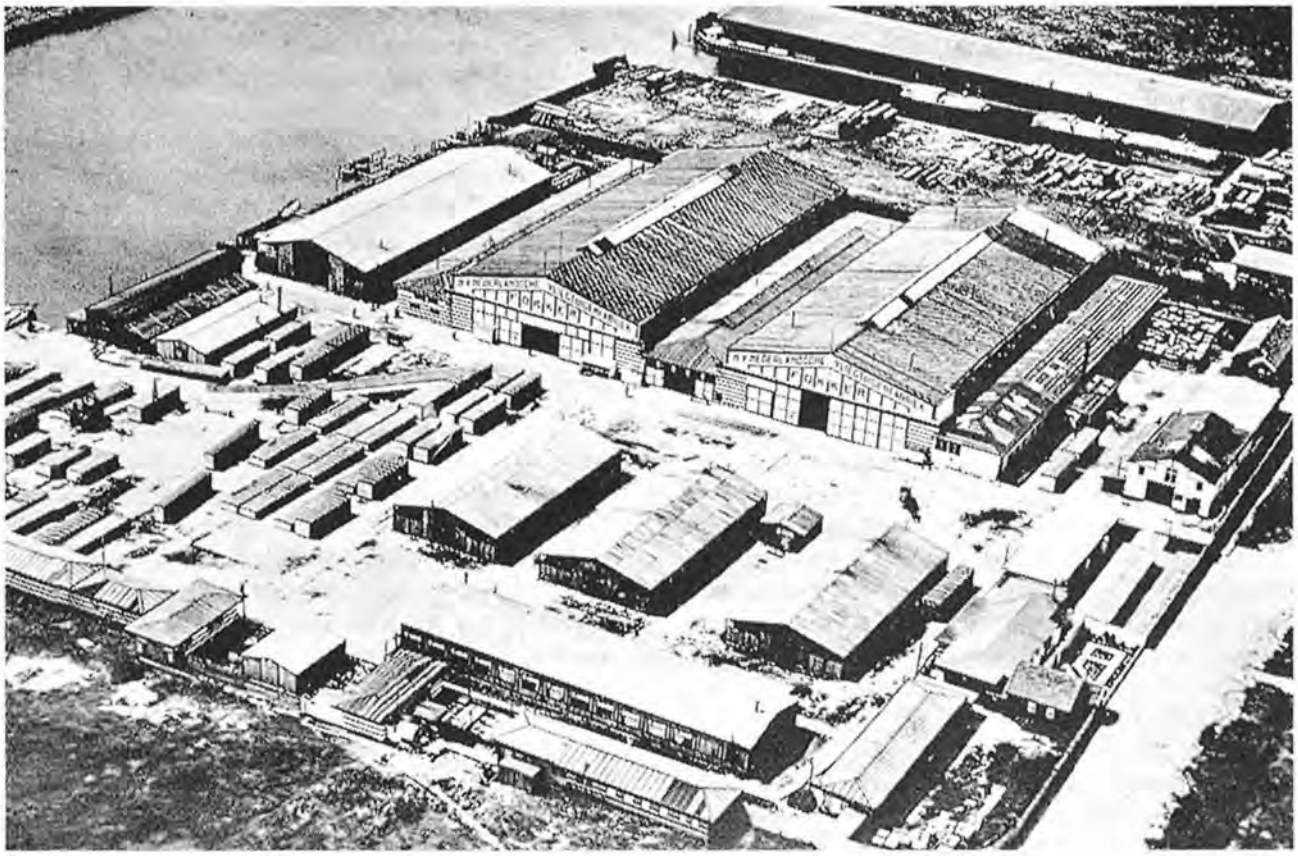
The history of aviation architecture - at least in The Netherlands - has hardly been studied hitherto. Since the aeroplane was invented around 1900, aviation has taken flight, both literally and figuratively. To begin with, the aeroplanes themselves have evolved from fragile, open machines without any comfort into sturdy aircraft for many passengers, with the luxury of a catering service and, for the crew, a technically ever more advanced cockpit.
In parallel, the facilities of the airfield grew by decades in ever greater proportions. From muddy grass fields with simple wooden lodges, airports developed into immense complexes with tarmac runways and all kinds of 'high tech' buildings. The first permanent facilities built directly for the purpose of aviation arose in the late 20s, when the international airlines had become established. During the 30s the building activities for airports, airline companies and aircraft industry increased quickly, although not as fast and intensely as after World War II.
All those orders led to the creation of more or less new building types such as hangars, airport terminals and control towers. The revolutionary means of transport by air gave (at least the Dutch) orders for aviation architecture almost from the start with a new, dynamic dimension and a modern, future-facing character. This is in sharp contrast with the monumental, historicist-designed railway stations which had accompanied the just as revolutionary transport invention of the train in the previous century (although these monumental city gates seemed to be the source of inspiration in the Lehigh competition for American Airport Designs in 1930).

Modernism in Dutch aviation architecture

A first exploration of this new territory of study reveals that important customers of the Dutch aviation world deliberately chose architects with sympathy for the Modern Movement because of its striving for optimal functionality in ground plans, flexible division, use of modern building techniques and materials (especially skeleton construction in reinforced concrete or steel and large spans of undivided spaces) and pureness of forms. These building patrons saw a clear relation between the architectural 'message of modernity' of the Modern Movement and the general (technical) 'message of modernity' of aviation itself. To be honest, there was also an economic aspect: the airline companies could not afford great luxurious buildings costing so much and becoming outdated so soon, while they also had to make great investments for their air fleet and regular international flights - especially during the very uncertain time of the Great Depression.
There were certainly close connections between some Dutch progressive architects and their aviation clients during the prewar period. The most productive was Dirk Roosenburg, who was a friend of Albert Plesman, the co-founder of KLM (Royal Dutch Airlines). The most interesting from the modern-movement point of view are J.A. Brinkman and L.C. van der Vlugt who worked for the Van der Leeuw brothers (Van Nelle's factory, Rotterdam) and their Aeroclub (Ypenburg airport). Last but not least, I mention W. van Tijen who together with H.A. Maaskant designed several complexes for Fokker's aircraft industry (where his brother Ko van Tijen was Vice-President) and the National Aviation Laboratory.

The beginning of civil aviation in The Netherlands

Although the first flying machines were intended to resemble automobiles in the air, for fun or for personal transport, aviation soon acquired a serious meaning for military goals. Already before World War I broke out, we had two military air bases, followed by some ten others spread over The Netherlands before the next war began. At the same time, civil aviation was stimulated by enthusiastic air force officers. One of them was Albert Plesman, who initiated the Eerste Luchtvaart Tentoonstelling te Amsterdam (First Aviation Exhibition) in 1919 with the intention of arousing a broad public interest in aviation. He secured the services of his old friend Roosenburg as architect for the semi-permanent exhibition buildings. For this audacious project Roosenburg - who had worked two years before at Berlage's office - planned a symmetrically laid out complex of wooden buildings in an expressive functionalist style inspired by Frank Lloyd Wright. In the exhibition halls he introduced a - for that time remarkable - joint construction with a free span of more than 30 m consisting of short boards which could be nailed together on the spot by unskilled workers.
The ELTA - where not only aircrafts from abroad could be seen but also prototypes of at least six different Dutch aircraft builders - was a great success and can be regarded as the birthplace of Dutch civil aviation.



ELTA/Fokker Complex, D. Roosenburg. Amsterdam, 1919. Aerial view, 1936.

In the same year KLM was founded, which opened a regular airline to London in 1920 from the primitive military air base of Schiphol, just inside the strategic ring of Amsterdam. However, it was Anthony Fokker who took over the ELTA buildings to establish his aircraft industry.

Aircraft industry 1920-1950 and the National Aviation Laboratory

The ELTA complex was in use for years as Fokker's factory, albeit not constantly. Its provisional character fitted very well in the unstable nature of the aircraft industry which needed to alter or replace its buildings frequently and quickly in accordance to new orders. So at the beginning of 1938, in three months, several removable factory halls made of sheet and corrugated iron, offices, warehouses and laboratories were added to the complex, part of the former wooden ELTA buildings. For the 1000 to 1500 labourers sanitary rooms and a bicycle shed were provided in a new cellar under the production hall for aircraft frames, while in the new directory office a demonstration room for aircraft models was furnished. The architects were Van Tijen and Maaskant.

In the case of this radical reconstruction - where the great halls had to be saved for economic and practical reasons - the architects attempted to endow the complex with a logical structure, in both architectural and industrial organisation terms. Near the main entrance a high fence-like lattice was placed, crowned by the letters of the company name and with trompe-l'oeil painted flat aircraft models as eye-catching showpieces in the middle. According to Ben Merkelbach - a true functionalist architect from Amsterdam - this solution was better fit for planting rambling roses against than for a modern aircraft industry (although such a huge advertisement by the roadside was very modern for its time).

Of all these pioneer aviation buildings nothing is left, because the complex was bombed during the war. After the war Fokker decided definitively to move to - the also destroyed - Schiphol airport where before the war some hangars had already been built (partly designed by Van Tijen) for the final assembly and maintainance of aircraft. In the meantime the aeroplane sizes, especially their wingspans, had grown tremendously and there was no end to it yet. The new assembly halls had to converge with these ever larger spans, and required therefore nearly inhuman measures and maximal opportunities for extension. Technically this was not too big a problem to overcome - with reinforced concrete constructions and light pre-fab or brick fillings the halls were quickly built. Architectonically such a building problem was less easy to solve, especially when one wanted to keep things on a human scale. Thus Van Tijen and Maaskant decided to cover the assembly building with curved roofs and gave the walls a continuing window strip at working level providing the labourers with a free sight of the field outside and the feeling of being in touch with the ground. In this idea of a modern workshop, advanced in form and function, the new

Fokker factory followed the inspiring example of the Van Nelle factory at Rotterdam.
Just before the war Van Tijen and Maaskant had designed another aviation building also submitted to the present - and future - demands of functionality, economy and harmony: the National Aviation Laboratory (NLL). Apart from the special wind-tunnel construction, the NLL building attracts attention by virtue of the logical grouping of the different department rooms at the central hall. Most striking is that the architects sought not abstraction or immaterialization but a true equivalence in used building materials - 'a marriage between concrete and brick' - in a sober, functional manner fitting the 'tradition of modernism'.

Prewar airport buildings

After World War I our country counted nine military air bases. One of them was Schiphol, being the first airport with permanent accommodation for civil aviation, thanks to the municipal aid of Amsterdam. Its terminal and control tower, clearly built in brick and wood, had been designed by Albert Boeken in 1926-1928. Boeken, who was then in charge of Public Works, tried later to bring the new architecture into the Modern Movement with his Groep '32 and is best known for his Apollohall in Amsterdam (1932-1934). While the discussions about a central, accessible airport went on, Schiphol airport continued to modernize in order to claim its position as the national gateway (and it still does, on an ever larger scale, incorporating the newest technological and logistic ideas).

Elsewhere only regional airports were realized, serving both KLM, business flights and pleasure aviation. For instance, in 1932-1934 Welschap airport near Eindhoven was laid out according to Roosenburg's plans. He designed a compact but well routed terminal with a roof terrace and control tower, in shape considerably resembling Boeken's Schiphol buildings, but not in its light appearance, created by steel-framed windows and plastered walls. The use of a white surface was very functional indeed, because this colour is best seen from a distance.
The same principles were adapted at the Ypenburg airport near The Hague, built on the initiative of the Hague and Rotterdam Aeroclubs in 1935-1936 and by then the second in size after Schiphol. The architects of this complex were Brinkman and Van der Vlugt (in co-operation with the local architect M. Zwanenburg). Probably they had received this commission on the recommendation of M.A.G. van der Leeuw, one of the directors of Van Nelle's factory and an enthusiastic member of the Rotterdam Aeroclub. Unhappily, Van der Vlugt could not witness the opening of his delicate creation, because he died just four months before.
Ypenburg airport had to serve many aviation purposes. Apart from its function as regional airport, it was meant for flying instruction and demonstration, but it also had to host airline companies, aeroclubs, the aviation school and aircraft factories. The main building of the airport complex was the slightly concave terminal with an almost transparant

Ypenburg Airport, J.A. Brinkman, L.C. van der Vlugt, 1935-1936. Original interior of club room.

travellers' hall (originally) in the middle, two restaurants with bent glass bay windows at the ends and on top a twelve-sided control tower, reminiscent of the tea-room tower of the Van Nelle factory.
The building construction was so designed that no more than a minimum of materials - a concrete skeleton filled in with whitewashed brick walls and steel-framed glass - was needed, both for economic and aesthetic reasons. This is particularly evident in the two staircases of the split-leveled side-aisles.
Other parts of the complex were the great hangar, the porter's lodge (by M. Zwanenburg) and the head office of the National Aviation School (designed by H.F. Mertens in 1939).
During the war, Ypenburg suffered bombardments (like so many other airports), but the terminal could be easily restored. It was due to later alterations (made for the airforce) that its subtle original details disappeared. Now of the original interior there is not much left (e.g. the fireplace in the club's room and the kitchen). This is a pity, because the furnishing was also typical of the light and optimistic atmosphere aimed at by the Modern Movement. The furniture was delivered by the Pander firm, then already a good partner of the architects but also very active in the aviation world with furnishing and even building complete aeroplanes.
At the moment, the fate of Ypenburg is uncertain. The terminal is partly used by the regional planning department, but the part that is not in use is greatly neglected. The large hangar is now in use by Fokker's aircraft industry, not so pleased with our aim to preserve this - in The Netherlands - unique pre-war airport complex as a listed monument.

Epilogue

In this case, Ypenburg's original 'message of modernity' can survive only if we take this as a 'challenge of conservation' and find a good solution for reuse; this is the paradox of our concern for the Modern Movement. Mobility matches more easily with modernization than with restoration.
However, in the case of Schiphol airport, the 'challenge of modernity' is consequently continued in several stages: from the postwar reconstruction (now part of Schiphol-East), to the central complex of Marius Duintjer (opened in 1967) and the new terminal of Schiphol-West, part of the large-scale master plan by Jan Benthem, Mels Crouwel and NACO (opened in 1993). Here we see the most actual form of the Modern Movement, where functionality, logistics, technology and aesthetics are combined in an orderly, attactive, lighted building of steel, aluminium and glass.
Elsewhere, too, we see new airport buildings rising, designed by a new generation of architects and trying to express a new identity for their space-linked function in various ways: Barcelona, Frankfurt, Kansai (Osaka), London (Stansted) and so on. This series shows without any doubt that the ideas of the Modern Movement are still alive and very well suited to the dynamic world of aviation.

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Hygiene, Technology and Economy: the 1930s Architecture of the Finnish Defence Forces

The nationalistic atmosphere of Finnish society in the 20s and 30s is well depicted in a bas-relief, *The Battle Between Good and Evil*, in the vestibule of the Helsinki Military Hospital. In the relief the whole Finnish army, with its modern armaments (ships, submarines, aeroplanes, anti-aircraft guns, etc.) stands facing a huge dragon coming from the East. The Soviet Union was seen as the enemy which threatened independent Finland.

The development and construction of the national defence forces for the newly independent country began in the 20s, to be completed in the interwar period. The air force was a totally new branch of the armed services: funds for buying equipment and for building barracks and airports were allocated for the first time, the medical services of the defence forces were modernized and the large modern military hospitals were built in Viipuri and Helsinki. New garrisons had their own smaller hospitals. New principles were adopted in planning the barracks: the main aim was to create healthy, hygienic living conditions for all recruits. The Finnish war material industry was founded in the 30s: a gun foundry was established in Jyväskylä, an aircraft factory in Tampere and an ammunition factory in Kuopio. For strategic reasons, most of the new garrisons were located near the eastern border in the south of Carelia and on Lake Ladoga. For the same reasons, the war material industry was centred in the middle of the country and the Second Team Exercise Centre was built near the western boundary.[1]

Because of the changes in administration and organization in 1927, all building design for the defence forces was transferred from the Supreme Administrative Board of Public Buildings to the Construction Bureau of the Technical Department at the Ministry of Defence. The Construction Bureau thus became one of the country's largest architects' offices, between 1927 and 1939 employing nine female and thirteen male architects. It is difficult to find drawings by individual architects, however, since the office functioned as a collective (architects signed with their initials only).[2]

In the 20s, National defence had paid particular attention to poor hygienic conditions in the barracks, outdated facilities, inadequate nursing and insufficient staff. The bad conditions in the barracks were the reason why so many recruits fell ill and even died.

The Viipuri Military Hospital was designed by architects Elsi Borg and Olavi Sortta, from the Ministry.[3] The first plans by Elsi Borg from 1929 were very modern: different functions had their own building volumes and the staircase formed a tall, cut-off cylinder. These plans were too modern for the army, however, and the hospital was built on the basis of more conservative plans by Olavi Sortta from 1930-1932. The completed part constitutes the first stage; the second stage was to have been a building of the same size, but this was never constructed. The patient and operation wards were placed in separate wings. In the patient wards the rooms were arranged around a central corridor and they all faced south. The service rooms were on the opposite side. This kind of separation of different functions was typical of hospital planning in the 30s, in which lifts made it possible to erect higher buildings and almost all service was vertical rather than horizontal. It became possible to build more economically because new ventilation techniques favoured the minimalization of cubic content per patient.[4]

The construction of Tikka, the Helsinki Military Hospital, began in May 1934 and was completed in 1936. The designer Olavi Sortta worked together with the hospital staff, primarily the principle medical officer.[5] In its basic structure, Tikka was similar to the Viipuri Military Hospital: the floor plans were identical and functions were to a large extent separated in both. Technical and economic considerations were the main factors which dictated this architectural solution and surface materials were chosen with regard to hygienic requirements. There were 250 beds in the brand-new hospital and there were several lifts: two for the patients, one for staff and one for food. The construction system of Tikka was conservative, consisting of brick vertical bearing elements, and staircases, balconies and intermediate floor-ceiling structures in concrete. Both hospitals are public buildings and stand as landmarks in the cityscape by virtue of their height and location. Nonetheless, they differ greatly from each other. The Viipuri hospital has a rigid, vertical entrance enhanced by lion reliefs by Gunnar Finne that cover the whole surface. Besides representing the highly monumental architecture of a young country, it is also an ambitious *Gesamtkunstwerk*, for which all details and furniture were carefully designed (over 150 drawings).

The Tikka façades, by contrast, are more ascetic and feature no military symbolism. The most prominent part of the building is the south-eastern gable of the patient ward. On every floor outside the staircase there are semicircular balconies of a design type which was unique in Finland at the time. These forms can be found in Erich Mendelsohn's architecture and in

Barracks of Motor Transport Company, M. Martikainen, Helsinki, 1936.

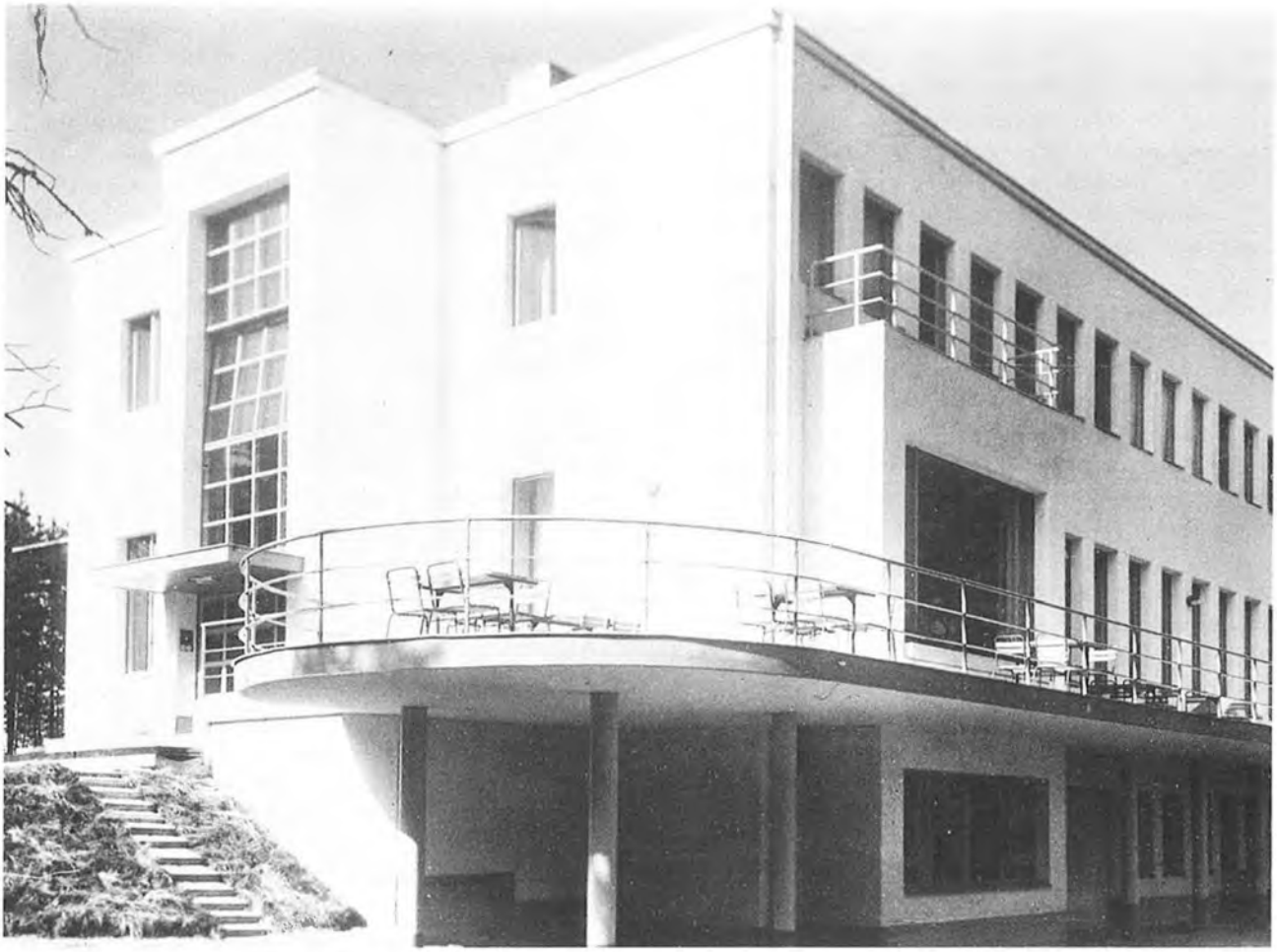
the first sketches of the Viipuri Military Hospital. Paimio Sanatorium by Alvar Aalto also has a rounded gable, which may have influenced the semicircular balcony design of Tikka. The desire to have sunlight throughout the day was the main determining factor behind the shape and location of the balconies.
An example of a smaller hospital for a new garrison is the Niinisalo Second Term Exercise Centre in Kankaanpää, designed by architect Kalle Lehtovuori in 1936.[6]

"Our barracks - hygienic, practical and elegant"[7]

The old red-brick barracks built by the Russian Empire and inherited by independent Finland were based on hall-quartering for the masses and therefore did not meet new demands for 'individual' room-quartering and for hygienic conditions. For this reason, new principles were adopted for repairing the old barracks and for planning new ones. The 'healthiest' type of barracks had a light, ventilated side corridor, rooms for eighteen men and sanitary facilities in the barracks themselves.
Twenty-two new barracks were built between 1928 and 1939, almost all based on a single-corridor plan with rooms for eighteen men, one company per floor. Standardization, improved sanitary facilities, the use of hygienic surface materials and functionalistic form language were the new features of Finnish military architecture. The main objective was to create hygienic and therefore healthy conditions for all the men at a time when tuberculosis was rife. The best example of this new 30s concept of barracks is the one built in 1935 for the Motor Transport Company in Helsinki, designed by Martha Martikainen. Being both modern and functionalistic and designed by a young woman architect, the barracks, the garage and the petrol station were immediately presented in the newspapers. By contrast, economy was given preference over hygiene in the design of the barracks for the Second Term Exercise Centre in Niinisalo, the work of Kalle Lehtovuori (1934). The barracks consist of three 60 m long three-storey lamelles. The Niinisalo barracks are very ascetic, resembling the modernist *Siedlungs* of Germany and Holland: there is no decoration and only the volumes of the staircases endow the façade with rhythm.

Airbase 6 in Immola, Imatra

Construction of the air force areas had begun in the late 20s. The status of the new branch of the military as well as the national will to defend were enhanced by propaganda. Students raised money for 'aeroplanes for the army' and, aided by the air force, the general staff, the Finnish Gas Defense and Finnish Film Industry Ltd made a film entitled *Our*



Immola Air Base, Officers' Club, E. Hyvärinen, 1936-1937.

Boys in the Air - We on the Ground. Air displays were organized all over the country and air defence associations worked in order to increase voluntary national defence.

During the 30s in Finland there were airbases in Sortavala, Suur-Merijoki and Turkinsaari, which are today situated on the Russian side. The Air Force Academy had been built in Kauhava in the late 20s and additional construction work went on throughout the 30s. The reason why Airbase 6 (1935-1937) was built in Immola, near Imatra and close to the eastern border, was connected with interwar defence policies. Adoption of the new architectural ideology and the idealization of technology can be seen in the buildings for the air force areas. For defence reasons, the areas were decentralized and placed in the surrounding forest according to functionalistic planning principles (attacks were expected especially from the air). The officers' dwelling areas were separated from each other and from the central exercise field, which was lined with barracks and the canteen building. Beside the aircraft hangars there was a radio station and a workshop building with garages. According to hierarchy, the officers and the warrant officers had their own clubs; the recruits had a soldiers' home. Every group had a sauna. One more airbase was designed before the Winter War in 1939, namely the Luonetjärvi Base near Jyväskylä, with buildings of the same design as at the Immola base.

The Military Academy in Santahamina (Helsinki) is the last example of elegant, ascetic, functionalist Finnish military architecture. The history of the Academy is linked to the 1940 Helsinki Olympic Games (which had to be cancelled), in that the school building was aimed to serve as a hotel for sportspeople. Designed by Olavi Sortta, it consisted of six buildings: the school, with rooms for cadets, the swimming pool, bath and gymnasium; the canteen building; the barracks; the education building; the officers' house and the stables. After World War II, architects with private practices designed the military buildings.

As far as architecture is concerned, the demands of National Defence corresponded to what Modernism (Functionalism) had to offer. The hospitals and the barracks were developed in the 30s to meet the hygiene requirements of medicine at the time, one of the aims being to create healthy conditions for recruits (new hospitals, barracks, etc.) as well as dwellings for staff; in other words, to improve national health and, by extension, fitness for service. All construction work was regulated by economy: superfluous decoration was omitted, standardized measurements were the aim and standard drawings were used - mostly for the regulars' dwelling houses and for the air force areas.

The international Modern Movement and its planning methods, which emphasized economy and hygiene, were adopted by the Finnish defence forces in the 30s, at the same time when the ideological and social programmes associated with Functionalism were shunned by right-wing nationalism. The Finnish defence forces used architecture as a means of underlinging the modernity and progressiveness of the young country, and airbases in particular received the latest technological equipment. White functionalist architecture came to contrast sharply with the old red-brick barracks which stood as a testimony to the military architecture of a foreign power, dating back to the time when Finland was a Grand Duchy of Russia.

Notes

[1] This paper is based on my unpublished master's thesis (1990, Department of Art History in the University of Helsinki) and two articles published by Society for Art History in Finland: "Women Architects at the Ministry of Defence 1927-1939", Jyväskylä, 1987 and " Hygiene, Technology and Economy - the Architecture of Finnish Defence Forces in the 1930's", Helsinki, 1991.

[2] The mainsources of this study are the original drawings in the archives of the Ministry of Defence.

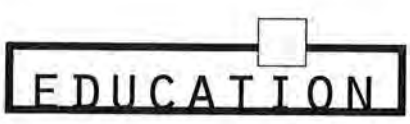
[3] "Viipurin sotilassairaala" (Viipuri Military Hospital), *Arkkitehti* (Journal) 1933.

[4] Åman, Anders, *Om den offentliga vården. Byggnader och verksamheter vid svenska vårdinstitutioner under 1800- och 1900-talen. En arkitekturhistorisk undersökning.* Uddevalla 1976.

[5] Helsinki Military Hospital was published in *"Arkkitehti"* Journal 10/1936 as a work of Construction Bureau of the Technical Department in the Ministry of Defence (without naming the architect).

[6] Architect Kalle Lehtovuori was one of the staff architects, who had anonymously carried out his life's work of 30 years planning buildings for the military authorities.

[7] Architect Niilo Niemi wrote two articles "Kasarmirakennuksemme" (Our Barracks) in the Military Administrative Magasin, *Sotilashallinnollinen Aikakausilehti* 11/1934, 12/1935. Niemi was one of the architects in the Construction Bureau of the Ministry of Defence.



Servants' House, Zonnestraal Sanatorium, J. Duiker, B. Bijvoet, Hilversum, 1926-1928.

Aimée de Back

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The Restoration Project for the Domehouse of Zonnestraal

Eight students of the Faculty of Architecture in Delft have taken the initiative to restore the Servants' House, *Dienstbodenhuis*, also known as the Domehouse, Koepel. This Servants' House was designed by Duiker in 1931 and is part of the Zonnestraal Sanatorium.
The occasion for this project is the one-hundredth anniversary of STYLOS, the students' association of the Faculty of Architecture, which was celebrated in many different ways. The choice of this particular building was made on account of several considerations.
Firstly, the miserable condition of parts of Zonnestraal, which has given rise to many discussions in the last twenty years and about which nothing was actually done, caused us a great deal of concern. Fortunately a great rescue plan has been undertaken in the meantime. In general, the process of development of these plans is set in motion and stimulated by the topical issue around young monuments. We do not actively take part in this discussion; what we want is to contribute to the process by doing something concrete.
Secondly, the trend of the Modern Movement still has its influence on contemporary architecture, and Johannes Duiker, who studied in Delft, was one of the most important pioneers of this movement. The techniques developed in the 20s formed the basis for construction methods used nowadays.
Furthermore, an important goal is to let this project serve as an experience and study object for architecture students as well as other interested people.
Zonnestraal is situated on a large estate on the outskirts of Hilversum. At the beginning of this century Jan van Zutphen, one of the leaders of the diamond workers' trade union, was searching for ways to help his colleagues who suffered from tuberculosis. In 1905 The Copper Stems Fund was established, named after the collecting of broken copper stems which were used for diamond-cutting. After years of collecting stems, money and diamond grindings, Zonnestraal was founded in order to cure the patients by means of fresh air, daylight and labour, and to prepare them for their return to society.
In 1919 Bijvoet and Duiker were the architects idealistic enough to cooperate with these ambitious plans to alleviate a gloomy situation. Zonnestraal was completed in 1928 and became a symbol of companionship and social commitment. It represents an essential part of the history of collective strength and effort that managed to win the fight against tuberculosis and ushered in a new period of labour movements.
The sanatorium consists of a main building where the general facilities were lodged, with the pavilions for patients on both sides. Scattered over the estate are the workshops, villas, some small sleeping huts, other annexes and the Servants' House.
The design task of the Domehouse consisted of a cheap but modern furnished residence for eighteen maid servants who worked at the sanatorium, containing a living-bedroom for each one of them. Apart from this a tea-kitchen, a bathroom and a common room for the evenings were to be designed.
From the architectural, technical and economic points of view, it followed that the circle was the basis of this design. The clear structure and honest use of materials are characteristic of Duiker's architecture. The skylight is an essential element for the atmosphere in the common room, through which daylight filters, just like the gallery on the first floor, from which the rooms are accessible.
Even though the floor plan of a room is not rectangular, it is very practical as a low wall separates the sink from the living area and creates a rectangular space for a bed. In spite of the space in each room, the spatial effect is great, because the room widens towards the large windows that follow the angle of the corner. The walls which carry the floor and separate the rooms are located in the middle of the façades, in such a way that the corner distortion is visible; this creates a spacious view through large windows in narrow steel frames.
When tuberculosis was contained in the early 50s, Zonnestraal lost its original function and became a hospital. The Servants' House then gave place to nurses who worked at the hospital. The present condition and technical damage of the Domehouse is mostly due to the fact that it went out of use about ten years ago and has been empty ever since.
The conference "Zonnestraal, the time has come", organized on March 10, 1994 by The Netherlands Department for Conservation of Historical Buildings, revealed that the question of how to deal with this monument has many different answers.
Some are of the opinion that Zonnestraal should be a place of pilgrimage, which led to the idea of placing a glass cover over parts of the complex. This plan of abstraction was very much disputed and last year it was rejected by the Netherlands Department of Conservation of Historical Buildings.
Another point of view is to restore the buildings to the original design, allowing technical improvements, provided they should not affect the appearance, to guarantee a longer life. Every building demands a different approach considering the degrees of decay in the total sanatorium. The most important issue is the new destination, which requires certain technical and functional changes in order to prevent the

wasting disease that would cause the buildings to fall once more into decay.
A variation to this concept is to start restoring the whole complex as soon as possible. During or after this period a decision about the new function will be made, preferably linked - to some extent - with the function of public health care.
Others are under the impression that the whole complex should be pulled down, keeping the memory of Zonnestraal by means of photos, film, drawings and models.
We believe that Zonnestraal must be used and brought back to life again, in order to guarantee the value and atmosphere of the appearance of this social monument. With regard to the Servants' House, we support the approach of restoration to the original characteristics, applying technical improvements and functional changes, preserving the essential elements of Duikers' design. It is inevitable to change its function as a residence for eighteen people, since the Domehouse will not be able to meet today's demands and regulations of residential buildings: the rooms would be too small, the common facilities and insulation insufficient, etc.
Joining two rooms together to create a total of nine larger rooms would make the Domehouse suitable for living in. These changes, however, would affect the clear structure of the building. Another option is to restore the Servants' House to its exact original function, with the effect that it cannot be used properly and falls into decay again. It is obvious that small technical and functional changes will be beneficial to the preservation of the Domehouse.
At the moment, the Servants' House is often the final building visited on guided tours, and this could be enforced by exhibiting documents about the social history of Zonnestraal and drawings and models of Duikers' architecture. The location would be perfect for the function of a visitors' centre, without causing interference to the rest of the estate, and many visitors will be informed of the historical and architectural backgrounds of this remarkable sanatorium.
The change of function requires an altered floor plan. A balance has to be struck between taking care in dealing with this monument and the challenge of the potential of the Domehouse. The most important aspect is that an exhibition room requires more open space and flexibility. We will have to adjust the new function to the existing structure and accept the spatial limitations to some extent. However, certain elements will inevitably have to be altered.
We have tested various models on three criteria: the effect on the total design, the functional effect, and the constructive consequences. The visual effects are simulated by computer drawings, which give a very useful image of the new interior design.
Connected with this, we undertook physical research into problems typical of monuments of the Modern Movement.
Firstly, condensation on the steel frames causes corrosion; corroded steel expands and the panes crack. This is caused by the difference between temperature on the steel frames and the temperature inside the building. One way to reduce this difference is using new window frames, that are usually bigger. Another way is placing construction panels on one side of the façades. A third possibility is to warm up the construction to reduce this difference of temperature. All these methods, however, affect the purity of the appearance of the building, and this is unacceptable. After researching this, we found that the original frames can be used again after a treatment of cleaning, zinking and painting; this results in a satisfactory situation.
Secondly, the inefficient use of energy should be countered to approach the standards of today. We opted for single glazing in the treated existing frames while accepting the fact that this cannot meet today's standards of insulation. On the other hand, installation of insulation material on the roof, on the foundation, on the floor and in the façade panels is quite simple, very effective and hardly visible.
In general, technical improvement and functional adaptation will be beneficial to the use and future of the Domehouse.
During the total process, we are guided and advised by experts from the University. When the preparations, involving research in archives, full integration of spatial, functional and technical design, estimates of revenue and expenditure are finished and sufficient material, information and research is collected, we will apply for permission from the Netherlands Department for Conservation of Historical Buildings. Most probably, we will commence with the actual work in April 1995. Guided by a master builder, the work will be carried out by students as much as possible, which reduces the costs and serves as practical experience.

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Learning Technology in Perspective through Transcription

After an introductory examination of the possible role of modern-movement architecture as a founding 'tradition of the modern' and of the relationship of detail to larger form, the difficulties of teaching technology to architecture students and the parallels between architectural and musical education are discussed. Setting out from these premises, a new method of teaching today's technology with a historical perspective is described in detail. It is based on the idea of *transcription*. A building or an unbuilt project of particular interest, dating from the first half of the century, is first analyzed and then redesigned with today's building techniques and according to our technical and environmental criteria, safety regulations, codes of practice, etc. This is in a fairly close analogy with musical transcription: there is an obligation of loyalty to the original. Finally there is a brief discussion of the way one learns in this method and of rehabilitation and conservation, admittedly only in a roundabout way.

The aims

Before describing in some detail the sort of work we do with students, it seems important to say a few words about the particular circumstances of architectural practice and teaching in France.
The profession and the educational system have adopted, since the late 18th century, an 'artistic' stance, often leaving technical matters to the technical staff of public administrations or building contractors. The years of vast building programmes orchestrated by the State after 1945 have further weakened the profession's technical role. Various forms and degrees of 'design and build' are therefore quite common. It is also important to note that the diploma awarded by the schools of architecture in France allows immediate registration as a fully practising architect.
In this context we see our teaching aims as twofold: on the one hand we want to give some basic, yet scientifically grounded, practical know-how before the student is licensed to build. On the other, we hope (rather naïvely) to contribute towards a reversal of the historical trend just described. Professional credibility is not our only motivation nevertheless. The mainspring of our efforts is a belief that the work of architecture cannot be limited to a particular scale or 'order of magnitude'. That it is through patient development, at the various scales, that the project may acquire meaning and depth. In the absence of an absolute set of rules (the classical orders, for instance) each modern work has, to some extent at least, to develop its own 'law', which would govern the relationships between the part and the whole, the small and the large.
A very common experience brings home the whole question: we can often recognize from a photo of a detail the building it belongs to. Thus Borges, in one of his stories, tells of certain objects a small, shining and unusually heavy metal cone, for instance which are messengers of another possible world, which eventually could take over this one. (J.L. Borges, *Tlön, Uqbar, orbis tertius*).
Auskomponieren is a term used for a process of composition which has detached itself from traditional European musical forms. The following text by Adorno suggests for this process a rather rigorous and demanding ethic: "No detail remains which is not meaningful solely through its relationship to the totality of form - but no form remains either, which is not made legitimate by the demands and impulse of the detail." (Th. Adorno, *Berg, erstes Streichquartet*).

The role of the modern 'tradition'

Faith in an underlying order structuring modern architectural productions, despite their revolutionary import, may be shaken today. A philosophy questioning the very foundation of thinking, or at least of the Western tradition of rationality, and reaching towards depths difficult to sound with that model of most structures - language...the very flesh of thought seems to encourage in architecture a search for a disjointed, disordered, unstructured assembly of elements more akin to Dada than to the harsh disciplines of the Modern Movement.
Whether this is indeed the final renunciation of Utopia and acceptance of the Chaos of the city-world, or a mere swing in the pendulum of fashion, is perhaps a question of taste. However, as teachers, we have to work on two assumptions: first, that the will to order, which is so typical of the discourse of the Modern Movement, also underlies the individual products of its protagonists; and second, that their oeuvre constitutes in its totality a sort of 'tradition' which is the sole possible point of linkage, even if negative, to a more distant past, and from which all later work develops, in continuity or in protest, or rather a mixture of both.
An important point to note, especially when one talks of education, is the fact that this 'tradition' is very heterogenous and contains, both technically and formally, the seeds of most strains which have developed since. This means that there is large gamut of choices when relating, in a personal way, to the 'tradition'.

The method

What is of particular interest in all this to us as teachers of technology is that once you accept the idea of an order linking the various scales of the

project and you actually start developing them, it simply becomes impossible to avoid questions of technology. The problem remaining is: when and how does one teach all that?

In our school, as everywhere else, a fair amount of technology is taught in lecture courses, and by the time the student has reached his fourth year he will have been 'subjected' to many hours of 'structures', 'energy in buildings', 'acoustics', etc. But we all know that the capacity to *design* is something very different and is learnt by actually designing. It is only while designing that one can develop a project at the various scales, as described above, and that one will find oneself drawn into questions of technology. Unfortunately, designing with the aim of developing the project, from these points of view, is very rarely engaged in. We can identify several specific reasons:

1. when studio work is devoted to technology, the student may quickly lose interest because of the absence of architectural 'problematics' - he will consider the work irrelevant, or he may find himself superficially adopting an architecture expressing technics;
2. when the studio is dealing with architecture, other problems ('architectural') will be so overwhelming that no time will remain to seriously tackle the various scales and the technical aspects they involve;
3. interest in design is a question of maturity: the student will develop a genuine interest for a particular domain of technology at a certain point in the course of studies, not necessarily the same for all students.

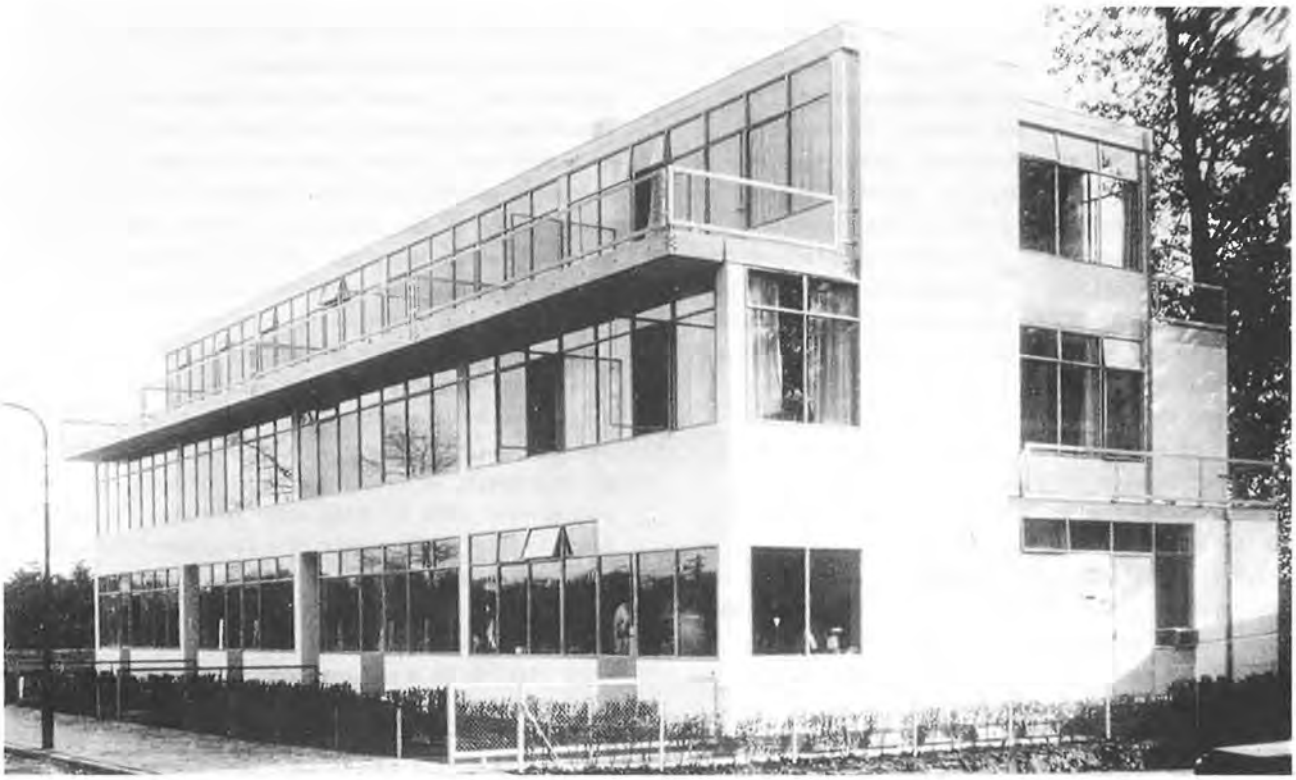
In musical education, *transcription* is a common exercise. When transcribing an operatic work to the piano, or a piece for the organ to the orchestra, the student will get good insight into various more or less technical aspects of music and of the work transcribed: harmony, texture, instrumentation, etc. What is more, he will get an insight into the 'workings' of a particular moment in the musical tradition. At the same time he does not have to actually compose, because the composition preexists.

We do something analogous with students of architecture in their fourth and fifth year. Because there is no need to 'compose', in questions of detail and technology concerning a building in which they are deeply interested.

Working in small groups or alone, they choose a building of note, generally situated within reach and dating between 1900 and 1960. The teacher may make suggestions but final choice is left to the students. They may also choose an unbuilt project of note, as long as they can lay their hands on some drawings as a starting point.

In the first stage, they will survey the building and/or study available documents in order to produce a series of drawings showing the building at various scales, as it is. They are also asked to try and interpret any noticed or reported malfunctions and failures. Access to buildings is often limited and that means, unfortunately, greater reliance on documents.

At the second stage, the same building will be transcribed into the present. This means that common French building techniques of today will be used as



Row Housing, G. Rietveld, Utrecht, 1934. (DOCOMOMO The Netherlands Register).

much as possible. Compliance with the various codes and regulations is compulsory, especially those concerning:

- energy saving;
- safety and fire-safety;
- soundproofing.

The scope to develop these and other topics in the design process varies according to the subject chosen, but from the start, two questions will have a primary role in organizing the design process:

- vertical load bearing and wind bracing
- heat loss through the building envelope

During the design process, questions of 'loyalty' or 'betrayal' of the original building will be discussed with teaching staff alongside more down-to-earth questions of availability, durability, cost, on-site assembly, possible failure, etc.

The file presented at the end of a year's work will contain photos, calculations, drawings at various scales, a total of more than thirty size A3 sheets.

It is interesting to note to what extent the students will 'identify' with the building towards the later stages of their work. Something akin to what Borges describes in the story "Pierre Menard, Author of Quixote" is probably happening in some way : "He did not want to compose another Quixote, but The Quixote. Needless to add that he did not aim at a mechanical transcription of the original. His admirable ambition was to produce a few pages which would coincide - word for word and line for line - with those of Miguel de Cervantes...The initial method which he imagined was relatively simple. Know Spanish well, return to the Catholic faith, battle against Moors and the Turk, forget the history of Europe between 1602 and 1918, *be* Miguel de Cervantes. Pierre Menard studied this procedure...but discarded it as too easy...To be in the 20th century a popular writer of the 17th seemed to him diminishing. To be in some way Cervantes, and to arrive at the Quixote, seemed less difficult - and therefore less interesting - than to continue being Pierre Menard and arrive at the Quixote."

The buildings transposed in this way include: the Villa Savoye, the Maison Planeix, the Villa Laroche, the Maison Jaoul, the Immeuble Clarté, the villa in Weissenhof (all by Le Corbusier), the Maison du Peuple in Clichy (Lods, Beaudoin, Prouvé), the Maison Orloff (Perret), the Villa Guggenbuhl, the holiday centre at Meriel, a house in Villa Seurat (all by Luràat), the Schrôderhuis and the flats adjacent to it in Utrecht (both by Rietveld), the Openluchtschool and the Zonnenstraal Sanatorium (both by Duiker and Bijvoet), flats in Hoek van Holland (Oud), the primary school in Aalsmeer (Wiebenga), Baensch Haus (Scharoun), Maison Carré (Aalto), Tugendhat Haus

Open-air School, J. Duiker, Amsterdam, 1929-1930.(DOCOMOMO The Netherlands Register).

(Mies van der Rohe), Fondation Maeght Museum in St Paul de Vence (Sert), Villa à Croix and Villa Noailles (Mallet-Stevens).
Work using projects unbuilt (or by now demolished or modified) includes: the Maison Citrohan, the Villa Meyer, the Maison Ternisien, the Maison à Carthage (all by Le Corbusier), the Villa Fricsay (Neutra).
The transcription exercise having been a success it was nevertheless considered too difficult and long (a year) to propose to a larger number of students (only ten to twenty students will take this demanding module every year). We therefore decided to offer a simpler version to about forty third-year students. The project in that case will be less complex - small houses, single or attached. They may exist, and in need of rehabilitation, as in the case of the so-called garden-city by Dumail in Paris (public housing from the late 30s), or mere on-paper projects, as in the case of the Cité Industrielle by Tony Garnier (1917). As this concerns rather cheap housing, the students will also get an insight into the extent to which housing standards have changed in the second half of the century, and thereby into one of the more important aspects of the rehabilitation of housing older than forty years.
In this exercise we insist less on the problems of loyalty of transcription, which facilitates the students' task. On the other hand, certain students will use this opportunity to improve their command of a Computer Aided Design programme.

Appraisal

To sum up, we feel this type of exercise is particularly suited to our postmodern context. There is no need to make any a-priori assumptions as to the determination of form by technique, other than might be subsumed in the rationale of current practice. There is no bias towards an architecture expressing technique. It gives the student a choice of possible paths, while developing insights into the 'traditions' of modern architecture and into the evolution of building techniques in the course of the 20th century. Thus he will almost imperceptibly, albeit indirectly, become familiar with the problems one encounters in the domain of rehabilitation, 'sensitive' rehabilitation in particular.
This exercise puts him into a fairly real design situation while relieving him of some design responsibilities (the project is given) so that he may concentrate on the rest. And most important, the students generally feel it is a rather fascinating way of acquiring technology, of getting a critical overview of some of the 'nuts and bolts' of their profession, and of learning to appreciate the importance of detail and of detailing.

Mabel Scarone

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Importance of the Modern Movement in the Training of New Architects

At our last Dessau meeting, during which we discussed the meaning, definitions and the period of existence of modern-movement architecture, we began to consider the still potential role of the movement's principles as a living corpus of ideas, present in many proposals of today's masters and fit for the training of a younger generation.

Beyond the frozen forms of 'style' (white horizontal bands, etc.), new parameters, reference structures and sets of values were to breathe new life into architecture.

If we come to accept that architecture is a response to needs in relation to resources within a specfic context, we should then also agree that in the 20s a revised approach responding to needs of a social, cultural and philosophical nature was put into practice.

Furthermore, in this changing context of the new century, technological resources had widened possibilities in the field of design.

The adequate enunciation of an architectural programme, as the result of the interplay between the relationships to which we have just referred, was of foremost interest to architects then, and once it was properly expressed, gave them an ample array of possibilities when it came to designing architectural form.

Rejection of the previous formal and compositional canons that materialized the shape in which - for better or worse - functional needs should be lodged, paved the way for a new set of strategies for considering those needs within a complex framework, itself a battery of rich ideas, that turned out to be the basis for the final outcome of the architectural proposition.

The masters of the so-called 'Heroic Period' faced the issue with the help of a solid background they had built for themselves with their early professional experiences.

The newly gained freedom in design was really rooted in perfect knowledge of the 'rules of composition' they were to ignore, as also in local expressive traditions and the by-now universal scope of technology. The history of this period in architecture has flowed like water under the bridges, leaving behind misunderstandings and confusion for today's students: mainly the idea that everything or anything is valid for the sake of change. A thorough case analysis of modern-movement buildings will show exactly the opposite.

The use of a rigourous conceptual framework of principles and ideas put together between 1910 and 1920 forged limits to what seemd at first sight to have been a boundless liberty for transgression of all that was revered until that moment.

Today, a need to 'do away with slogans' and dive into the real thoughts and principles of the masters we still consider basic to present-day teaching in the field of design, explains why in Buenos Aires we work in that direction, with the results I have brought to the consideration of this forum.

Considered geographically, Buenos Aires was a backwater in relation to Western 18th-century and 19th-century cultural history, but in matters concerning modern-movement architecture, it was soon - together with Brazil - to be an early forge of ideas that paved the way for Le Corbusier's visits to South America in 1929.

The avant garde ideas of the 'Anthropophagist' and 'Martinfierrista' movements in Rio and Buenos Aires were the backdrop to the rapid changes and acceptance of message, and also an early inspiration for a number of then young Argentine and Brazilian students and architects who were to challenge the beaux-arts-minded teaching in the schools of architecture of both their local universities.

Most of them were to be active in the 30s and early 40s. The already strong presence of German firms in Argentina (Siemens Bauenunion for example) with their imported literature (Wasmuth's, *Moderne Bauenformen, Bauhaus Bucher*) as well as an established tradition and expertise in reinforced concrete structures since 1900, explains our almost direct links with German Rationalism.

Architecturally speaking, the buildings from between 1930 and 1940 were to document the last pangs of an oppulent era for our country, a boom beginning in 1880, with the parenthesis of the Wall Street Crash to be followed by a new spurt of prosperity that would last for another twenty years.

Teaching at the university during those sixty years continued to follow the beaten track of the Parisian ateliers with only the British, Belgian and German engineers active on the Pampas building railways, ports, grain elevators and factories, all important examples of the use of a new technology fit to the also new programmes of a world-encompassing industrialized society.

Those local monuments would be 'discovered' and experienced by the new generation as soon as they were stimulated by Le Corbusier's nine seminars in Buenos Aires (October 3-15, 1929).

As from 1929, the cultural turning point for architecture in Argentina, Morance's *L'Architecture Vivante*, the serials of *L'Esprit Nouveau*, and *Vers un Architecture*, were to be common reading matter for the local avant-garde.

Prēcisions' did the rest, since several chapters were to deal specifically with Le Corbusier's experience

Casa Currutchet, Le Corbusier, La Plata, Argentina, 1949 (DOCOMOMO Argentina Register).

of Brazil and Argentina. Local 'folk' was to be rediscovered in this book and a new set of ideas, coupled with the appraisal of the 'engineer aesthetic', finally planted the root of change in the minds of our modern-movement pioneers in the Rio de la Plata area.

It was no coincidence that two of the most influencial early figures of this moment were to be Antonio Vilar, an engineer, and Amancio Williams, an aircraft pilot and student of engineering who changed his mind halfway through to study architecture at the University of Buenos Aires.

Both were important for the first generations of architects who were responsible for the profound changes in training that were to follow and to be turned into reality in the 50s.

Since then, at the Faculty of Architecture trial and error has led us to set a preordered number of subjects ranked in growing complexity of problems and linked to the practice of design as a central subject in the curriculum.

Liberty and mobility within this apparently rigid structure is to be found in the existence of twenty-five parallel workshops of design where the student can experience as many philosophies and modes of practice as sustained by the professors who teach in any of them.

A similar situation is to be found in the plural views expressed by the History, Theory, Technology and Morphology Departments, complemented by an important group of free elective seminars and workshops that complete our five-year cycle of graduate training.

Of this last group, I underline the teaching of principles of Conservation and Recycling of the Architectural Heritage since I am personally involved in this subject as well as in Architectural & Urban Design, appointed as one of the twenty-five professors to whom I refer above.

Creative design proposals can exist only if construction is mastered at different levels of complexity. Furthermore, the understanding of problems to be solved, linked to a real context, is fundamental.

Theoretical principles and historical background are the foundation materials on which we begin to elaborate a process of design and, having said this, the Modern Movement turns out to be of utmost importance (in concepts, value systems, theories and project modes).

The knowledge of case studies (their use through time, acceptation, failure, change), living the real experience in their existing present state and discovering the original spatial proposal (architecture is space limited, etc) is a must, if we are to expect creative and sound solution proposals to formulated design problems.

Notes

' *Prècisions sur un èat present de l'architecture et de l'urbanisme*. Collection "L'esprit nouveau",1930

Dietrich W. Schmidt

ENGINEER
STUTTGART, GERMANY

The Danger of History for Architects

Introduction

Let me suggest that all of us are convinced of the importance of the Modern Movement in architecture. Shouldn't that be a good enough reason to increase knowledge of this famous period of architectural history, in other words, to stress the Modern Movement in the field of historical education? Nevertheless, as you may have noticed, the title of my contribution is "The Danger of History for Architects". This needs explanation.

I think the experience of postmodern overestimation of historical issues[1] should lead us to a more critical consideration of the quantity of historical impacts in architectural education. Can architects escape the question about the value of historical beholdings when reviewing the sedulous abuse of history ten years ago?

At the summit of Postmodernism, the Hamburg architect Volkwin Marg anxiously asked: "Is the playing of architects with the box of bricks provided by history (...) a new alibi, allowing them to run away from the demands of reality into political irresponsibility under the cover of history of art?"[2] What were the reasons for this intercourse between history and architects? Didn't they escape from the present to the past, because they were afraid of the insecurity of present-day values and assumed that those of the past were more secure? This seems to me a characteristic phenomenon of conservative thinking since times past: conservatism was always convinced of unalterable truths, and yet was undeceived. The Swiss writer Friedrich Dürrenmatt remembered Socrates ("I know that I know nothing") and pointed out: "Who knows, is aware of knowing little, and all he knows is preliminary. Only the believer believes that he knows. Veracity is a word of belief. Nobody is capable of greater cruelty than those who act in the name of veracity."[3] All human knowledge, we learn, is preliminary. Similarly, Bruno Taut expressed his opinion about history in 1929: "History itself is nothing certain or objective."[4] This is why we cannot cease testing our store of knowledge, from completing and correcting it; i.e. to instruct, to request explanation, or, using a more pretentious word, to become enlightened.

Of course, we have to do this also in the field of architectural history. We have to go on with research work, although a number of articles, among them two by Fritz R. Raddatz in the German magazine *Die Zeit* with the title "Enlightenment Sets its Children Free", proposed in 1984 that the end of enlightenment had come, that Cartesian logic could no longer provide explanations[5]. The tenor was that values like reason, history, or progress were discharged; the new value was mythology.

The enlightened avant-garde of the Modern Movement was already convinced in the 20s of the relativeness of historical knowledge. Nevertheless, today also the illusionary opinion persists, that historical knowledge becomes more secure the older it is. We find this, for example, in the field of Gothic architecture as well as in Goethe, the German 'Pope of literature', who believed that the origins of Gothic architecture were typically German.

The Modern Movement and its intercourse with history

Even Walter Gropius, the director of the Bauhaus at Dessau, the only school of architecture in Germany without education in history, referred to Goethe. At the head of his article "Tradition and Continuity in Architecture", Gropius quotes Goethe: "There is nothing in the past we could desire back, there is only an eternal novelty emerging out of the enlarged elements of the past, and the real desire must be always to produce, to create new, better things."[6] This celebration of innovation characterizes the conviction of the Modern Movement. Gropius writes in his article: "The word 'tradition' derives from the Latin 'tradere': to transmit, to commit. This does not of course mean that studying an old building type or old masterplan of a city would enable us compulsively to erect houses or townships appropriate to our century; too deep a preoccupation with such study might even prevent rather than help forward a direct and living answer to our modern problems."[7] As far as design is concerned, intensive preoccupation with traditional issues would obviously seem somewhat dangerous or risky to the Bauhaus teacher.

Thus Gropius, one of the fathers of the International Style, regards history as something more or less secluded; he was convinced that referring to historical values, like conservative architects did, was obsolete and would hinder progressiveness. This conviction is easy to understand in the face of beautiful columns hiding dark dwellings or shabby working conditions. Gropius, born in 1883, grew up in the physical presence of eclecticism, when mere reproductions of various historical forms could not solve the real problems of architecture, like housing shortage, economic construction, or expressing the new ideals of the changing society. At that time education in architectural history produced shiny fictions and was an invitation to plagiarize. This abuse of history as a stone-pit caused the rejection of architectural history in the training of architects at the Bauhaus.

Besides the Bauhaus there was only one other architectural school of the Modern Movement: the so-called Vchutemas[8] founded in 1920 in the young Soviet Union; in 1927 it was renamed Vchutein and in 1930 the reorganization of the soviet educational system transformed its faculties into separate schools, one

Fagus plant, W. Gropius, Alfeld, Germany, 1911.

of them becoming the Moscow Architectural Institute. The Vchutemas can be compared with the Bauhaus, and most probably it renounced education in architectural history. Only in the basic courses was history of art offered. This school was described in 1929 by its rector Novitski as a "special technical-industrial high school"[9], a characterization which stressed its orientation towards the future. The foundation decree of November 29, 1920 had already denied the look back into history. Alexander Vesnin, born in the same year as Gropius, was head of the architectural department, and we know a lot of his statements against the use of history. Even in 1934, after the fatal decision of the competition for the Soviet Palace, he wrote: "Assimilation of the architectural heritage was a totally absurd thing. The majority of architects approach the heritage like a dowry-chest, everyone pilfers what he likes and glues it to his building. Architects and critics do not understand that the old architecture will be integrated into new creations."[10] The roots of this sceptical intercourse with history go back to the 19th century. It was Friedrich Nietzsche who already in 1874 warned against compiling the stock of tradition: "Certainly, we need history, but we use it differently from the idle lounger in the garden of knowledge, though he may look condescendingly upon our charmless needs and necessities. That means we need it for living and acting, not for withdrawing from life and action, or even for adorning the selfish life and the cowardly, evil deed. We want to serve history only as much as it serves living."[11] The intercourse with history does not imply escaping into encyclopedism.

Resentments against history culminated in the rise of functional rigorism in the 20s, which turned especially against the immediate past. Erich Mendelsohn, the self-reliant modernist, said, when he opened his Schocken store at Nürnberg in 1926: "Never in history has a vigorous time ever given more credit to another time than to itself." Even the quite independent Austrian architect Josef Frank criticized architects' referring to history and spoke of "incapable men" and their "desperate deeds". "They cling to everything old, like the drowning man will catch at a straw".[13] Controversial opinions like these belonged to the modernist strategy of separating from retrospectivism. "To kill historicism it was necessary to kill history",[14] said Spiro Kostoff of the University of California in Berkeley in 1967. In this climate of hating history, the relationship between architects and historians became difficult. In an article about "History for Architects - the case of Sigfried Giedion"[15], Sokratis Georgiadis quotes a letter by Hannes Meyer, then teacher of architecture at the Bauhaus in Dessau: "We should develop our creations to a point where the art critic would no longer be able to judge the product."[16] Giedion's detailed answer to this personal letter rejects this as esoteric cliquishness: "(...) If you mean, that only those who erect buildings have a vocation for theoretical judgement, only sick people could judge sick people, only women could judge women, trees,

trees. The end: cliquishness of the whole cosmos!..." What Hannes Meyer really meant he unveils in a second letter: "I am not able to judge the functionallity of a railroad (...) or of my typewriter. (...) The hangar in Orly I think imposing, 'modern' and so on, but in the final instance I do not know if its construction is correct concerning statics, thermics and so on."[17] Thus Hannes Meyer wrote of an architecture reduced to its functional purpose and technical correctness. The same ascetic opinion was expressed by his Swiss colleague Hans Schmidt in 1927 in the magazine of the Swiss Werkbund: "Building is not architecture, but in its original character it is technic, thus a matter of necessity, a manifestation of the most primitive needs of living."[18]

This dogmatic and coy materialism of Schmidt and Meyer was too exaggerated to be entirely accepted by the Modern Movement. It was the modernist Sigfried Giedion, general secretary of the CIAM, who claimed a new task for the historian. In his opinion, the historian should mediate between the intellectual and the practical spheres, as Georgiadis writes. This would be a contribution to stop the "cliquishness of the world", which narrows the view upon general connections and degenerates architecture into a mere mechanistic way of building.

Giedion put down his own ideas about history in architectural education in 1934.[19] The essentials of his new approach were to divide the education in history into two separate parts, (a conception we still find today at the University of Stuttgart). The first part should be a rough survey of history of architecture up to the 18th century. Giedion pointed out that "not too much should be expected from education in the encyclopedian sense". This is why he added the second part, which should deal with "the origins of the present time"; here steps backward to the Renaissance should be possible. (In Stuttgart Jürgen Joedicke called this "The basic elements of modern architecture"). Giedion wrote in his manuscript "The architect has to be acquainted with the tradition from which he evolves." Thus the purpose of this education was not compiling facts but explaining perceptions, or - as he wrote elsewhere achieving consciousness of one's own time.

In his first lecture at Harvard University on November 15, 1938, entitled "The Life of Architecture", Giedion explained his aims: "Planning does not simply mean knowing what exists. Planning means knowing what has gone before and feeling what is coming. This is no invitation to prophecy. Behind it there is only a request for a universal view of the world."[20] Giedion's intention was not to provide a complete history of modern architecture but to encourage modern thinking. Again and again he stressed the danger of compiling historical facts, so in his first lecture at the School of Fine Arts in Yale, October 27, 1941: "In the brain of a young student a thicket of facts was developed instead of basic methodological training. This constitutes a great danger, for facts which are not based on a functional penetration clutter up the brain and undermine the productive capacity. Facts make sense when they may be incorporated into a spiritual system. The sector of human knowledge on which particular stress may be laid in the coming period will concern more the interrelations between facts than the facts themselves."[21] The indispensability of historical education derives, in his opinion, only from the demand for a universal view of circumstances and conditions under which the architect acts. The historical education of architects continued to be a problem, and in 1950 a symposium at Harvard was titled "Art History in the Training of the Architect". Giedion emphasized the inadequacy of academic history teaching: "... we should avoid teaching the history of art in an encyclopedic way. This encyclopedic method will always be insufficient, for its superficiality arouses in the student a mistaken feeling of comprehensive knowledge."[22] This method, he said, was typical of the 19th century, when history resembled collecting stamps and architecture had done nothing else than put together forms of the past. He continued: "If we want to give a survey of history with a limited amount of time at our disposal, then in our method we must combine the bird's-eye view with detailed close-ups." In 1955 Giedion wrote about his course at the Harvard Graduate School of Design with the title "The Visual Arts in History": "This course should introduce the student without historical argumentations into the many possibilities of architecture, starting from natural growth, plants, the microscopic and macroscopic view of materials, leading to problems of structures, volumes and voids, transparency and perforation."

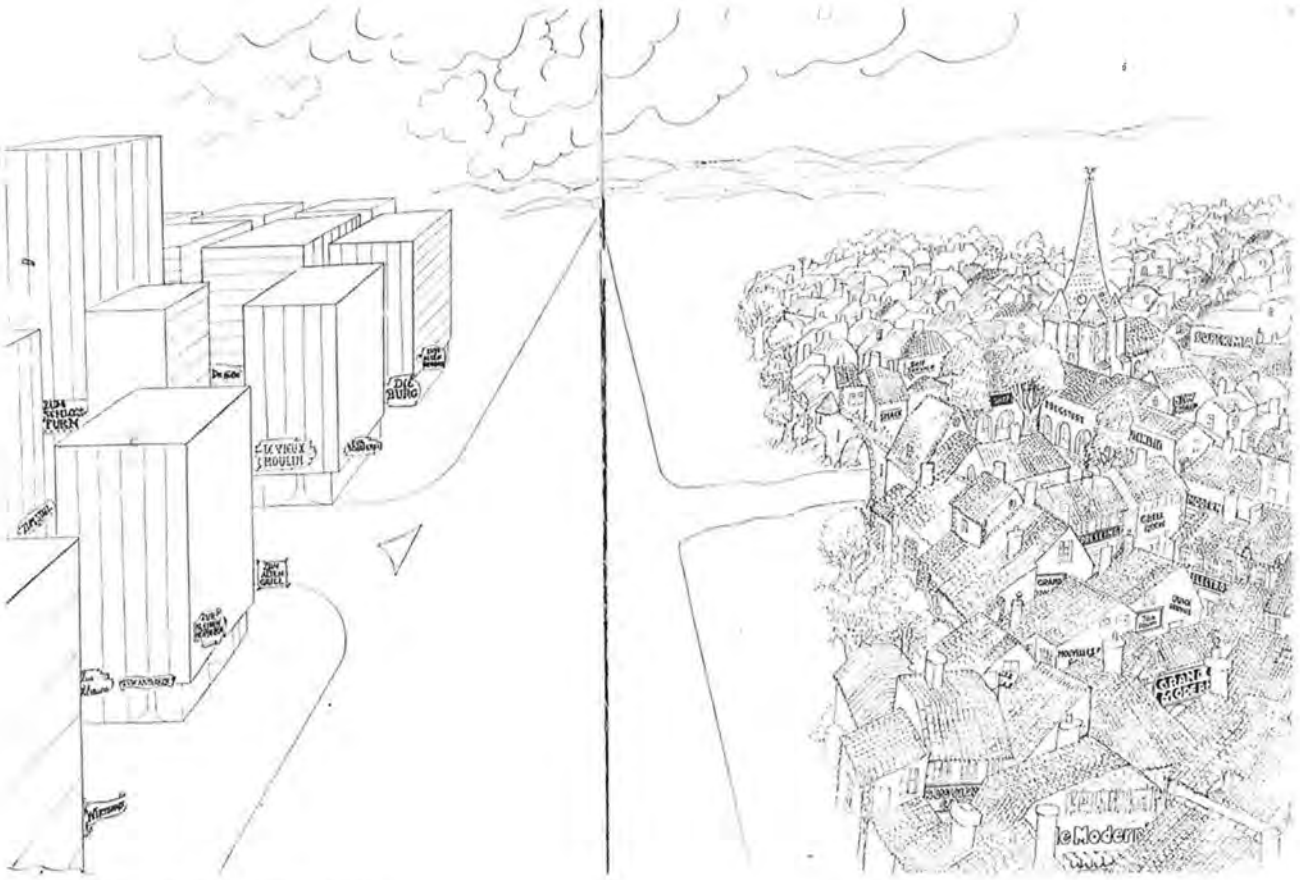
Means and values of architectural expression

The general question regarding how architects assume their values of expression cannot be disregarded. How far do they acknowledge conventional issues? More precisely: what do they do with history?

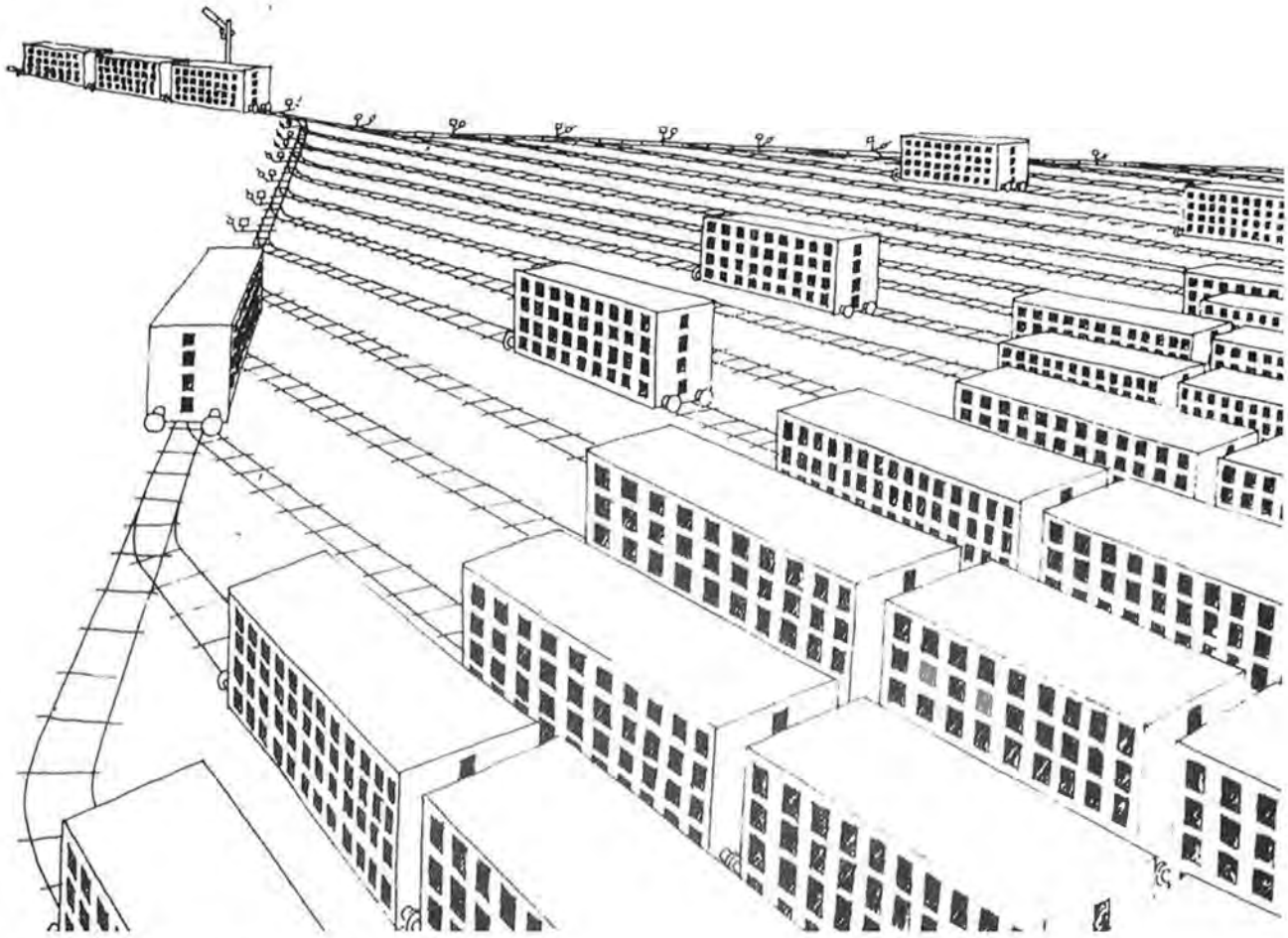
In the Soviet Union, after the mid 30s a new historicism had become the party's pet. Moreover, it was dangerous to depart from the "general line": in 1932 professors Ginzburg and Ladovski were dismissed[23] because of their modern designs for the Soviet Palace competition and in 1937 Solomon Lisagor, a partner of Ginzburg, was imprisoned and died one year later.[24] Nevertheless, Alexander Vesnin turned against the official abuse of history when in 1940 he wrote: "Each epoch creates its own means of expression, and these means do not fit to another epoch, even though they may be beautiful. Architects make a monstrous mistake by believing that the forms created during the time of the Italian Renaissance and at that time meaningful would keep their essential meaning in a different epoch, and that they could adopt these forms for their designs and buildings."[25]

The architects of the 20s and 30s did not cease voluntarily from their historical scepticism. thirty years later this way of thinking came up again

and culminated in a strong belief in the future: the Soviet Union had shot the Sputnik into orbit[26], and a few years later President Kennedy announced the "Apollo" programme and in 1969 the US landed the first man on the moon.[27] This led to the conviction that technical sciences accompanied by the increasing social sciences were able to organize the future of mankind. As the historian Michael Stürmer pointed out not long ago,[28] in the late 60s the past did not count at all, "history had done a bunk". This conviction, however, did not produce only positive results: the experiences of exaggerated economic functionalism led us in the mid 70s to a new understanding of continuity: we learned that the present is not contrary to history but its last part.[29] So again history gained access to the designing process and started pullulating. Historical forms often seemed to substitute the architects' inventions. Instead of answering the urgent questions of today, instead of working with current issues, a lot of architects ten years ago were criticised for "playing children"[30] or "behaving as if in the supermarket of history". Keeping in mind this recent abuse of history and the royal support of historical architecture today in the UK retelling the times of Charles Dickens[31], historians ask for the danger of historical education, like they did in Germany immediately after the retrospective period of Nazi architecture.[32] It was the time of reeducation after World War II. In August 1947 an international congress on the education of engineers (IKIA) was held in Darmstadt. The Munich art historian Schmoll gen. Eisenwerth explained the tasks of historical education for architects. He made a clear distinction between the theoretical education of an art historian and the practical needs of educating architects. He refers to Paul Frankl, "one of the giants of German *Kunstwissenschaft*" according to the Pelican History of Art,[33] who interpreted history of architecture as a field of ideas to be observed by the developing and designing architect. Then Schmoll continues: "Students of architecture need no education in *Kunstwissenschaft*" (science of art) as this is the task of educating art historians at the universities, but knowledge and guidance on the great observation field of grown architecture." This opinion is not too far from Giedion's educational conception, "to introduce the many possibilities of architecture". Schmoll continued: "We aspired (...) to make more precise the general impression of important buildings of the past and their operating elements by making the students themselves describe and find notions. So the history of art helps to clarify the notions architects have to work with intellectually."[34] So Schmoll points out that the architect is not a scholar. For him, it



Cartoon 'Nostalgie', Sempé, 1979.



Cartoon 'Bauherrlichkeit', Gabor Benedek, 1980s.

is important that students of architecture learn to describe in their own words the general impression of significant historical buildings and to recognize their operating elements.
This education should help them to understand that form is not an independent product, but developing in a process of permanently changing interdependences.
The history of architecture should not provide a stock of facts for easy utilization, but show meanings in architecture, the different intercourse with space, forms, functions and constructions. It deals with the social and political impacts of architectural expression, although in architecture, which is meant to be used, this is more difficult than in the fine arts. Thus, the history of architecture cannot confine itself to mere descriptive issues or to questions of the substrata of matters; it has to explain relations.

Teaching architectural history of the Modern Movement

Increasing knowledge of the Modern Movement means on the one hand better opportunities for the preservation of this important architecture. This is particularly necessary – it seems to me – in the former communist countries, where these buildings are associated with hated totalitarian regimes. Public opinion would have these monuments of the Modern Movement abolished together with the political system. Considering, however, the values of functionalism and Constructivism, we recognize that, still today, they can help forward the quality of architecture.
The big housing estates of the late 20s, providing lots of dwellings for the poor, sometimes show a boring lack of aesthetics; but they illustrate above all social idealism and the conviction that every man needs a minimum of shelter. The housing shortage of today reveals different values.
The aspect of new constructions shows us the mistakes as well as the courage of technological experimentation. This must be extended to the field of ecological innovations today.
The word "functionalism" - stressing the functions of the house - implies the attempt to give more importance to the needs of the user.
On the other hand, however, increasing knowledge of modern-movement buildings could be misunderstood as in invitation to plagiarize. Imitating this architecture would mean escaping from thinking to knowledge. This is the danger of historical education.
In conclusion, I would like to propose that teachers addressing themselves to students of architecture should urge them on to innovation, fantasy and courageous experiments. Architects should contemplate the needs of the user as well as of society. The Modern Movement is a good example but not the only one.

If addressing themselves to students of history of art, their teaching must be more complete, more exact and more scientific in order to encourage further investigation, since the Modern Movement is far from being completely researched.

Notes

[1] See the first international exhibition or architecture 1980 in Venice "La Presenza del Passato" by Paolo Portoghesi.

[2] Letter to the magazine *Der Architekt*, no.4, 1985, p.151.

[3] "Auf der suche nach dem lieben Gott" (looking for the dear god) in : *WIENER*, no.9/1988.

[4] Bruno Taut, *Die Neue Baukuns in Europa und Amerika*, (The New Architecture in Europe and america) Stuttgart 1929.

[5] Fritz J. Raddatz, "Die Aufklärung entläßt ihre Kinder. Vernunft, Geschichte, Fortschritt werden verabschiedet: Mythos ist der neue Wert". *DIE ZEIT*, no.27, 29 Juni 1984.
ders., Unser Verhängnis als unsere Verantwortung. Der ratlose Mensch zwischen Mythos und Ratio. *DIE ZEIT*, no.28, 6 Juli 1984

[6] W. Gropius, *Apollo in der Demokratie*, Mainz 1967, S.51

[7] Gropius, *Apollo...*, p.53.

[8] Higuer Artistic-Technical Workshops - Vysshie Khudozhest- venno-Technicheskie Masterskie.

[9] Ch. Schädlich, "Wchutemas 1920-30 zum 60. Geburtstag ihrer Gründung; in: Architektur der DDR", *Heft 12*, 1980, pp. 680-88.

[10] A. Vesnin, Controverted questions; in: *Literaturnaja Gaseta*, no.135 (415), October 8, 1934.

[11] Fr. Nietzsche, "Vom Nutzen und Nachteil der Historie für das Leben", in: *Unzeitgemäße Betrachtunge*, Leipzig 1874/Stuttgart 1964, p.97.

[12] Published later as "Warum diese Architektur?" in: *Die Baukunst*, 5.1929, no.2, p.7.

[13] J. Frank, "Architektur als Symbol. Elemente deutschen neuen Bauenes", 1931.

[14] See: Spiro Kostoff's contribution to the symposium "Architectural History and the Student Architect", in: *Journal of the Society of Architectural historians*, XXVI, no.3, October 1967, p.189.

[15] Festschrift für Antonio Hernández, IAG, Uni Stgt., 1994, p.31.

[16] Letter to Giedion of May 16 1927, Archiv S. Giedion, Institut für Geschichte und Theorie der Architektur, ETH Zürich.

[17] Letter of August 17 1927 (see No.14)

[18] H. Schmidt, "Das Bauen ist nicht Architektur" in Das Werk No.5, Mai 1927.

[19] "Kunsthistorischer Unterricht and der technischen Hochschule", Manuskripte vom 18.7.1934 (gta, Zürich).

[20] Manuskripte, gta Zürich

[21] Manuskripte, gta Zürich

[22] Manuskripte, gta Zürich

[23] See *Die form* No.4, 1933, p.102.

[24] "Avantgarde II 1924-1937". *Sowjetische Architektur*. Stuttgart 1922, p.276.

[25] Architektura SSSR, Nr.3, 1940, p.37.

[26] on October 4, 1957.

[27] Neil Armstrong, July 20, 1969.

[28] See "Democracy in the crisis", *ZEIT-Punkte* No. 1/1994.

[29] See the architecture of Charles Moore, Philip Johnson, James Stirling and so on.

[30] Volkwin Marg, Leserbrief in der Architekt, Nr.4, 1985, S.151.

[31] See the Poundbury colony near Dorchester, a remake of Georgian houses by Leon Krier, John Simpson and Demetry Porphyrios 1987-1994.

[32] See eg. the buildings of Paul Schmitthenner.

[33] See Paul Frankl, *Gothic Architecture*, Harmodsworth 1962, p.XIV (profesSor in Weimar and Halle, emigrated to USA).

[34] J.A. Schmoll gen. "Eisenwerth Zur Notwendigkeit der historischen Bildung des Architektennachwuchses", in E. Neufert (Hrsg.) *Der Architekt im Zerreißpunkt*, Darmstad 1948, p.93.

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Typological Approach to Modern Architecture

Introduction

Uncertain parameters employed in architectual criticism, judging works mostly from criteria such as language or impressions based on assymetry, irregularity etc., often contribute to creating confusion in actually defining what can be considered as 'modern architecture'.

The whole matter is becoming more and more vague, creating problems for the teaching of architecture. Assuming that the problem for designers and students of architecture is not just to place a masterpiece within a historical framework, but rather to single out what is innovative and what is traditional in a building, we must recognize that an aesthetic approach alone for analyzing a modern building is inadequate for architectural education. Examining buildings as 'organisms' consisting of elements, where the structure, function and expression all contribute to the definition of architectural character, we often find that some buildings regarded as modern in literature actually 'imitate' modern architecture, concentrating the innovative intention in some of the most expressive elements (such as the façade) while the work remains substantially traditional.

By contrast, buildings judged as conservative or rather academic from the architectural language employed may show a highly innovative character if considered as a whole.

The method of considering the building as an organism consisting of elements has a long tradition in Italy and, as explained subsequently, should not be confused with renaissance analogies between architecture and the human body.'

With the advent of the modern age (the introduction of machines, the new idea of progress, the specialization of roles in intellectual production as well), buildings became an area of conflict because of the very nature of the modern production process: the division between the artistic and intuitive function and the technical and rational function: two 'souls' with their own specialized disciplines which are to a certain extent independent from one another. If the design is considered as the final goal of the analysis of the real construction, it can be stated that the architectural composition starts from the recognition of the complementary nature of the characteristics of the architectural organism and the elements which form part of it. As in many branches of science, typological study also involves a dualistic basis for the characters of buildings and urban settlements:

- the contrasting features of organic and serial buildings;
- the contrasting features of the wooden-elastic and masonry-plastic materials;
- the different behaviour of structures, which are either bearing or supported;
- the functional division between basic building and specialised building;
- the two basic tectonic features of enclosing-covering structures.

Both interpretation and design in architecture start with a summary identification of the quality differences in these pairs of terms, as well as the relative nature of their value and above all the possibility of dialectic exchange and potential integration.

This method of research can be applied to the changes introduced by modern architecture in the traditional concept of the architectural organism; setting aside the ideologies at the basis of modern architecture, we can examine its forms assuming that their explanation is in the forms themselves.

Above all, what should be examined are the relationships between the parts, that is, the substance of architecture, since this analysis enables us to interpret the building's structure and its life (even if an aspect is identifiable, it is always an 'element' of a more complex structure). The typological approach thus has an overall validity. At one end of the set of relationships we will find the material developed in the most elementary forms (agglomerate or squared stone), and at the other end the geographical environment as the synthesis of building operations which have transformed man's habitat during the course of time.

The constructed environment must therefore be interpreted through the life of the buildings rather than through the traditional disciplines (static, distribution, aesthetic); this life determines their character through a series of themes covering different categories of problems, aimed at the study of the architectural unit considered as an organism on every scale.

We provide a summary of the notions which can be used in this type of study together with some examples. The points covered are as follows:

1) basic notions of organism and type: the idea of organism and type is recurrent, either implicitly or explicitly, throughout the history of the theory of traditional architecture, and affects most of our cities including contemporary ones. A summary of the definition of these terms is indispensable for providing, as clear as possible, a single interpretation of the characteristics of buildings;

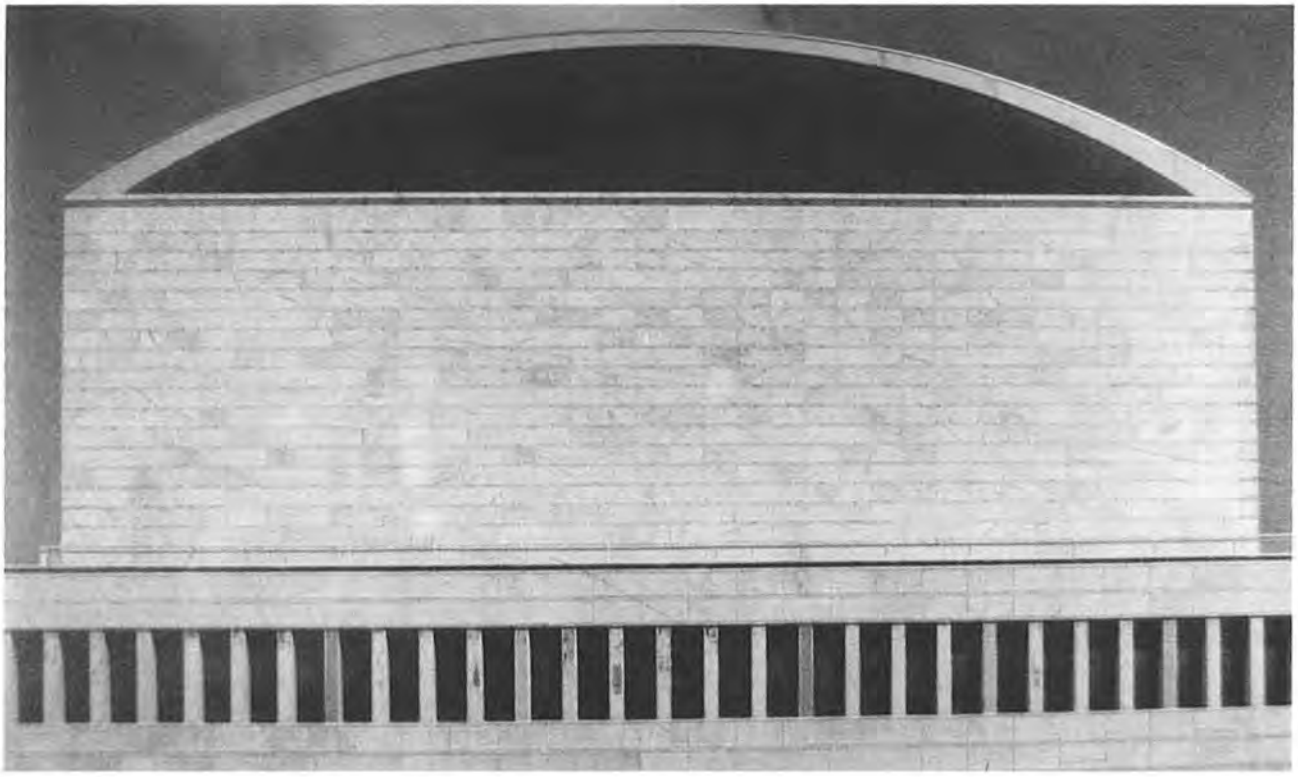
2) sequence of nature-architecture transformation: Matter-Material-Element-Structure'

The idea of sequence includes not only the technical and technological aspects of the problems, but is also directly related to the interpretation of the building.

The features related to the process of transforming matter are either more or less obvious according to the intention involved in the building. They are generally more evident in spontaneous buildings (direct interpretation) and rather less so in buildings with a strong aesthetic intent (indirect interpretation). This observation is applicable to both traditional and modern buildings (we can cite the direct interpretation of buildings by Maillart or Nervi, and the indirect interpretation of Le Corbusier's houses);
3) the sequence of external interpretation (architectural layers): Base-Elevation-Unification-Conclusion.
This sequence concerns not only the aesthetic aspect, but also the construction requirments which underlie the shapes and their translation into architectural language. It involves a hierarchical arrangement of the elements of composition and is often interpreted in an innovative way or even denied in the Modern Movement;
4) examples of interpretation in the development of modern architecture.

Two basic notions: organisms and building types

Leon Battista Alberti held that buildings should be designed by learning from nature, by which he meant living organisms.[3] The human body is one of the organisms most often proposed as a model. Each of its parts (organs) is necessary for the other parts, and they all admirably contribute to the life of the organism (body). The link with renaissance treatises has, however, led to controversy in the relationship between architecture and natural science; this relationship is often based on imitation which sometimes only involves the visible shape of natural organic structures, translating (representing) them in the world of architectural forms, which is inevitably artificial. This confusion can also be seen in many aspects of so-called modern 'organic architecture'.
In order to utilise the metaphor of architectural organism, it is more useful to examine (in the structures forming the world of plants) their 'necessity', rather than the resulting shapes.
In the relationship between plant and animal organisms and architectural organisms, it must be recalled that there are limits of interpretation. The widespread use of the term (in the tradition which has also been used in a non-specific sense, even in recent times) conceals a risk of ambiguity in the potentially numerous and often conflicting interpretations. The reference to living organisms is useful only for expressing the need for a relationship to exist between the elements forming the building as a single unit; this relationship covers all the aspects of the creation of the organism as a single whole. However, an arbitrary extension of the transfer of meaning of this metaphor involves two risks:
- the first one is imitation, that is, the temptation, recurring throughout history on a cyclical basis, to establish a relationship on the basis of morphological affinity (or even imitation) regarding the visible forms of plant and animal organisms (nature);
- the second risk is 'biologism'[4] in the sense of a simplistic, dangerous application of concepts and definitions belonging to natural science.
On the other hand, when used with the proper precautions, analogy is a tool which, by means of comparison between the known aspects of reality, can be useful for supplying an initial, approximate idea of the complexity involved in the definition of the organism, as well as of the potential instruments for solving the problem of complexity through the comprehension of the internal reasons leading first to the formation and then to the linking of the various elements.
We can use the elementary but didactically effective examples of the plant analogy. The relationship between the elements of a tree are relationships based on necessity. From this point of view, the tree is a perfect example of an organism, where each part (element) contributes to the life of the tree as a whole, undertaking both static and functional tasks on a hierarchical basis, at the same time (roots, trunk, branches and leaves are bearing and supported structures from the hierarchical point of view but are also held together by necessity to contribute to supplying, transforming and circulating vital substances). Each tree performs these functions through special elements, linked together in a particular way in order to form a structure which we can include in a more general classifcation based on internal correspondence.
However, when we talk about oaks we do not think precisely about one particular oak, one tree among many different trees. There is a genetic heritage of the oak which is manifested in features common to different trees. Our idea about oaks actually includes the infinite varieties possible for the same type of tree. This means that common features of trees are manifested in nature as single, unique trees, with other unrepeatable individual characteristics.
This example seems to suggest an initial, intuitive idea leading to the definition of two basic notions which can also be employed in architecture:
- an organism can be defined as a group of elements linked together on the basis of necessity and contributing jointly to the same purpose;[5]
- the type can be defined as a heritage consisting of common, transmittable characteristics which exist before the formation of the organism, governing from within the formation of the elements, the structure of the relationships and the relationships based on necessity. Extending this notion, the building organism is based on general laws determining its transformation over time; these can be based on some overall characteristics corresponding to type. Once it is constructed, the building identifies (makes them 'individual') these features in historical time and space, thus individualizing the type.
Considering the limit of applicability of this analogy, reference should also be made to some important subjects concerning the study of the



Palazzo dei Congressi, A. Libera, EUR quarter, Rome, 1937-1942. The volume of the main hall.

characteristics of buildings:
1) the affinity with botany cannot be extended to the mechanisms involved in the permanence and transformation of the building. The features common to groups of buildings are not transmitted naturally as time goes by, but are rather altered artificially through the innovative, original contribution which each civilization makes to the traditional prototypes which have been inherited. Buildings incarnate a historical type; once they have been built, they make their own contribution to updating the type, in a continuous sequence of mutations forming the typological process.[8]
One major difference should be pointed out between modern and traditional architecture: at least in theory, modern buildings have replaced the transformation of type with radical innovation;
2) typological classification cannot be formulated on a purely statistical basis as in botany, but in order to be usable, it must be based on the common, deep roots underlying the buildings, as well as the causes which enabled their features to be transmitted over time. We can observe a further difference between modern and traditional architecture: modern buildings can be classified only according to analytical categories (functions, structures etc.) but not overall categories (based on the process of historical developments).
Although the concept of organism is closely linked to type, it is now obvious that making a reference to type does not mean that reference is made to a particular building organism, but rather to the overall law governing the idea of many particular organisms and the reproduction of some of their general characters. The traditional idea of organisms is basically unifying; just as for trees, the function, stability and interpretation of buildings have an extremely close internal link of which the architect is conscious before this link is defined formally.
It should also be pointed out that it is no longer possible, as it was before the industrial revolution (which through the process of specialisation led to the beginning of the decline of the organism concept), to have an 'instinctive' knowledge of the need for types. In modern society there is a range of possible typological choices; we need to orient ourselves and derive the notion of type from the real world where we live and which we know. Interpretation is therefore a basic tool for understanding the general features governing the formation of the architectural organism.
Looking at a simple example, we can see that Palladio's Villa Capra shows a law of hierarchy governing all the components of the building:
- the *utilitas* aspect of this law is shown in the sequence: central reception area, subordinate perimeter areas;
- the *firmitas* aspect of this law coincides with a static hierarchy: the supported part (thrusting dome), perimeter areas bearing this thrust, the pronai bearing the residual thrust of the covering parts and the base of the building;
- the *utilitas* does not mean providing a mechanical, utilitarian response to functional requirements. The concept of Palladio, and traditional architecture in general, is a humanistic idea of functions linked to the way in which man can live in a given area, applied not so much on a logical and functional basis

as an emotional, symbolic one.
The exterior corresponds exactly, but, and this is important, not mechanically, to the idea of space that Palladio wanted to represent. This design does not simply reflect the construction, but rather the life of the building. The horizontal lines (both the continuous architrave-freize-cornice line and the string courses uniting the underlying floor slab to the base level) are on all four sides of the building, indicating the interior hierarchy, providing the form of the bearing walls and the four pronaos, and indicating the height of both the first floor and the tympanums. These signs sum up in a conventional fashion (symbolically), indicating the character of the building, thus making overall interpretation possible.
The entire architectural expression obviously corresponds to a rule, a general order which indicates the need for a relationship between the various elements. This rule can be interpreted as the style used by Palladio.
Unlike the modern way of understanding style as an individual expression, style in traditional architecture can be defined as the choice of a rule coordinating the act of construction by the architect.
We can now try to place the example of an architectural organism represented by Villa Capra into the framework of a historical process, interpreting the morphological and symbolic aspects and referring to the types of development that this building has produced. Historians have tried to highlight the absolute novelty of Villa Capra. The building is actually part of a process of continuous updating of the same type of building. This is confirmed by a long series of previous buildings such as bath complexes and many Roman tombs, often considered to be 'small temples' at the time of Palladio.
Sebastiano Serlio, among others, had already illustrated (in the VII Book in the chapter on "Houses Outside the City") in a nearly mature form the type of building which Villa Capra was later to be. Palladio himself had expressed in virtually final form the idea of a central plan building organism in his design for the Villa Trissino at Meledo. The general idea of a building, the type, had therefore already been formulated mentally by Palladio before translating it into reality as the summing up of his building programme. The design is not a search, but rather the verification requiring new needs, further demands upon the buildings, adjustments and corrections with respect to the initial idea.
From the example of Palladio we can observe how the centralizing axis of the building is not an abstraction, but rather expresses life (pathways, movement) in the building, creating nodes and poles as a specialized intersection of continuous lines (a general definition regarding as much the spaces and the central area as the elements and string courses indicating the intersection between the floor slab and the walls). This led to the creation of dividing axes which provide an outline for the building and place a limitation on the expansion of the building and the perimeter space, creating 'counternodes' and 'counterpoles' (specialized spaces or elements) at their intersection. In other words, they are based on rules indicating the hierarchy of the parts within the organism.
While Villa Capra sums up an infinite number of characters inherited from the past, it gave birth to a whole family of buildings: neo-Palladian villas in England, Switzerland, France and America which conserve the features, the style of the original and reproduce them in an infinite variety of versions, all original and in some ways unique. We can therefore speak of a process of formation with which the Palladian villa identifies, in a given historical period, and represents a time of transformation, reflecting the characteristics which had been developed on a collective basis up to then. In this sense, extending the notion based on the analysis of individual cases, we can expand on the definition of the type given previously: the building type corresponds to the persistence of a set of notions, rules and characteristics, inherited on a collective basis and accepted by a civilization throughout its history.[7] These features are to be found in families of buildings distributed over time and space with an infinite number of possible variations. Therefore, the type does not just mean the simple statistical recurrence of certain requisites; it is not an abstract model, but rather something based on a common pattern, a synthesis of the original characteristics of the building as they appeared in the mind of the architect before construction.
We will now provide further definitions based directly on the topics we have discussed up to now; these terms have already been used on an intuitive basis, but should now be set forth on a formal basis so that the subsequent topics can be fully explained.
Structure is defined as the law linking the elements together in a recognizable form which can generally be expressed through geometric rules.[8]
This law can consist of a relationship of need between the various elements, though not necessarily (for example, structures based on laws of repetition where any element can be replaced without changing the character of the whole structure). A serial structure is defined as a structure in which an element can be replaced without causing substantial changes, while in an organic structure the arrangement and the distributive, static and expressive role of each element is such that they cannot be replaced without altering the whole structure. It should be pointed out how the character of the structure is related to the character of the elements; the vocation of some elements is to be completed by a relationship with other elements (for example the arch), while in other elements (for example the trilith), this relationship is not closely linked with the features which the elements and the structure have in common. In other words, there can be:
- organic structures achieved by the use of serial

Palazzo della Civiltà italiana, G. Guerrini, E. La Padula, M. Romano, EUR quarter, Rome.

elements;
- serial structures achieved by the use of organic elements;
- organic structures achieved by the organic use of organic elements (totally organic);
- serial structures achieved by the serial use of serial elements (totally serial).
The element is defined as the smallest component forming the structure. This definition is closely linked to the scale of reference; a truss, for example, can be considered when taken on its own as a structure, and in particular a system, in the sense that the elements composing it (struts, purlins, chain, braces) all work together with the aim of supporting the covering parts. From this point of view, typological analysis can be used to categorize not only architectural organisms but also elements (types of elements) to be considered as part of the overall development process. On the other hand, some authors have assigned a combinatorial value to typological classification in order to demonstrate the potential of isolating the element from the structure.[9] Nevertheless, to go back to the previous example, considering the frame of reference for the truss, for example the building, the truss can be regarded as an element composing a more complex organism, while the building could be considered as an element of the urban organism. Therefore, the usefulness of the definition of the element depends on its practical value, aimed at providing an interpretation; going down the scale, useful in some interpretations, has only theoretical meaning in others.[10]
The notion of organism is in conflict with the ideology of the modern architectural movement (or rather from the definition set forth in official history). This hostility actually refers to a broader community of thought characterizing Modernism, of which progress is the most obvious principle.
The modern idea of progress identifies a linear movement in one direction only, an increasingly accelerated movement, though not continuous, towards a goal which is also continuously advancing. The historical forces holding this idea agree in their opposition to the type of city which has been inherited (radical and antithetical innovation, revolutionary with regard to the tradition which advanced the notion of organism) as a value in itself. The pioneers of Modernism therefore consider the entire modern age as heroic opposition to the previous epochs, where history is interpreted as a series of stages involving overcomings, regressions and recoveries. In this context,where evolution is replaced with revolution, the idea of the organism, which has slowly evolved through various forms, seems to be outdated.

The nature-architecture transformation: matter, material, element, structure

Matter is the basic element for the formation of the building. Matter has its own character, just as materials, architectural elements and the organism have their own characters. These features mutually affect one another in the sense that the building is the synthesis and the conclusion of a constant process of transformation of nature into architecture. We have distinguished matter from material since the two terms differ profoundly:
- by definition, the term matter indicates the substance composing the things existing in the universe, the physical world perceived by the senses. Together with an indeterminate aspect, the term implies the potential to receive a form. Thus it is not building material, but exists before processing;
- on the other hand, the term material indicates the matter considered by man to be suitable for use (processed or not) in construction.[11]
The distinction between matter and material is therefore a design operation; it is one of the basic aspects in determining the character of buildings, and characterises the creative process. This operation of recognizing matter and imposing order on it is a creative act par excellence, and is the origin of any building, with a gradual process by which man abandons an imitative relationship with nature. It is in this proud separation of man from nature, in the creation of the first and most simple artificial building elements, the kiln-dried brick, that we can perceive the artificial essence of architecture. In this sense, modern architecture becomes part of the process of the gradual transformation of natural material (heterogeneous, variable, 'controversial') into artifical material (homogeneous, constant, laboratory tested).[12]
Nevertheless, the traditional organism identifies a process of continuing transformation in which each stage absorbs the changes made in the previous one; it is conditioned by the original contribution made by the material to the creation of the type. In other words, replacing the material used traditionally in a given building type belonging to a certain culture, the original features remain (for example the serial-wooden character of Gothic buildings in stonework). In modern architecture, on the contrary, the use of a new material represents a further break with tradition (traditional materials are often used even to imitate the forms of the world of machines). One way to interpret buildings is therefore to determine whether the typological characteristics of the materials are really permanent or not.
In this regard, it could be useful to make a general classification of materials in relation to the features traditionally attributed to them, with reference to different types of elements and structures. When man recognizes certain building qualities in a material, he has already acknowledged that it is suitable for producing a certain category of elements and not others.[13]
The knowledge needed is acquired gradually and becomes part of the awareness of the builder through the experience of the act of building. The idea of type therefore regards the whole building process,

starting with the initial choices regarding the use of material, associating the recognition that, because of its characteristics, the material provided by nature is suitable for the intermediate (formation of the elements) and final (linking the elements in the structure). The acknowledged characteristics of the materials and the elements they produce are obviously highly complex and depend on the civilization where they were produced, the influence and the interaction between cultures. Nevertheless, we can identify some basic characteristics.
The matter acknowledged by man to be suitable for building material can be divided into two major categories:
1 - Wooden-elastic materials. Since it was recognised that plant matter is differentiated, the use of materials based on hierarchy follows (the tree has a structure characterised by size and resistance, corresponding to the hierarchical distinction between pillars, beams, purlins etc.);
- elements produced from wooden-elastic materials (wood, iron, steel)[11] are characterised from the morphological point of view by one dimension prevailing over the other two (linear elements), tending to be strongly hierarchical, discrete and liable to repetition in series;
- the structures composed of a union of these elements have specific qualities which can be considered as having a serial vocation,[15] meaning by this a structure tending to be discontinuous, composed of repeatable, interchangeable elements and which remains functional and recognisable when some elements of a series are replaced by others.[16]
2 - Plastic-stone, or plastic-masonry materials. Since it was recognized that stone produces undifferentiated material (stone is taken from a formless mass of non-hierarchical matter), the material is used in continuous, homogeneous forms;
- the elements produced in plastic-masonry areas (stone or brick masonry),[17] characterised from the morphological point of view by two dimensions prevailing over the third one (in flat or curved linear elements) tend not to be hierarchical; they are continuous and immediately identifiable (have their own identity) in the structure;
- the structures formed by the union of these elements basically have the specific qualities of being organic, using this term to mean the tendency of a structure to be homogeneous, with the elements mutually related on the basis of necessity so that their position in the building links size and geometry in such a way that replacing one element with another, the structure loses its functional character and becomes unrecognizable.[18]
In the interpretation of the aggregation of elements to form the structures, special attention must be paid to the tectonic nodes of the building. On the basis of the general definition of a node, tectonic nodes are considered to mean the intersection of two or more continuous elements or discontinuity within a continuous element. The analysis of tectonic nodes, classified by type through the building process, is one of the tools for interpreting traditional organisms, and their alteration enables us to recognize the change to the modern style as an operation opposed to the 'natural' development of the typological process.[19] Thus the elimination of the possibility of interpreting tectonic nodes may be one of the features of modern architecture with regard to the artistic expression component of the building; these nodes are often subordinated to the artistic intentions of the architect (formation of continuous surfaces, pure volumes etc.).

Exterior legibility of the building

There is a considerable amount of literature on innovation regarding the elimination of the notion of the façade in the modern architecture movement. Despite the theories, the external involucre of a building, both in the traditional terms of the façade and in the less traditional terms used in modern architecture, remains one of the elements linking the city and the interior space - despite the declared intentions - and is therefore one of the most important elements for interpreting the building.
The traditional façade could represent an instrument of 'representation' or 'expression'.[20]
- Representation is the act of making the reality of the organism visible in one tectonic site, in such a way as to provide a synthesis and ensure that it can be interpreted as a whole. The façade is therefore directly linked to the concrete nature of the organism being represented.
- Expression is the effort to provide external interpretation to the characters of organisms critically and subjectively.
In the general definition of organism which we have given, the façade is not the mechanical aspect (or even the direct aspect) of the building but rather the recognisable synthesis. This synthesis can also appear metaphorically or in virtual forms, but it is always produced by relationships of necessity with the organism (it is never a place of abstract expression as in visual arts).
The history of architecture involves historical cycles of direct or indirect legibility in the construction and spatial aspects of the building through the façade, but each of these stages contemplates, absorbs and takes into consideration the previous stages; they are interpreted as a conquest, since through experiment, thought and then production, new possibilities are opened up for the interpetation of the organisms created. This is evident when we recall the number of times that architecture has returned to direct legibility.[21]
The encoded construction logic at the basis of any architectural system (not only classical) can be interpreted in the façade of traditional organisms. Until modern times, with the intentional destruction of the distinctive characters making the roles of the elements visible within the architectural organism, four

architectural layers were employed: base, elevation, unification, conclusion. In the original pre-modern types these parts did not involve just the intentional, external legibility, but the whole spatial, distributive and construction aspects of the buildings shown more or less concretely in the external part.

1 - The base is the first layer of support 'naturally' necessary to the organism as a whole. It thus derives from the solution of concrete problems occurring at the time of construction: the stability of the building ensured by a sound foundation above ground, the need to make the building visible as an artificial creation, lifted up through an artificial means which is easy to interpret. In modern times, the elimination of static hierarchy beween the parts often leads to an upsetting of the 'natural' order of the external part, not only in the creations of the modern architecture movement (we can recall the extensive use of pilotis) but also in modern buildings nearer to traditional forms.

2 - The elevation (intended as from the Latin ex-levare, to lift out, corresponding to shaft in classical order) is the rising vertical part of the building. It can be enclosing, bearing or simply supporting the roof:

- masonry wall: continuous, enclosing, opaque (therefore organically oriented) where holes result from the removal of material;
- isolated supports: discrete, open, transparent (therefore serially oriented) where holes are obtained by closing the empty spaces between the elements composing the structure.

In modern architecture, the nature of the material upon which the characters of the elements and their aggregation in the structure also depends, is:

- hidden in the architectural stream stressing the artistic and expressive component of the building (a trend especially represented by architect-artists);
- highlighted beyond its role as component in the stream stressing the technical aspect of construction (a trend especially represented by architect-engineers).

3 - The unification area has its structural origin in levelling (as trabeation in the classical order) which links the building from above. This layer has also remained in modern buildings due to static necessities which cannot be eliminated, though it is often absorbed in and united with the volume of the building (that is, made indistinguishable to legibility).

4 - The conclusion area which corresponds to the part of the building having the function of protecting the areas listed previously. This can obviously include the elments located above the cornice, such as the roof, balustrade, belevedere or penthouse when these have the function of 'concluding' the building. The modern architecture movement has also here made remarkable changes with the elimination of the roof used in many traditional types, replacing it with a flat roof slab. The frequent opposition by users to the changes in the roof (especially at the beginning of the modern architecture movement) indicates the persistence of the common idea that the building should have, vertically much more than horizontally, a beginning (the base) and a conclusion (the roof).[22]

The relationship between external legibility of buildings and the typological contents started to decline long before modern architecture, and reached a critical stage in the 19th century with the extensive construction in all the major European cities of multifamily housing designed by architects who had mainly been involved in specialized building.[23] The architect transferred the tools designed for the legibility of specialized buildings to the design of buildings consisting of repeatible units (serial rooms or whole flats) with little or no hierarchy.[24] The attempts made throughout the 19th century aimed at imposing an artifical hierarchy, with a language superimposed on the character of serial type buildings.

The notion of the organism in the rise of modern architecture

The study of the comparison between the traditional idea of organism and contemporary production is thus more difficult due to the very notion of 'modern architecture'. On the basis of what has been said up to now, the problem, as it applies to designers and teachers, can be solved by defining what is a continuation and what opposes the traditional sense of organism and type in a world built by our contemporaries (we are concerned with this above all because we are obliged to be contemporary, and this status also involves the inheritance and the absorption of breakthroughs and innovations in modern thought).

Continuity in the changes of types of organisms, in fact, underwent a crisis with the advent of modern architecture, this phenomenon being basically due to three aspirations concerning the specialized role which architects consider themselves to play in society:

- the aspiration towards organization, identified with the management of the techniques they use. The legibility factor is considered to derive directly from specialized organizational systems (production, distribution etc.) and is implicitly considered to be a secondary problem;
- the aspiration toward individual expression, contrasting with the previous one but equally a part of modern architecture. This constant desire to highlight 'creativity' initially led to the transformation, and then the abandonment, of the previous typological categories of buildings;[25]
- the aspiration toward continuous innovation which derives from the first two is one of the driving forces of modern architecture, which proposes revolution (of forms, methods and ideas) as the constant in architectural quality. By definition, this revolution means the loss of continuity and opposition to the city as it exists.

These aspirations all correspond to a general division of intellectual labour which arose at the start of the modern era, and which, in its evolution in the 20thcentury, has taken the architect by surprise. The

increasing fragmentation of the unity of culture (specialization divided between the technical-constructive and artistic-speculative aspects) corresponds to the increasing fragmentation of the unity of the architectural organisms, leading, as mentioned above, to specialization by three components:
- functional-distributive (see the research by Behne, Hilberseimer, Klein and Gropius);
- artistic-expressive (see the research by Finsterlin, Hertlein, Mendelsohn, Poelzig, Hoger and Sharoun);
- technical-constructive (see the research by Frassinet, Maillart, Candela and Morandi).
The same considerations on the ability to interpret buildings in the transition to the modern age also apply on a wider scale to cities and parts of cities: the principles opposing the traditional idea of organism can be seen both in individual buildings and in aggregations of buildings, with the abandoning of the idea of correspondence between the urban layout and type. Nevertheless, in most of prewar Europe, the traditional idea of organism (architectural and urban) was indispensable in the planning of new buildings, and persists in many modern architects (we might recall Behrens, Asplund, Perret).[26] Furthermore, beyond some general principles which could be derived from the study of specific buildings, throughout most of the history of modern European building, type has been a factor showing continuity with the buildings inherited from the past.
We will attempt to analyze the transistion from traditional to modern building types, using the same interpretation methods used for the buildings inherited, trying to distinguish the innovative elements and the elements testifying to continuity with the past.
With regard to the 'manifesto' buildings of the modern architecture movement, the differences (and therefore the innovations) are highly evident. For example, behind the Villa at Garches is a very clear programme of intentional:
- elimination of spatial hierarchy through axes and poles;
- lack of correspondence between distribution and structure (free plan);
- removal of legibility of tectonic nodes;
- elimination of the plastic masonry character of the façade material;
- separation of the free façade (and thus external legibility) from the unitary overall composition of the building (see the study on the proportions of piercing on geometrical rules which are independent from distribution and structure);
- deliberate contradiction between external legibility and the static principles underlying the hierarchical nature of traditional buildings in the four layers of architectural stratification.
Obviously, these observations do not represent a judgement, but the acknowledgment of the break with the traditional concept of organism. The method will be especially useful for examining works which, though less extreme, are significant for the shift to new production and design conditions; complex building in which there is often no obvious conflict with the existing city. Implicitly, this means recognizing the plurality of contributions to the formation of modern architecture, as well as the terminological drawback of the simplified definition of 'modern architecture' (a term which we continue to use referring exclusively to the historical period of time). On the other hand, official historians have grouped the teaching of rules of composition of traditional buildings under the term 'academic culture' without distinguishing between the teaching principles which are still alive and potentially modern and those with rules reduced to mere sterile, formal indications.
There follow four examples of the interpretation of modern buildings in Rome.
We have said that the process of abstraction of legibility from the typological point of view intensified in the 19th century. In Italy, this process concluded approximately in the late 20s in forms determined by different cultural contexts. This phenomenon is particularly evident in Rome with the rise and fall of the so-called 'Barochetto' style, an exclusively decorative technique based on minor baroque motifs and which indicates a final separation between legibility of façades and building technique: the language is converted into decoration superimposed on the building type. This is the last stage of the imitative application of traditional language, which triggered a reduction of the significance of the language and therefore an inevitable reaction. Therefore, especially from the end of the decade, there was an almost sudden abandonment of particular style motifs together with the persistence of traditional models. The abandonment of ornament made the link between language and building type all the more obvious, highlighting continuity and innovation in the more or less coherent application of the idea of a unified organism.[27]
In this context, one of the clearest examples of the specific, contradictory transistion to modernity in the Rome area is represented by the building designed by Capponi in 1928 on the lungotevere Arnaldo da Brescia. The building makes a reference to the baroque tradition in the façade, used as a sort of urban scenery, while simple volumes are used without the usual decorative motifs (so that the architect was nicknamed 'Borromini in shirtsleeves').
Let's interpret the building from the typological point of view. It occupies a block on a matrix course (along the Tiber), flanked by two parallel planting courses, built-up areas dating from after the period of Italian Unification, and a third pathway (connecting course)[28]. The building type is in itself innovative inside the urban fabric: detached multifamiliar housing with a single stairwell in which it is difficult to identify the use of traditional partition due to the independence (or an occasional, accidental correspondence) of structures and distribution. The new

type of small residential building or *palazzina*, which developed a few decades previously, also imitates some of the themes of specialized residential architecture (especially the *palazzo*). The architect respects the orientation of courses, placing the entrance on the matrix course, with the helicoidal stairway in a significant nodal position, separated by two lightwells to provide lighting for the node. The nodal axis and orthogonal counter-axis are externally legible through four concave spaces in the volume, hinting at the baroque background of the building; the entrance has a small pronaos, a simplified type based on the one designed by Bernini for S. Andrea al Quirinale.
Nevertheless, the two apartments per floor on the four floors are ostentatiously distributed according to strictly functional criteria:
- the nodal axis on the ground floor, though symmetrical,[29] does not have a centralizing effect;
- on the upper floors, the central axis becomes specular axis (dividing), unlike what happens in traditional building (centralizing symmetrical axis);
- the hierarchy of the space does not follow the criteria of central (nodes, poles) and peripheral (antinodes, antipoles) positioning as in traditional buildings;
- there is no clear division, either, into serial rooms (even hierarchizied and specialized) and specialized ones;
- there is no relationship of necessity with the external surface (the windows are distributed on a non-hierarchical basis long the four sides and the main space of the sitting room faces the building pathway).[30]
Nevertheless, some obvious tectonic nodes of traditional buildings remain. In the buildings showing the transition to modern architecture, intial sketches often reveal a study of legibility based directly on the organization of the classical order, and after, through stages involving increasing simplification, also due to reasons of economy in construction, the building shows evident signs of modern tendencies which are more obvious than in the original idea (use of the 'rhythmic' wall[31] in basic building; direct legibility of the serial character of the design, since the critical choice of the designer and new productive reasons happen to coincide).
Here, too, the intentions of the architect concerning the organization of the external legibility of the building are very clear if the complete work is compared with the initial studies. Capponi had made a preliminary drawing showing:
- the base occupying the first floor and semi-basement floor, with a hierarchical arrangement consisting of a base and an elevated part containing windows, and unification consisting of a continuous layer joining the string course and the window-sill course, also forming the convex architrave of the pronaos;
- the elevation consisting of piers on the next three floors, in the same working plane as the base, united by the architrave on the top floor, containing the windows on a working plane set back in relation to what is virtually the bearing part;
- the unification area formed by the cornice;
- the conclusion formed by the penthouse, with an elevation-based hierarchy and a low unification content.
Some of the characters of the *palazzo* are therefore imitated, but with significant exceptions to traditional language such as the use of the architrave on the top floor, which more than unifying the whole building, contributes to the legibility of the elevation part as a single volume in the spirit of the 'pure volume' of modern architecture. In the actual building, the apparently secondary changes indicate a further shift to modern architecture:
- the base terminates with a node formed by the large window-sill course with straight echinus moulding, simplified and deprived of the usual oval and arrow decorations, nevertheless indicating the bearing function of the element;
- the covering function of the cornice is indicated by the direction of the section, based for the sake of simplicity on shell moulding;
- the elevation floors are united by a continuous vertical plane, providing no indication as to the role of the elements other than the variable direction of the veining of the facing slabs indicating a travertine stone element applied to the surface.
In traditional building, the recognized character of stone would have led to its use to ensure greater resistance (horizontal veining) both acting as supports (thick sections) or imitating supports (coating slabs). The plastic, masonry character (organic, continuous, enclosing) of the material used is contradicted by the initial, hypothetical design where the elevation imitated wooden-elastic structures (serial, discrete, non-enclosing) according to a procedure inherited from the past[32] with a subsequent opting for subordination to the final choice of pure volume.
In the base, the plane of the section containing the window bays is set back in order to indicate the thickness of the wall and the weight of the material employed. This is another indication of the uncertainty (and therefore the crisis) during this period of transition: the artificial search for plastic wall thickness by setting back planes or the protruding of piercing in concrete framed structures having wooden-elastic characters.[33]
An extension of the typological study to other examples of the same period would enable us to make a general assessment of the modern style in Rome. Unlike other European architecture contained in offical history, the modern building in Rome is not the consequence of the ideology of the machine, but rather makes an adaptation (sometimes radical) of the traditional notion of organism.
There is a contrast in Roman modernity between the fast consumption typical of the machine age and techniques liable to replacement by more up-to-date

products, and the sense of duration in architecture from two points of view:
- in the historical sense, as a manifestation of a process of continuous transformation (inherited and transmittable);
- in the physical sense, as resistance to atmospheric factors and the passing of time (the building is wholly coated in solid travertine which hides and protects the concrete structure).

In order to understand the specific features of architecture in Rome at that time, we need only recall the designs by modern Dutch architects like Duiker or Brinkman, where reference to machines was evident in the use of metal technologies which often imitated mechanical and especially naval ones in buildings from that period.[34]

The problems involved in reconciling the traditional idea of organisms with the requirements of the present day and seen in Capponi's building, with different solutions (often contamination, overlapping or compromise) are to be seen in architecture not only in Rome (Aschieri, Foschini, Di Castro, Ridolfi etc.) but also in many Italian cities (Muzio, E. Lancia and Ponti in Milan; Dioguardi, Petrucci, Calza Bini in Bari, etc.). This connection is often hasty and sometimes shows an experimental attitude verging on eclecticism.

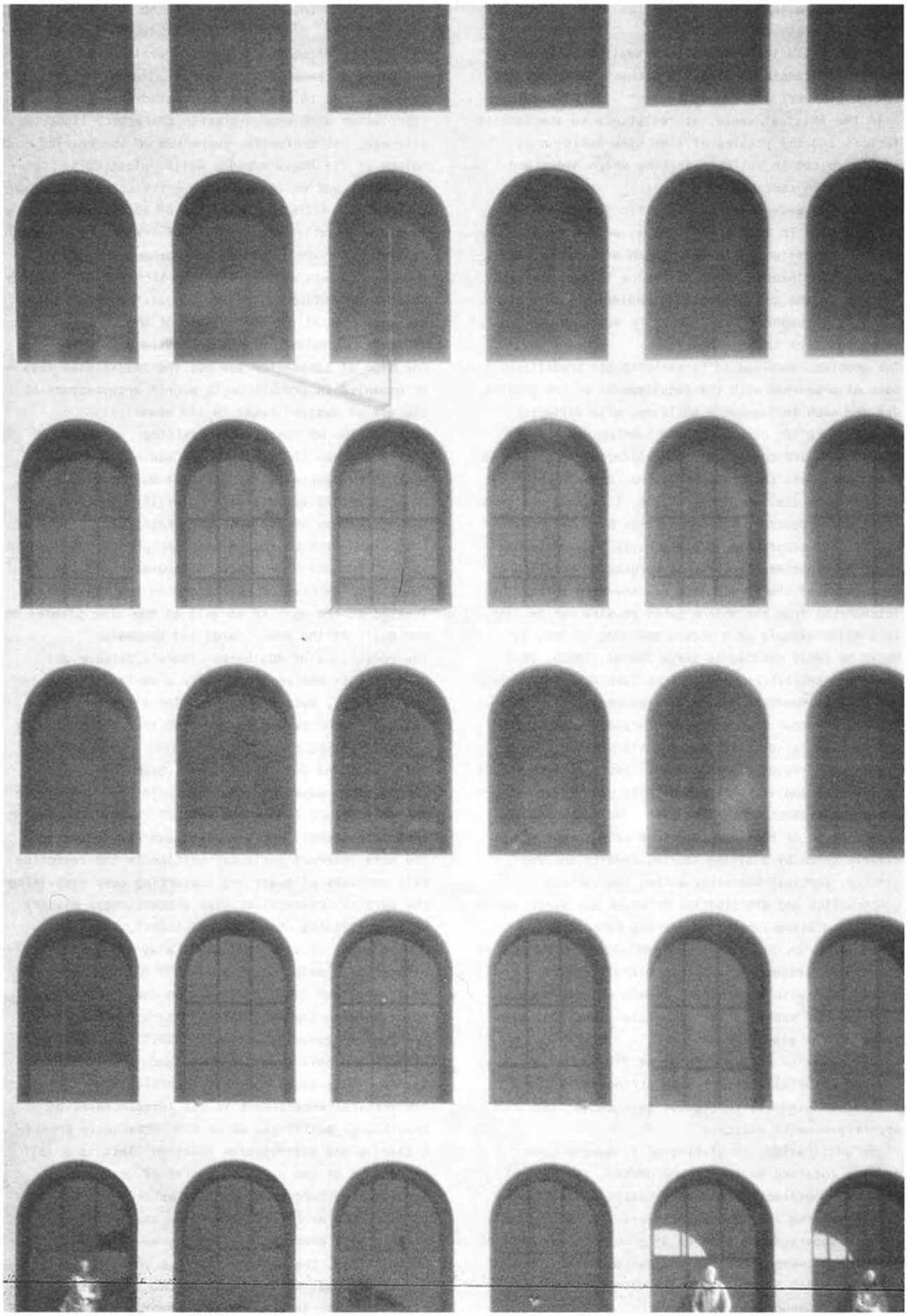
An example of the persistence of inherited rules interpreted from the modern point of view can be seen in a major example of a modern building in Rome by Mario De Renzi located in Largo Tonioi (1952). This building, specialized for offices (see the similar type built by De Renzi in Piazza Indipendenza, 1950-1954) employs the four layers of architectural composition with a clearly serial-oriented building type. The odd number of piercing elements identifies the central axis of symmetry and virtual pathway. The main tectonic nodes (intersection of floor slabs and masonry walls, intersection of roof and penthouse architrave) are clearly shown by a string course, cornice and roof cornice. Vertical hierarchy unites the various construction and distribution roles of the parts, which are also distinguished by different materials:
- the base, on two floors, is indicated by the use of the stone (travertine slabs in hierarchical arrangement with alternating square and rectangular courses) and provides the commercial function, with shops on the ground floor;
- the elevation section, on three floors, is shown by lighter material (bricks) with string courses and full floor windows, continuous bays and a flat arch architrave, with offices;
- the unification, consisting of a reverse cyma cornice (bearing moulding) and dentils (structural element, representing the termination of portions supporting the roof) on which there are water drip corbels separated by a becco di civetta (a transition moulding between a reverse echinus and torus, and final moulding terminating in a cavetto (covering moulding) supporting the fillet;
- the conclusion, consisting of the penthouse following the volume of the building on a diferent working plane (set back in order to distinguish the bearing part from the supported part); it is indicated externally by a set of columns (simplfied Doric) joined to the continuous architrave (conclusion with wooden-elastic character, light, discrete, non-enclosing, supported on the bearing volume of the heavy masonry walls, plastic, continuous and enclosing) with brick corners (nodes).

De Renzi's building is a version of modern architecture as a simplfication and updating of tradition,[35] to which Capponi had given a theatrical interpetation with references (less evident here) to 17th and 18th-century Roman architecture by the use of jutties and cornices (in this case slight protrusions of the string course) as small balconies a few dozen centimeters wide.

One sign of opposition against the traditional idea of organism in transition to modern architecture is the use of designs based on the classical organization of specialized buildings, employed in an innovative way (for example the use of pair spans with an evident negation of the nodal pathway axis, or with regard to external legibility, the re-interpretation of the vertical order). An example of this transition to modern architecture can be seen in the Palazzo dei Ricevimenti e Congressi and the Palazzo della Civiltà del Lavoro in the EUR quarter, located at the ends of an axis of the area planned on the basis of the Roman cardo and decumanus.

The nodal axis of Adalberto Libera's Palazzo dei Congressi is therefore not only a central course for the building, but an urban one for the group of buildings. The design is based on the combination of a basilica type plan[36] for receptions with a central nodal hall and anti-nodal series type rooms, and a second nodal area for congresses, joined by a single antipolar space (where the role of reversing dividing axis is evident), and with two separate entrances. The more internal antinodal section in the reception hall consists of a serving-supporting cusp containing the vertical connections (two discontinuous masonry walls containing stairways and lifts). From the static point of view, the walls play the unitary role of bearing a major metal vault (38 m high), as well as at the same time, distributing connections. The space between the two walls is therefore useful for the task of ensuring vertical stability (one wall alone would have been too thin) and to accommodate stairs. These tasks somewhat resemble the hierarchical arrangement in the lateral naves of traditional buildings, which simulataneously provide a bearing and distribution function. This is a full expression of the unifying spirit of the architectural organism, because by the very act of building the architect solves the static and distribution problem in a legible way.

Nevertheless, the bearing sections containing a pair number of spans with a 'solid', non on the direction of nodal axis; this actually becomes a specular axis, contradicting the message of the colonnade and the



Palazzo della Civiltà italiana, G. Guerrini, E. La Padula, M. Romano, EUR quarter, Rome.

traditional basilical composition.[17]
The hierarchical structure of the outside of the building can be seen clearly through the distinction of the roles of the various parts (which are: bearing and supported; serving and served; serial and nodal).
- The bearing part (base) consists of a raised crepidoma joined to the stairway. A modern and innovative element is the fact that the top of the stairway does not coincide with the stylobate, the stairs continuing to rise inside the portico with uneven spaces between the columns (access through the centre).
- The supported part (elevation) consists externally of a perimeter with serial rooms, and internally by the parallelepiped of the large nodal reception hall. An innovative element: the absence of hierarchical arrangement in the elevation (plastic character of the walls) unified by the facing with stone slabs in two sizes.
- The unification can hardly be perceived, and consists of a thin cornice on the same working plane as the wall to join the two volumes. Pure volumes therefore result.
- The cross vaulting of the metal covering (conclusion) results from the logic of rising the nodal area, while the roof of the congress hall is formed by the open air theatre (a modern, innovative element) in accordance with Le Corbusier's theories on the roof as 'artificial ground'.
The Palazzo della Civiltà, at the opposite end of the decumanus in the EUR quarter, is one of the clearest expressions of modernity. Much architecture at that time tried, without fully succeeding, to imitate its abstract shape and the absolute repetition of elements.[18] Several features of modern ideology can be perceived to coexist:
- the series expressed without any hierarchical arrangement (arches repeated in an identical fashion, without any sign determining the role of the element into the building taken as a whole (in contrast to the nodal function of piercing);
- the absolute lack of any indication of vertical stratification in the building (no hierarchy in the role of the base, elevation, conclusion and roof): perhaps no other building, not even those by Gropius or Le Corbusier, represents such an absolute denial of the organic and construction needs of the building represented by a visible relationship between the parts;
- an extreme use of the role of independent 'involucre' of outer surfaces, turning mechanically, without any angle indicating a specialized role in the vertical order of the parts;
- the contradiction, in the character of the bearing structure, between the wooden-elastic type (reinforced concrete frame) of construction and the evident masonry-plastic legibility of the walls. This contradiction often occurs in architecture (past and contemporary) but has never been shown so strikingly. Paradoxically, while this building seems to be (and had been regarded as) extremely traditional when considering parameters of taste alone, a study of the typological features shows that it is an extreme, modern break with any inherited ideas of organism. In the contradiction between the use of organically-oriented elements in an undifferentiated, non-hierarchical way; a serial logic so absolute and extreme in the lack of any hierarchy, that it is not comparable to the geometrical principles of any treaty, of any old or modern architectural theories, but rather to the abstract, obsessive series in modern figurative art.

Notes

' Giovan Battista Milani, for example, from the start of his teaching in Rome in 1907, asserted that the composition of a building is based on the character of the elements, which can be distinguished between:
- linear forms
- plastic forms
and three other major types of forms based on the requirements of the buildings:
1 - practical forms (based on the practical use of the building);
2- structural forms (based on the choice of the mechanism of resistance and the materials used);
3 - expressive forms (based on the need to provide the building with a decorative expression).

The design must be a combination of these needs: "a healthy, complete architectural organism can result only from their complex, logical equilibrium" (G.B. Milani, *L'Ossatura muraria*, Turin, 1920 (Introduzione). In this work Milani discusses only the static aspect; he not only understood that the notion of an organism had to be continuously recalled in this context; as part of technically-oriented teaching, he also made a reference to the general character of the buildings in mentioning the examples even if the definition of expression as the decorative aspect is typical of that period, a result of the eclectic concept involving the distinction between the appearance of buildings and the typological aspect.

Gustavo Giovannoni, another important figure in architectural education in the years between the two world wars, has a similar concept of the organism; architectural elements must be composed in "organisms which can be defined, at the same time as constructive, since they must be implemented in practice and, on a significant scale, distributive in the sense that they consist of a number of elements linked together on the basis of specific functions, and aesthetic because of the beauty appropriate to the theme and the environment, both internal and external."
In 1907 Giovannoni, an architect who studied engineering, had already advanced the proposal to train "integral architects" through the study of four main fields:
1 - a "complete artistic training";
2 - technical training "comparable to that received by civil engineers, although in a narrower field";
3 - a type of training involving independent study based on general knowledge "which can only be

provided by a high school";
4 - "knowledge based on the history of architecture and art. (G. Giovannoni, *Corso di architettura, parte II*, Rome, 1931 (Introduzione). Giovannoni later, extending the idea, defined whole cities as 'cinematic organisms' in *Vecchie città ed edilizia nuova*, Turin, 1931,p. 87 pp. The unitary concept of organisms was to remain an open problem in faculties of architecture in Italy, which use the notions derived from two different groups of disciplines with different origins (polytechnics and academies), resulting from modern specialisation and the ongoing process of the division of labour in industrial societies.

[2] By structure we mean the law linking the elements together; this includes the static law, though not the static law alone.

[3] "Every portion of the building must be in harmony with the others in order to ensure the success of the entire work and to make it pleasant, so that all of the impulse to express beauty is not concentrated in a single aspect while ignoring the other parts; all the parts should harmonize to form one, single whole rather than unrelated, differing fragments. When combining these portions, the simplicity of nature is the example to be followed." He also writes: "In any case, my advice is never to fall into the trap of having a building which seems to be a deformed body, with shoulders or sides out of proportion. Variety gives a pleasant flavour to all things, if it is based on the unity and on the mutual balance of distant elements. If there is no relation between these elements or if they are not in proper harmony, this type of variety leads to serious disharmony, " Leon Battista Alberti, *De re aedificatoria*, Florence, 1485, Ital. trans. Milan, 1989, pp. 37-38.)

[4] See: Sylvain Malfroy, "Introduction à la terminologie", in: Silvayn Malfroy, *Gianfranco Caniggia, L'approche morphologique de la ville et du territoire*, Zürich 1986.

[5] The etymology of the term organism in the sense in which it is used in typological analysis is largely modern, and is related to the term 'organization', unknown before the age of Illuminism and meaning the law governing the coordination of elements forming the organism. The term 'to organize' already existed in Dante's time, but in the literal sense of 'forming organs'. This transformation of meaning as time passed shows the gradual extension of the concept of organism to other fields of human activity where the need for coordination was perceived. The term also entered the Italian scientific vocabulary with the meaning of 'to order or arrange', and in 1649 Malpighi described 'organization' in the modern sense of all of those parts which collaborate for the same function.

[6] "The organism undoubtedly tends to be defined in the context of specific civilizations, since it tends to provide a basic expression to the spiritual values characterizing that civilization: the central plan baptistry, the early Christian basilica, the bath complex and houses with lightwells and quadriporticoes are all typical forms of architectual organisms. They are not mechanical or biological types; they are the result of spiritual creation, since they come about only through man's personality. This spiritual mediation is the profound reason for the absolutely individual nature of architectual forms which, though to different extents, are also forms of art, since they come to life in a process of full, fertile creativity which is therefore never identical, but always the result of conquest and originality, which makes it full of life." (S. Muratori, *Saggi di critica dell'architettura contemporanea*, Rome 1946, published in: *Storia e critica dell'architettura moderna*, Rome 1980.

[7] It can be seen that this definition is different from the classic one made by Quatremre de Quincy.

[8] The definition is extensive and applies to practically any scale of architecture. The term is applicable to the building and the urban scale. (see Paolo Maretto, *Realtà naturale e realtà costruita*, Florence 1993). The structures are arranged through the structural components which, in the case of the building, consist of systems of elements classified by type, and which "are not self-sufficient and necessarily related by a framework of mutual correlations." (See Gianfranco Caniggia, Gian Luigi Maffei, *Il progetto nell'edilizia di base*, Venice 1984, p. 149).

[9] For example, see the typological distinction of the three major categories used by Giulio Carlo Argan: the entire configuration of buildings, the construction elements, the decoration (see Giulio Carlo Argan, Op.Cit.).

[10] For a study of the definitions given, created for residential building but which can be extended to construction as a whole, see Gianfranco Caniggia, Gian Luigi Maffei, *Composizione architettonica e tipologia edilizia. 1 Lettura dell'edilizia di base*, Venice, 1979.

[11] Gianfranco Cataldi summarized the various meanings of the term as follows: "Man enriching matter with form, the intentional imprint of consciousness, a tangibly effective action, the result of the individual and individualizing process, and even more importantly, the typical experience transmitted by memory, thus forming the common heritage of the entire human race" (Giancarlo Cataldi, *Lezioni di Architettura*, Florence, 1981, p. 85). In the similar interpretation of Maffei-Caniggia, material constitutes the "synthesis between the matter of which it is made and the specific culture involved in the civilization where it is used for building" (See Gianfranco Caniggia, Gianluigi Maffei, *Il progetto edilizio di base*, Venice 1984, p. 162).

[12] The definitions are given by Le Corbusier (*Vers une Architecture*, Paris, 1923).

[13] Recognizing that solidified volcanic rock deposited in layers or stratums can be used to carve out slabs which are practically identical in size, already contains the idea of a way to re-aggregate material

obtained by stratification, i.e. laying it in parallel horizontal layers (the Latin stratum is the past participle of sternere, to lay).

[14] By elastic we mean the elements composed of material which, when deformed, can return to its original condition once the causes of deformation are removed (complete return of the energy exerted in deformation).

[15] This is obviously a general characteristic concerning the 'vocation' of the material and (as mentioned) allows for combinations between the character of the structures and the character of the elements: organic structures can be obtained by the use of serial-type elements (a continuous wall obtained by joining wooden type elements) or serial structures using plastic wall material (serial repetition of isolated masonry pillars).

[16] While in the Gothic cathedral, (Winchester, Amiens, Chartres) one span can be replaced by another one in the series, no elements comparable to the Gothic span can be replaced in the central plan baroque church of S. Ivo alla Sapienza, since the building consists of a strongly organic, unitary structure. In practice, even in the most organic building expressing plastic construction character, there are elements repeated in series (even if a small one), if the element is considered on the proper scale (repetition of columns, sections of vaulting etc.). The definition of organic and serial is therefore relative, since as in architectural organisms, we can refer to degrees of the extent to which the structure is serial or organic. The two general characteristics and categories are almost always easy to identify when all the various features involved are taken into account.

[17] Concrete can be used to exploit either its wooden-elastic characteristics (reinforced concrete frames) or its plastic-masonry characteristics (supporting wall etc.).

[18] See the study of the problem of the material-structure relationship in Paolo Maretto, Op. cit., p. 89 passim.

[19] In traditional buildings, the union of elements can come about in different forms, thus producing, with the consolidation of material and social culture in society, different processes of typifying categories of elements which make up building types. We can also identify various cultural aspects in relation to the persistence of ways of employing material and the classifcation of types of systems of elements. It should be stressed that the development of building tradition does not depend strictly on the relationship between the material used and the results as they are interpreted. This is shown by the large number of solutions adopted and the characters of the buildings in areas where the same materials have been used.

[20] We have given definitions useful for identifying the problem of legibility in architecture, though recalling that many different meanings of these terms have been used in related disciplines.

[21] This is shown, for example, in the 18th-century anti-baroque reaction of Carlo Lodoli, who proposed a direct relationship between the building and architecture in his theories on the meaning of the building (in a particular episode of critical awareness). His famous statement that "what is in function should be in representation" (where the term function has a broader meaning identified with the 'functioning' of the building) is a direct return to the idea of pre-renaissance tradition that the building should find visible expression in the façade. We can also recall the periodical returns to the direct representation of the romanesque style, often at the roots of some forms of architectural Rationalism. In William Morris, works like the Red House are an occasion for a constructive revision of the relationship of necessity between the architectural organism and the way in which it can be interpreted externally.

[22] There are, however, remarkable exceptions (all of F.L. Wright's Prairie Houses) which show how difficult it is to group all the experiments of the first half of the 20th century under the general name of modern architecture.

[23] Basic building is defined as residential construction while specialized building is derived from residential application for dedicated purposes (therefore not only services, but also residential buildings, such as mansions and convents, whose main purpose is not residential).

[24] The ground floor generally has a vertical hierarchical design for specialized use, which the first floor was for a long time higher than the floors above, designed to be the floor which was most accessible from the street as well as costly, recalling the 'noble floor' of the renaissance palazzo[25]. We can recall the condition of 'major' American architecture in Richardson's time, when houses were designed according to the European typological tradition grafted onto local American domestic themes, and the rapid changes which took place subsequently in just half a century as part of the search for an absolutely recognizable character (we can recall the important case of Wright's later works) for each work produced.

[26] Theorists of modern architecture were perfectly aware of this. Behne writes: "In Behrens there is still a certain amount of dualism; on the one hand he first of all takes the function into account, and on the other he continues to use traditional elements: walls, roof, windows etc., subordinating to them the function where necessary" (in: Adolf Behne, *Der Moderne Zweckbau*, Munich, 1926).

[27] See G. Strappa, "La continuità con la tradizione nell'edilizia Romana del '900" in *Tradizione e innovazione nell'architettura di Roma capitale*, Rome 1989.

[28] The different courses in the urban organism are divided into: matrix courses connecting two poles and existing before construction; planting courses, allowing for construction in internal areas distant from the matrix courses; connecting courses to

connect two pathways in the internal area.

[28] The symmetrical axis is defined as the axis dividing the building into two identical parts, encountering an empty space (potentially to run across, a 'crossing' axis, and therefore centralising), while a specular axis is defined as the axis which, though it divides the building into identical parts, encounters a solid part of building, and therefore divides.

[29] A significant indication of just how modern the building is. While in traditional types the hierarchy space and function corresponded to the hierarchy of urban layout, matrix courses being transformed into roads for the flow of traffic, the distribution of residential spaces is 'opposed' to the local street patterns.

[31] Serial distribution without hierarchy of piercing in the walls.

[32] We can recall numberous Roman palazzi in which series of trilithic elements are imposed on the plastic structure of the walls (Palazzo della Cancelleria, Palazzo Ossoli, etc.), and, in antiquity, on the Coliseum itself where the column-architrave system is superimposed on the organic arch system of the real wall construction.

[33] For the problem of non-direct legibility of wall thickness in modern Italian architecture see: Paolo Maretto, "Tra passatismo e modernismo, l'architettura italiana degli anni Trenta nei centri storici italiani", in: L'architettura delle trasformazioni urbane, 1890-1940, proceedings of XXIV Congress of Architectural History, Rome 1991.

[34] This is generally valid, but there are numerous exceptions to the general features of architecture in Rome between the two wars. In the early 30s, Capponi himself built the Botanical and Chemistry Institutes at the University of Rome where the external legibility of the building shows clear links with North European industrial architecture related to the ideology of the machine age.

[35] Other works planned by De Renzi in the same period in Rome show the same continuity of the concept of the organism inherited from tradition, especially the YMCA office building at Piazza Indipendenza, the row of houses in the Tuscolano II area (with S. Muratori and others) and workers' housing in Montesacro.

[36] Libera himself had compared the reception hall to a vast temple, confirming a possible critical, modern use of building types inherited from the past.

[37] Instead of the stairs, which would have been a theatrical way of summing up the vertical space of the building, the lifts are placed at the entrance (with pair spans in between) highlighting their character as machines 'inserted' into the building in contrast to the surroundings (a classical architect would never have placed an exclusively functional element on the nodal axis; vertical connection in an axial position would have represented the distribution and spatial centre).

[38] See the many previous projects, such as Libera's design for the Aprilia town hall, where the repetition of the arches still showed an organic form of hierarchy.

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Modern-Movement Design Projects and Realizations in the Training of Young Architects

The overall value and evaluation of a modernist building is undoubtedly primarily made up of innovative elements contained in it as well as of certain elements of construction, the materials used in its realization and some formal features that characterize it. In the specific climate of the ancient city of Cracow, one appreciates the imitative historical forms, particularly the neoclassicist ones, but the eclectic solutions which arose in the effect of stylistic mutations and local transformations are often treated with reserve. Since the end of the 19th-century, the architects of Cracow have created their own distinctive interpretation of alien architectural and artistic phenomena which is coloured with the city's specific atmosphere and based on distinctive aesthetic patterns. This fact has been observed but has not been fully appreciated and continues to be treated as a rather marginal phenomenon. The majority of Cracow interwar architecture is thus severely underestimated, particularly as its origin and realization brings out a specific regional distinctiveness. The architects who were active in the 20s and 30s were fully aware of all the international currents. On the one hand, they imitated the world fashions in architecture, but on the other, they paid attention to the local traditions. A good example of such an approach are certain stylistic limitations which ultimately did not allow a broadly understood avant-garde movement to be created. The term 'fashionable, European trend' often took on a pejorative ring. Hence, the wish to emphasize the 'local character' of architectural creations and the attempt to combine it with the modernist convention.
After 123 years of partitions, the non-existence of the Polish state, and after the recovery of national independence in 1918, this artistic split and its numerous symptoms which are visible in the architectural realizations can be fully justified. From the perspective of over half a century, one must emphasize that the above-mentioned architectural achievements are significant phenomena on the Polish architectural scene, and while they do not belong to the most fashionable 20th-century ideology, they are undoubtedly worth noticing in terms of the history of European thought. Nevertheless, they reflect the social and artistic processes which were then taking place. In Cracow, they had given birth to a unique artistic shape. The convention which was accepted there and then had a complex origin. Stylistically, it had not gone beyond semi-modernism; ideologically, it looked nostalgically to the past and consciously rejected the avant-garde. Thanks to this, a fragment of our contemporary history has been preserved and this constitutes the real value of this art.
Up until now, there were no in-depth analyses of the above convention. There was no historical distance. Or perhaps, the ever present wish to 'come closer to Europe' has led to a lack of objectivity in the assessment of our own artistic achievements. The complex of a peripheral position on the map of Europe and the minuteness of our own artistic achievements, particularly as regards Cracow interwar architecture, is still present in our society.
Nevertheless, the preservation and maintenence of the architectural achievements of the 20s and 30s in their unadulterated shape is a task which ought to be realized, although up until quite recently the general public was rather ill-disposed towards the idea. This may be because realizations belonging to the post-modernist aesthetics which introduced a certain enlivening to the bland architecture of the 60s, 70s and 80s began to appear relatively late. Whereas unfortunately, Modernism was being associated above all with the totalitarian architecture of 'apartment blocks', overshadowing the architecture of the interwar period with all of its unique aesthetics and comfort which it offered to its users.
At the turn of 1990-1991 when the Polish Section of DOCOMOMO was being created, its ideas were known and understood by a small group of theoreticians and historians of architecture. That is why one of the main tasks of the members of the Polish DOCOMOMO, the majority of whom are graduates of various Polish schools of higher learning, is to acquaint the students of architecture with the above problems and to create an interest in Modernism.
In the course of the last three years, a number of interesting papers on the architectural achievements of the first half of the 20th century have been written. For example, a few doctoral dissertations on the modernist architecture and art have been written under the supervision of Professor Andrzej K. Olszewski. A dissertation discussing the realization of the new port of Gdynia, which was constructed after 1918, got some very good reviews. Earlier on, some very interesting papers were written on the modernist art and architecture of Warsaw, whereas the international session "This Wonderful Wroclaw Modernism" (1992) aroused considerable interest among the public.
In 1991 professor Andrzej Kadluczka, director of the Department of 19th and 20th-Century Architecture at the Technical University of Cracow, and deputy president of the Polish Section of DOCOMOMO, as well as the authors of

the present paper (also employees of the same Faculty) who are in charge of the academic side of the activity, decided to set up an archive of modernist architecture of Cracow.

The city of Cracow obtained its location act in the year 1257. It has a great multitude of centuries-old buildings which are relatively well preserved, thanks to the fact that they have been included in the state preservation and restoration programme. Modernism has also bequeathed to the city a number of charming and valuable monuments of architecture which unfortunately, year in year out, fall into greater and greater ruin, as there is no uniform conservation plan which would protect them from wild alterations and the adverse workings of time.

The main core of the archives is made up of projects prepared by third year students of architecture as part of the 'Contemporary Architecture' course. Initially, it was the most interesting villas and buildings in the city centre that were included in the students' projects. Over time, the buildings lying on the outskirts of the city were also incorporated. Students' projects consist of three major elements: drawings, zerox-copies of archival materials, and
up-dated records including extensive descriptions and photographic material.

Additionally, each building is presented in the form of axonometric drawings which highlight its shape and internal logic. Another interesting aspect of the entire undertaking is that the students can still come across people who remember the times when these buildings had been designed, erected and were generally in their prime. Thanks to their stories and memories, the students have an excellent opportunity to experience the atmosphere of many years ago and often meet the relations of the famous architects who designed them. These types of lively accounts are an additional element which enriches the research work.

It seems that in the course of the next few years, the majority of the Cracow buildings which bear traces of the Modern Movement will have become researched and catalogued.

Gradually, the gathered materials are being analyzed and catalogued, so that they could be presented to those historians, architects and conservationists who take an interest in them. Yet, it is an immense and costly undertaking. That is why it has been proposed that the size of students' projects, and subsequently the zerox-copies and catalogues, be limited to A3.

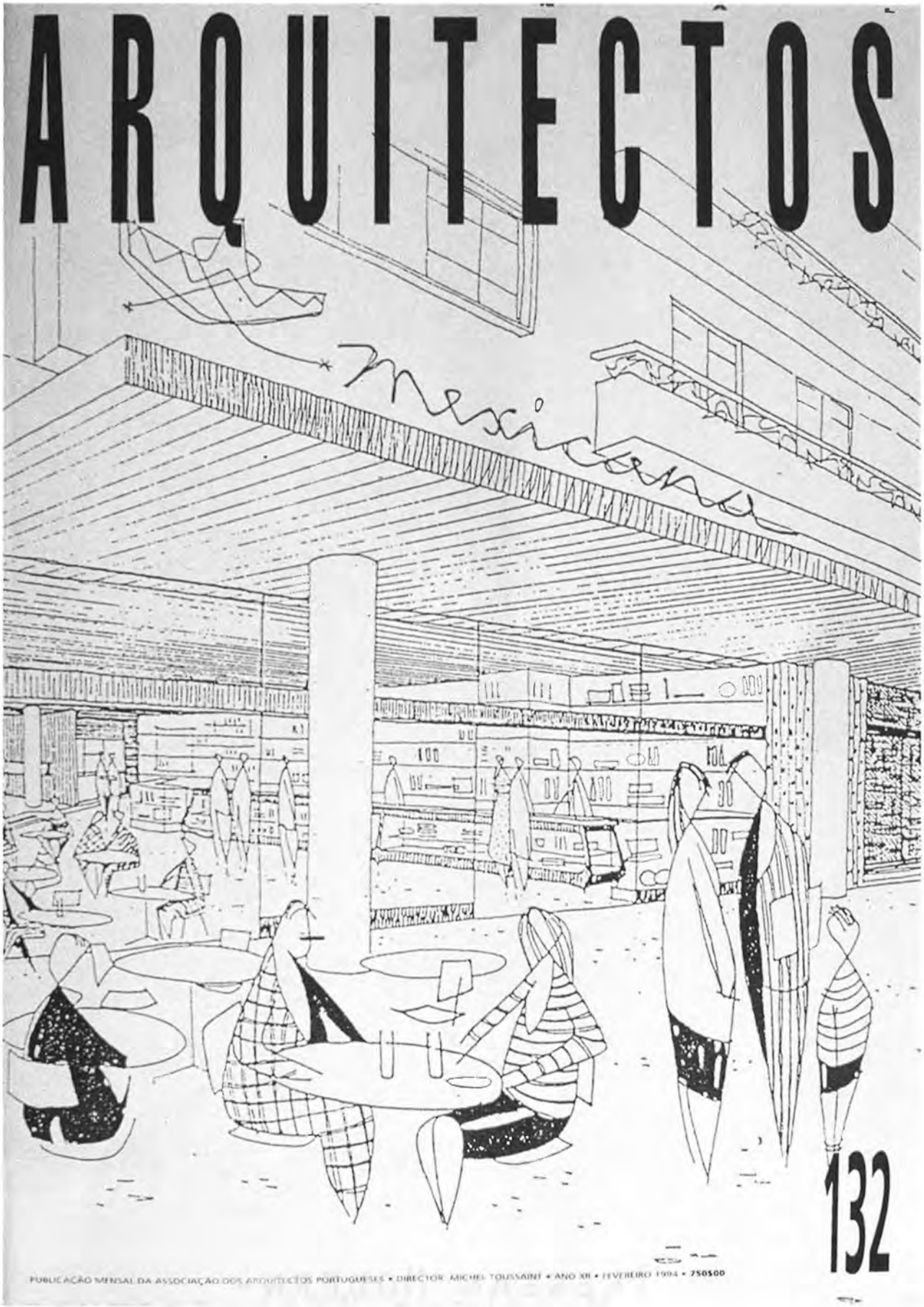
The interests of the teachers who specialize in the interwar period are not limited to this period exclusively, but they also include certain aspects of post-war architecture, especially those which continue the good traditions of the 30s.

The problem of the Modern Movement is also being introduced by another enthusiastic research team at the Cracow Faculty of Architecture, namely the Independent Drawing, Painting and Sculpture Department. Just how much this type of work is needed is best borne out by the following fact. In the second year, there is a course in free-hand drawing, among others in the form of quick five or six minute sketches. During a video show the students are required to make quick sketches which render the character of the building, its characteristics and the most prominent details, etc. In the course of one of such classes, one of the students came to the conclusion that in a city such as Cracow, one should only highlight the pretty, historical architecture, and not modernist architecture which only spoils the students' taste. Such and similar views which luckily are rather exceptional, only testify to the need of continuing the initiated didactic process.

The department of painting proposes a different type of classes that are linked to the local Cracow traditions. The stained-glass section created by Wladyslaw Zelenski at the beginning of this century has existed here ever since. At one time, it even competed with Tiffany and the Galle brothers. Right until the outbreak of World War II, the department supplied stained-glass windows to many a Cracow public building and institution. The majority of the stained-glass windows have survived until the present, although some of them have been a little affected by time and the polluted environment. Having studied the selected specimen, our students design their own stained-glass windows which are usually a transformation of still life and often hark back to modernist stylistics. There is no doubt that the student projects created during these classes belong to one of the best in the whole department.

Following a series of theoretical lectures, seminars and classes which comprise the origin and history of the Modern Movement, one may observe a growing tendency among students of architecture to look for inspiration in the stylistics of the 20s and 30s and an ever greater understanding of the functional and aesthetic values which this period has contributed to the history of architecture. The above issues have become an important element of the educational process at the Faculty of Architecture of the Cracow Technical University. At the same time, it is worth emphasizing that the young architects consider these problems to be immensely interesting and useful for their future careers.

IBERIAN MODERN-MOVEMENT ARCHITECTURE



'A Mexicana', Jorge Ferreira Chaves. Lisbon, 1960-1962. Drawing of entrance.

José Manuel Fernandes

CHAIRMAN IBERIAN DOCOMOMO

The Battle for 'A Mexicana' or Long Live 'A Mexicana'

'A Mexicana' on the Praça de Londres in Lisbon is about to be seriously altered. I was told this by architect Manuel Chaves, son of Jorge Ferreira Chaves, the architect who designed it. It is a work built in 1960-1962 and is remarkable for its conception of space and for the sculptures it contains.

We do not have any new architectural projects in progress and, knowing through long experience of the awful 'Lisbon projects' which are often rough hewn and unenlightened - and which, apparently, will be starting on the 'Mexicana' any time now - I issue this alert and offer some information which I hope will be useful.

Regarding 'A Mexicana': The architectural idea for this café/snack bar/tea room/restaurant was, in its time - the early 60s - innovative and inventive. I would like to point out its most prominent features: at the entrance, a large horizontal awning projects onto the outdoor area and spatially divides it from the interior which is deliberately without a façade; above, the letters, in neon, reading 'Ar Condicionado' (air conditioning) are an attraction because of their novelty in their time. Located on the ground floor of an ordinary building ('light portuguese' style architecture) we are greeted on approach by the tilework of Queribim Lapa, a kiosk and an esplanade.

Upon entering, our attention is drawn from the wooden balconies and the lighted nooks very much of the period - to the Column. This structure, which is the calling card of the Mexicana, was initially painted gold and intended by the architect as a piece of art, an expressionist meeting of planes unfolding its 'caligaresque' lack of logic onto the café ceiling. Likewise, the ceiling is made up of oblique stuccoed planes which draw us into an inviting and 'mysterious' darkness with a subtlety which characterizes the atmosphere of the café.

As a whole, the ground floor space is intended to be a set of fragments, creating micro-atmospheres which invite one to linger in the intimacy of a small group of friends. The barber shop area, which operated behind the front railing - one of the activities for patrons within this multi-functional concept - is followed by the stone 'lavatory' with its blue and green crystallized glass bottom; a progression of tube lights hung in alignment with the tables; in the back, a splendid ceramic mural by Queribim Lapa, *Burning Allegorical Mexican Sun*; and crowning it all, the surprise 'empty' space, the Bird Cage, a small open air patio receiving the sounds and smells of the café, a return to the cycle of nature after the artificial. I recall that a hidden speaker next to the birds amplified their chirping - a fine finishing touch. In addition to all of this, almost one hundred employees, two underground rooms (with a restaurant, bakery and other features), and an upstairs salon make this four-floor gastronomic universe tick.

As Manuel Chaves said to me, "...the Mexicana is the paradigm of what we cannot manage to achieve today", speaking of the way architects can control ideas, materials and spaces, globally and with quality.

Regarding the architect - Jorge Ferreira Chaves (1920-1984) is one of those 'unknown authors' who due to fate and recent history has emerged only today as a true creator of architecture. Currently his work is in the process of being rediscovered but I would like to present some facts here to provide a sense of the value of his work.

As the son of an engineer who then lived in the Cape Verde Islands employed on public works projects, Chaves completed his architecture studies in Lisbon between 1910 and 1916, together with Frederico George, Nuno Teotónico Pereira and Conceição Silva all while continuing to assiduously attend a sculpture course (bringing together of the arts or a desire thereof) and going 'to war' in the Azores for a brief interim. Among his early works are the modern Chamber of Commerce of Bissau which used ventilation grates with standard cloth awnings to give the feel of a 'clean' open space.

This was followed by the unexpected and important project of the Hotel Ritz (1952-1954) on which he was invited to work by Pardal Monteiro. This work was notable for its aesthetic wisdom and the way in which the materials were applied. At the end of the 50s he designed the Hotel Florida in the Marques de Pombal Circle in Lisbon with generous use of tiles and a staircase leading to the sky view restaurant - restrained luxury.

Shortly following the Mexicana in the early 60s, Chaves designed three housing blocks in Olivais Sul with a strong upper moulding and a cascade-like design of the façade and the remarkable 'little work' of the GCD in São Pedro do Sul which was clearly influenced by the study on "Popular Architecture in Portugal" with its stone 'curtains', the wooden grating in the interspaces, the columns supporting the mass of the building and the ground space opening onto the street.

Between 1963-1965, and dividing the work with Palma de Melo, with whom he shared a studio, he built in Lisbon what has been called the best urban housing plan of the decade. The building on Ilha do Príncipe street in the Colónias district is a powerful series of volumes descending the hillside in alignment with the existing street. "Mushroom pillars, columns which seem to be budding, wooden grating, white curtains, all of which render the building indestructible and untouchable, even today."

He continued with a series of hotels (the Carbo in Armaçao de Pera designed in conjunction with Frederico Santana and the only one to be written up in the 'leftist' magazine *Architecture* in 1964; the Baleeira in Sagres; the São João in Funchal on Madeira). All of these were cleverly conceived buildings with elegant façades and porches designed with an understanding of how to provide a satisfying and balanced tourist space which would soon, however, be rejected in favour of the thirsty Algarve.
Regarding the cafés and the current situation - what appears to be one of the threats to the Mexicana is the idea of imbuing it with a Brazilian flavour. Obviously the owners are fully entitled to renovate and make their commercial space more attractive, but when that space has important artistic and cultural features, the renovation must be done with caution and care. It is, after all, our responsibility to inform and explain, and to prevent. Otherwise, we lose even the little we have - as Nuno Portas said in 1961, when the Café Portugal in the Rossio was demolished, and which Valentim de Carvalho, fortunately, "revived from the ashes" in 1990. Today, given the information we have, the situation is about to reach catastrophic proportions: in addition to not knowing the architect in charge of the alterations - which means it will be a 'summary project', uncontrolled and terrorist in nature, undertaken by well-intentioned suppliers of balconies, refigerators and 'modern' lights - I was told that they were considering installing large stainless steel and glass balconies with the false idea of their profitability, tearing out the floors and staircases and even the main column which, clearly, they believe is ugly or occupies too much space - in order to put in a pond and booths. The ultimate irony is the idea of halogen lighting to make up for the existing "ack of light'. That will be the end of it.
In this Lisbon of 1994 which claims to be the cultural capital; in the residential heart between the Alvalade and the Alameda; in the soul of one of the few good cafés in the city - and the Mexicana is not a relic of the past - we must be capable of maintaining dignity and a respect for the value of the work as exerience and as art. I believe that, if necessary, the Chamber or Government/SEC should intervene, classifying the building as a monument - if that could help - and propose a collaborative effort along the lines of 'Martinho de Arcada': a sound project which preserves memories, materials and the public it serves. It also should serve as a model, within the limitation of possibilities, for other similar spaces and a reminder of Lisbon's past: the café Império, the Galeto, the Versailles, the Tentadora. Isn't that a tempting idea?

'A Mexicana' Jorge Ferreira Chaves, Lisbon, 1960-1962. Cafe Area, 1960s.

Fernando Agrasar

ARCHITECT

Differential Traits of Galician Rationalism: Tradition and Modernity

Definitions of two differentiated ideas: the avant-garde versus modernity

A characterization of the emergence of modern architecture in the geographical, social and cultural context of Galician urban centres in the 30s, besides being of interest as an episode in the development of Spanish architecture during the Second Republic, might permit a broader reflection on the formulation of an architecture generated from avant-garde art credos, whose codification was strongly conditioned by indirect diffusion and by the special circumstances inherent to a position far removed from the centres of gestation of the new architecture.

In order to build up a theoretical reference framework which would on the one hand allow us to situate this architecture, isolated from modern historiography, and on the other serve as a point of departure, we might recall Baudelaire's idea expressed in *Mon Coeur mis à nu*, in which the poet confronts the avant-garde and modernity in the sense that he sees the modern creator as original and unfettered by norms while the avant-garde creator is a faithful follower of pre-established models. To this observation by Baudelaire we might add the transparency of the thinking of Walter Benjamin who, basing his ideas on essential perceptions by Kant, developed 'the question of the certainty of knowledge which lasts', which must be clearly separated from 'the dignity of a fleeting experience'. In architectural terms, this opposition is immediately translated into the conflict between the Modern Movement and all the architectures linked to the plastic avant-gardes. While the first embodies the 'certainty' of an architectural transformation which is fruit of the deep social and technological changes of its time, part of an enormous qualitative leap in the evolution of history, avant-garde architecture would be that 'experience' whose very essence contains its own fleetingness, interpreted by its protagonists according to strict plastic codes.

The emergence of modern architecture in Galicia: local circumstances

In the 30s modern Spanish architecture revealed in a highly didactic way the contrast between modernity and the avant-garde, since its two main centres of discussion opted one for the position defined by Baudelaire and the other for the stance described by Benjamin. Barcelona and Madrid were the points from which the new architecture radiated. The Catalan nucleus produced a new formulation which involved transformations of all kinds (methodological, constructional, functional, urban and so on) and, above all, a theoretical absence of 'style'. Meanwhile, in Madrid, an architecture was composed which translated the visual novelties of the avant-garde art and the decorative arts of the moment without radically transforming typologies, occupying the existing urban tissue and respecting those functional schemes which had been ratified by use.

The distorted voice of modernity

Modern imagery, with which 30s Galician rationalist architecture was composed, reached architects and the public accepted their works in a fragmentary way, without codifying them. The authors of this new architecture had trained for the most part in Madrid, saving the occasional exception such as Caridad Mateo, and marked by the 1925 generation they began to work with intensity (the number of architects in Galicia at the time was very small and yet Galician urban centres grew at a good pace), far from theoretical discussions on architecture, lacking a climate conducive to reflection and, above all, without feeling the need for a renovating stance which would involve social, technological or urban transformation questions. They undertook the task of reflecting in their new architecture an idea of modernity, referring almost exclusively to formal questions.

The provenances of the visual keys to this architecture were many and varied, often extra-architectural: the applied arts and art-deco inspired illustrations, the pictorial avant-garde, cinema and the most fascinating expression of technology at that time, namely the great ocean-going liners which anchored regularly in La Coruña and Vigo, were codified in architectural forms.

The adapted tradition

Galician architecture of the 30s, however, cannot be summarized as a simple process of trivialization of the achievements of the Mercadel generation. Besides the interest of the formal filiation of its divers compositional elements among the aesthetic novelties of the time, this architecture may be studied as the fruit of an astonishing coexistence of historical and traditional elements with the geometries and abstract novelties of modernity.

History

The new forms of architectural expression presented themselves either as a total renovation which convulsed all the levels involved in its production and implied a total rejection of the idea of 'style', or else as the product of a new aesthetic ideology in which the issue of image was the fundamental one. Their one common denominator, however, was the banishment of history and tradition. A small group of architects in a peripheral situation such as that of Galicia had a set of immediate references in the form of a whole accumulation of new, attractive images to which was added the weight of a rich vernacular architectural tradition and the imposing presence of monumental pieces, fundamentally romanesque and baroque.

Galician Romanesque and Baroque left their mark in the work of two of this period's most representative architects: Antonio Tenreiro in La Coruña and Francisco Castro in Vigo. During the years prior to Rationalism, Castro designed buildings with opaque, stone walls with small openings which enhanced their potential, while the façades were crowned with roughly crenellated elements in a clear allusion to the Romanesque; Tenreiro, in the meantime, produced an architecture close to the formal models of the Chicago School, having decorative recourse to the forms of the Galician Baroque, the geometrical Baroque of Santiago de Compostela. In his rationalist period Castro not only used imposing granite planes but also made non-literal quotes in the form of stylized archivolts, curved consoles and small, paired columns without capitals. While Tenreiro renewed and reduced the decorative repertoire, reference to the Santiago Baroque remained in his way of composing the successive planes which were gradually added to the initial volumetric scheme, cut out against this in a certain tendency towards unstable compositions and monumental finishes, featuring rotund volumes.
Other historical quotes are less strict and reveal the perfect coexistence between the new rationalist language and a stylized, decorative historicism. An illustration of this idea is the Malde jewellers' establishment in Santiago's Rúa do Vilar, the work of José Caridad Mateo.

Compositional mechanisms

The compositional mechanisms of Galician Rationalism could not escape from under the weight of History: from the balanced, symmetrical compositions by Rafael González Villar, strongly influenced by the beaux-arts tradition, to the more innovatory designs by Tenreiro, the modelling of volumes with the traditional interplay of addition-subtraction formed the basis of all the new architectural pieces. The absence of symmetry, the compositional trait which architectural modernity used as a weapon against tradition, appeared invariably and inevitably in Galician buildings. What could not be transgressed were the laws of urban symmetry. While façades were asymmetrical, wherever possible they were united to pieces which resulted from a mirror-like repetition of the first, creating a composition in which the urban façades were symmetrical even though their component parts were not. The new rationalist city, the *ensanche* or urban extension, populated by the great bourgeois dwellings which formed blocks of enormous symmetrical façades and potent corners, responded to the monumental vocation of symbolizing power and the desire for social and cultural renovation which typified the new and as yet minority urban Galician bourgeoisie of the Second Republic period.

The functional system of dwellings: the masculine-feminine distribution vis-à-vis the day-night distribution

While the exterior appearance of urban dwellings was thoroughly renovated, their functional system continued on from the 19th-century dwelling. The modern proposal for grouping the rooms together according to whether their use would be diurnal or nocturnal and repeating previously studied cells was exceptional in Galicia. The distributive scheme of 19th-century dwellings in Galician cities had hardly any variants. On an elongated ground plan of a single bay the stair well was placed in a central position and the different rooms arranged along both sides of a long corridor. The rooms belonged to two different domains, masculine and feminine, and were grouped together according to these categories. Pertaining to the masculine world were the drawing room and the study, while the feminine world consisted of the dining room, the kitchen, the bathrooms and bedrooms. Resulting from this was the afunctional arrangement of the drawing and dining rooms, placed at either end of the dwelling, an arrangement perfectly in keeping with the division of the dwelling into masculine and feminine domains. This arrangement was maintained even in the case of *ensanche* buildings, which were not conditioned by the division of dwellings in the historical city.

The role of materials

Although the previous decade had seen the construction of such sophisticated buildings as the Banco Pastor in La Coruña, the tallest on the Peninsula at the time, a reinforced concrete structure with a flat roof with a chamber, during the 30s rationalist architecture, which was for the most part domestic, continued to employ traditional materials and techniques. The use of concrete was, of course, inevitable, although in more modest constructions it was employed as a mass and exclusively for walls, chestnut wood being used for the floor-ceiling structures, as was the tradition. Timber gallery carpentry was transposed without variation to rationalist façades. In the south, granite was used for bearing walls and façades, while interior supports and horizontal frameworks were metallic. To all this was added the constant conflict between the flat roof and the sloping tiled roof which was hidden, with certain feelings of stylistic remorse, behind geometrical plastrons which crowned the façade.
The use of traditional materials and techniques was not simply the consequence of economic circumstances (new materials were used for high-budget buildings), nor can it be justified by reluctance on the part of builders to apply new techniques and materials. The coexistence between history and modernity in Galician Rationalism, on the formal, compositional and functional levels, had of necessity to take place in its construction. This new architecture required traditional materials and techniques since its links with the past, which were part of its essence, called for the continuation of the constructional tradition.

The paradigmatic case of the modern adaptation of the gallery

The idea that modern architecture in Galicia is characterized by a partial historical reflection and

the survival of autochthonous elements is illustrated by the transformed presence of one of the most characteristic elements of our architecture from the 30s. The traditional gallery, the prefect architectural reply to the Atlantic climate and akin to the naval construction tradition, was an indispensable element in Galician buildings along the whole of the coastal strip and its presence was to condition the new architecture.

- Façade Composition: the Double Skin

The fundamental consequence of the omnipresent gallery would be the transfer to the new architecture of the compositional game of adding to the building's simple parallelepiped a second façade plane, light and transparent, which would cover as more of the façade surface the higher it was above street level. Occasionally this game consisted of a continuous cantilever on every floor, partially enclosed in glass; on other occasions the transparent second skin would be arranged in a more partial, dramatic way.

- Use and Function of a Traditional Element

A gallery proper is not merely a large glazed façade surface; if it is to produce its desired thermal effects, both in summer and in winter, there must be a wall at a short distance away from the glass (from between 90 cm to 150 cm). The rationalist interpretation of the gallery was not limited to its exterior appearance; on the contrary, it consisted of a closing element behind the glazed skin.

- Constructional Continuity

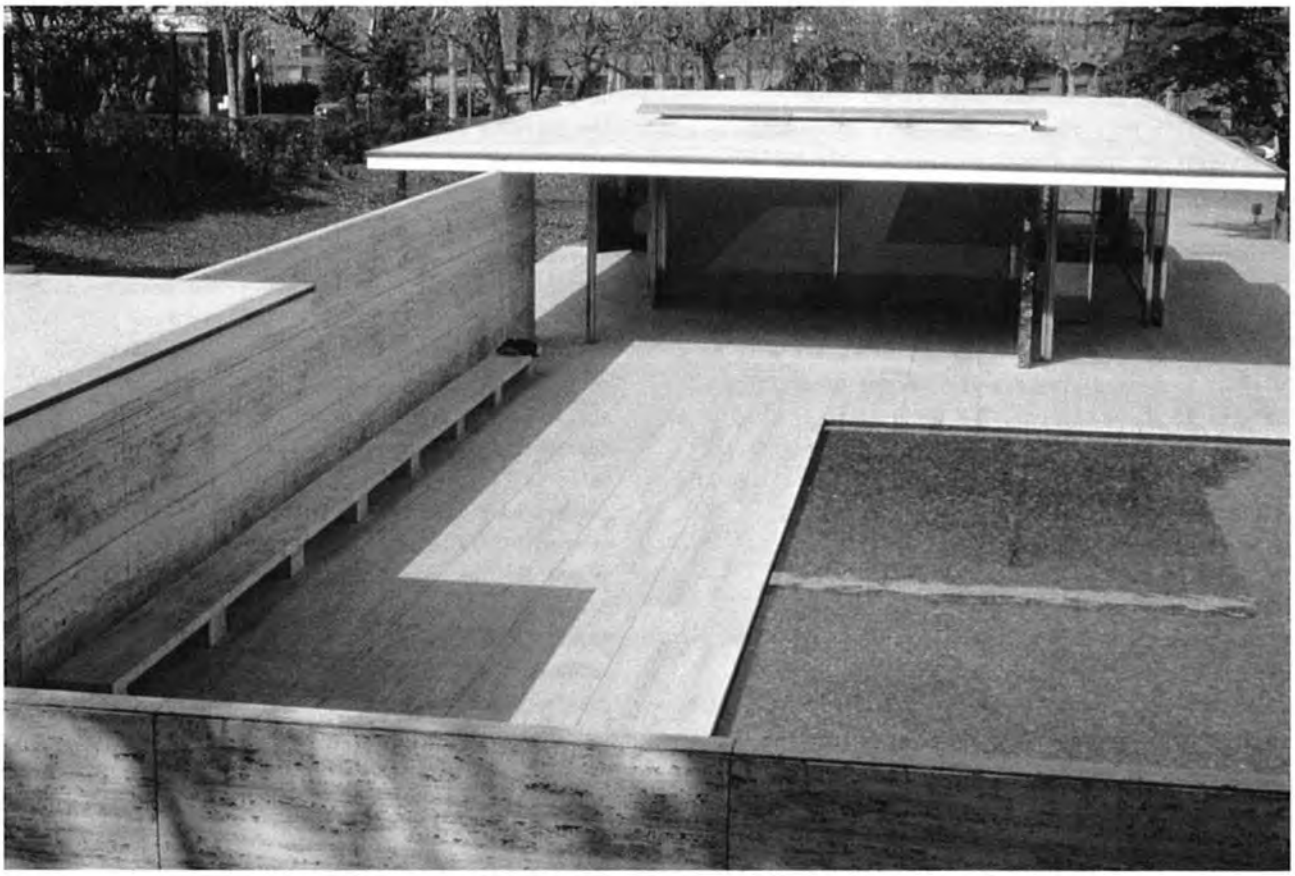
From the constructional point of view, the new interpretation of the gallery brought with it no innovations other than the reinforced concrete cantilevered slab on which it rested. The increased resistance of the support made it possible for the base of the exterior façade to become solid. Upon this plinth and reaching up to the floor above was placed a painted wood carpentry structure with windows which could be opened and closed, simple in section and devoid of ornamentation. These galleries were the same, even in their modulation, as their traditional counterparts.

- Corner Solutions

One of the most striking compositional features of the galleries is the corners, a dominant element in rationalist compositions. The stone arris framed by the white corners of the planes of the galleries arranged on converging façades is a common sight on street junctions in Galician cities. The corners of rationalist buildings retain in Galicia the proportions and recall the composition of their traditional counterparts. The arris, pierced by openings on the corner, appears live, clearly revealing a continuity between the central timber upright and the intersection of inbuilt planes. The planes, of the second skin which covers the basic volume, come exaggeratedly close to the arris to frame it with closed volumes or balconies with high plastrons which create the impression of closed volumes.

Conclusions: unreflecting architecture

Architecture of the 30s in Galicia joined modernity by adding to its own codes the new visual messages from the avant-garde movements. Its authors have left no written record of their reflections on architecture and, in this sense, we should not challenge Adorno's statement that without theory there is no art. The question might be resolved if we consider that Galician rationalist architectural thought could be summarized as the adaptation of images of the time (the mythification of the machine, art-deco geometrization, speed and the cubist visual revolution) to several omnipresent constants of the architectural tradition in Galicia (simple, compact volumes, traditional materials and their constructional rationality, History as a reference and the immediacy of the climate and the landscape, whose presence the city can never disguise). This is the essence of an architecture which became converted into the reflection of its time but which could not or would not forget its circumstances.



German Pavilion, Ludwig Mies van der Rohe, Barcelona 1929 (reconstructed 1986). (Iberian DOCOMOMO Register)

Isabel Bachs Bertran

CONSERVATION ARCHITECT BARCELONA PAVILION

The Conservation of the Barcelona Pavilion

The conservation work performed on the Barcelona Pavilion since its reconstruction has been carried out within the same framework and spirit in which this building was reconstructed by Cristian Cirici, Ignasi de Solà Morales and Fernando Ramos, that is, with:
- respect for the place in which it was reconstructed;
- the most precise resolution of details;
- careful selection of materials.'

Nonetheless, having observed the effect which time and use have had and continue to have on the building, certain new points of reference have emerged, and with them solutions, which have changed some of the prerequisites of the original Pavilion and its reconstruction.

The conservation project was conceived as an open dialogue between the property itself and the technical team, and one which welcomes the opinions and contributions of the above-mentioned architects as well as those experts who have been consulted on specific subjects. The work has been proceeding at a gradual pace since 1990, and today is at an advanced stage, though not yet completed.

The site

The building, according to the reconstruction project, was to be located on the same site as that chosen by Mies in 1929. Later, the foundations of the original building were unearthed during the excavation work, thus confirming the building's placement on the site.

The base

The platform is built over the area where the gas, electricity and water meters are located. This space is formed by retaining walls and concrete walls which support the drainage structure from the podium and anchor the metal columns which sustain the roofs as well as the metal support structure of the walls.

Marbles, pavement and walls

The choice of blocks of stone which were used as the facing for the walls and pavement of the building was made in the first stage of construction. The Pavilion was and is made with four different types of marble: Roman travertine, Alpine green marble, Tinian green marble and Onyx Doré.

The travertine floating pavement: 5 cm thick, and 109 x 109 cm per module, is set over the one-directional metal structure, leaving a space in between for drainage.

The walls, the metal support structures, are faced with 3 cm thick sheets attached to the support with stainless steel anchors which permit adjustments and allowances in three directions. The wall facing was resolved with 17 cm blocks, anchored to each other and to the structure with steel bars and epoxy resin.

Roofs

A different solution was found for the structural support of the roofs. The roof over the office area is supported by the truss of the walls while the main roof is set on eight cross-shaped steel laminated columns. With porticoes measuring 6.65 x 7.35 m and projections measuring 2.10 x 3.45 m.

The roofs are made of slabs of reinforced concrete, waterproofed and finished with a polyester revetment reinforced with non-woven fibreglass. The ceilings on the interior of the roofs were faced with a lime and white marble stucco.

Carpentry

Brightly polished stainless steel was chosen for the metal carpentry after earlier trials showed the lack of durability of nickel and chrome-plating.

The wooden partitions in the office area were made with panels faced with clear varnished maple.

Installations

As mentioned previously, there is a space beneath the platform where all of the building's systems are housed and metered and which provide for:
- the water connection and the purification system for the ponds;
- the drains for the floating pavement and the roofs;
- the heating and air conditioning systems for the offices.

Security

A closed-circuit television system was installed in the building together with two alarm systems, one protecting the front of the building by a photoelectric beam and the other set underground on the perimeter of the garden and activated when stepped on.

Conservation and maintenance

The conservation project covers those areas in which repair, replacement and maintenance are necessary and which were already foreseen in the reconstruction project. They are as follows:
- small pond: restoration of the black glass revetment on the sides and bottom;
- ceiling: repair and replacement of the stucco revetment in the public area;
- roof: maintenance work on the reinforced polyester finishing and waterproofing;
- security: revision and adjustments to the closed circuit T.V. security system;
- lighting: regulation of the interior lighting system.

Apart from these, the conservation project poses solutions to problems stemming from unforeseen factors related to the building's environment and usage.

Marbles, effects of the environment and protection

Between 1990 and 1991 a significant change in colouration was detected in the Alpine green marble facings surrounding the small pond. The progressive reddish pigmentation, more accentuated in the area directly touched by the water and the sun, indicated

the possibility of a chemical process taking place which was altering the surface compounds of the marble. A sample was taken to the laboratories of the University of Barcelona and the Autonomous University at Bellaterra for a diffraction analysis and a microtomy to observe permeability.
The conclusion reached by the specialists consulted was that the effect on the marble was due to the combined action of chemical and physical factors caused by the dissolution of the surface calcite of the marble from contact with water acting as acid rain.
The treatment which was proposed and carried out involved:
-a high pressure wash down to remove accumulated organic material on the surface;
-elimination of the *Fe* ions and, therefore, of the oxide formed within the marble;
- filling the holes with a product which restores the original degree of reflection of the marble and, with that, the colour; moreover the filled cavities act as protection against further damage caused by the water or the sun.

The application and limits of conservation control

One of the issues developed at project level but not carried out was the possiblity of air conditioning the public area of the Pavilion. The specific proposal grew out of the fact that it was not possible to add any element to this area which would change the spatial conditions, thus forestalling any interference with the passive means of climate control.
The study undertaken was based on a plenum ventilation system whereby the air is forced through the open junctures of the pavement from a plenum chamber located in the space between the pavement and its metal support.
The conclusion of the study revealed the high cost involved in installing the system and the equally high cost of maintenance.
A recent review of some of the writings which have been published about the Pavilion have led me to reflect, once again, on the different interpretations of the space, as conceived by Mies.
Compared against references such as 'garden of contemplation', 'temple' and 'walkways', are concepts which have been surfacing and which are tied to ideas of specific function such as comfort, soundproofing, etc.
As the architects of the reconstruction stated: "the Pavilion must be a representative space to be visited, a place where a certain number of people can come together for a social/cultural activity."
It is possible to adjust this space for maximum use, providing it with versatile systems which can be adapted to different situations. There is, however, a limit above and beyond that of capacity and that is the extent to which permanent modifications can be made to its spatial and compositional features.

A final note

It was clear from the start of the reconstruction project that there was a need to restore the surroundings to match the original site of the Barcelona Pavilion.
That meant, firstly, demolition of the old INI building which blocked the view of the Magic Fountain Plaza and hid the Barcelona Pavilion from view from that square.
Secondly, there was the issue of replacing the colonnade at the end of the esplanade.
At present the demolition of the INI has been completed and the City of Barcelona Department of Urban Projects is developing an urban renewal project for the square, which is to include the reconstruction of the colonnade.

' Ref: *Mies Van der Rohe. The Pavilion of Barcelona*, Cristian Cirici, Ignasi de Solà-Morales, Fernando Ramos, Ed.Gustavo Gili, Barcelona, 1993.
In 1981 the Barcelona City Council commissioned Cristian Cirici, Ignasi de Solà-Morales and Fernando Ramos to be the architects of the reconstruction project. Their task was "to raise a building which, rather than duplicating the exact technical conditions of the 1929 building, would be reconstructed with the idea of guaranteeing its permanence", and from the perspective of absolute fidelity to Mies van der Rohe's idea.

Mario Corea

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The Recuperation of a Master Work of Catalan Modernity

In 1933 the Generalitat - the autonomous Catalan government - commissioned the GATCPAC to design the Central Dispensary for Tuberculosis Treatment as part of their campaign to combat this widely extended disease. Constructed in a dense neighbourhood in the historical centre of Barcelona, the project was firmly grounded on rationalist concepts while at the same time it sought to reconcile traditional construction processes with the new technological advances of the period.
In the words of Oriol Bohigas, the resulting building is "the masterpiece of Rationalism in this country and one of the most important works in Europe though, unfortunately, little known because its completion coincided with the outbreak of the civil war and the subsequent dispersal of the GATCPAC and the fierce battle waged against modern architecture."
With regard to its place within the urban plan, the project was conceived so that the building wings were set orthogonally - in disregard of the alignment of the site - thereby creating an interior patio/garden which served as access to the clinic.

Previous work on the building

In the course of its 57 years the building had undergone interventions on several different occasions, resulting in varying and successive changes to the original project.
A number of alterations were made which affected the exterior image of the building such as the addition and later removal of a cylindrical volume at the top which served as a water tank; removal of the small rooms on the roof terrace used for breeding test animals; construction of a storeroom on the same terrace next to the stairwell entrance; building of a boiler room in place of lavatories for the patients using the solarium and finally the separation of the ground floor porch area of the porter's residence. Glass partitions were added on the interior as well to create new office space on the ground floor and significant changes were made to the spaces for the x-ray equipment.
The choice of some of the elements related to the building's facilities could be questioned, although there was a certain logic to their placement in the original building. This is the case of the doors separating the auditorium from the library and the library shelves themselves.
The treatment of color, both of the interior and the exterior, underwent progressive change over time to the point where it ultimately lost the spirit of the original project.
The building also showed signs of some serious structural problems primarily in terms of advanced stages of corrosion. This condition was encountered both in the columns at the foundation level, resulting from the leaks in the drainpipes and in the girders located near the roof where leaking and the lack of ventilation accelerated the rusting process.
At the same time, the hazardous state of the electrical wiring; the poor lighting - especially the careless installation of new fluorescent fixtures; the faulty operation of the heating system and the lack of both a air conditioning and a fire prevention system all pointed to the need for a thorough systems overhaul.

Restoration work

The objective of this most recent intervention was to completely restore the building while simultaneously adapting it for use as a neighborhood health centre.
The principal criterion which guided the work was a concern for the preservation of the compositional language on both the exterior and the interior as well as the architectural structure of the building.
Moreover, the project strove to conserve the spirit of the construction while bringing it up to current standards.
Since the clinic was first built the surrounding neighborhood had undergone a massive change providing a new perspective of the building within the context of this old quarter of the city. For instance, the disappearance of the building located next to the fire escape leading down from the auditorium meant that this staircase is now visible in its entirety, and consequently it sets off the two volumes of the auditorium and the examining rooms located on either side of it. The variance in level between the ground floor of the building and the street behind the building is resolved by a retaining wall which visually appears to be a part of the surroundings - not of the building structure - so that the clinic now, as originally, is encircled by a low wall and gate.
Likewise, the glass partitions of the porter's residence on the ground floor - were removed, reopening the full outdoor space of the site and thus accentuating the sense of weightlessness of the volume above it.
The main work projected for the grounds was the restoration of the central garden and the addition of pavement all around the building in order to highlight the building and set it off from its immediate surroundings.
The changes made to the entry gate further contributed to this focus on the building. With a simpler design than the one it replaced, the gate does not try to compete with the forms of the building and frees up the entire volume of the staircase, giving it a greater sense of a landmark, organizing the overall composition and bringing it closer to the spirit of the original project.
The work performed on the interior included changes of a functional nature, such as the reclamation of the

ground floor spaces for their original purpose or making changes to other spaces according to the present needs. Among these we can cite the x-ray room; the lecture hall; the control room for the air conditioning; adjustments made to the medical areas and the change of the porter's residence into an exhibition space.

Nonetheless, in those cases where the building could not be adapted to the program, the latter was changed in order not to alter the architectural structure of the clinic. In this sense, the most challenging operation was the updating and upgrading of the general mechanical systems and the addition of air conditioning all done in order to increase the building's level of comfort and efficiency without altering the original structure.

The foremost objective of this intervention was to maintain or recover, depending on the case, the original spirit of the project. Thus, everything from the new materials used and the shapes and forms of the elements, to the colors applied, was analogous in concept to its original equivalent.

Central Dispensary for Tuberculosis Treatment, GATCPAC: J.Ll. Sert, J. Torres-Clavé, J.B. Subirana, Barcelona 1935. Conference room.

José A. Sosa Díaz Saavedra
María Luisa González García

Architects
Gran Canaria, Spain

Focal Points and Multiple Poles

The Rationalist Cabildo de Gran Canaria (Island Government Building) and Alejandro de la Sota's plan for its extension

When one poses questions such as the survival of modern architecture, doubts almost invariably arise along with the suspicion that things have changed and that former criteria and codes are no longer valid, despite the fact that they are repeatedly appealed to by different sectors of the discipline when it comes to tackling specific problems.

Since we ourselves were also plagued by this doubt, we decided that it might be expedient to reflect on the question of modernity and, to this end, establish a parallel between the rationalist Cabildo de Gran Canaria by Miguel Martín-Fernández (1929-1932) and Alejandro de la Sota's recent plan for its extension (1994).

A multitude of similarities and differences exists between both projects. Similarities, for instance, in the use of a clearly modern formal structure and arrangement; in the free, flexible distribution and in the articulating volumetric composition of gestalt bodies. Nonetheless, we felt that there are aspects which modify the modern project in its essence or substance.

Among these, the most significant is perhaps the relationship with the city, the different ways of understanding the building's public character in relation to the urban environment of which it forms part. That is, we wondered whether both projects, while obeying modern compositional codes, provide the same response to their surroundings. Or, going a bit further, whether that modern reply to the city is still valid today.

The rationalist project (1929-1932)

The work of Martín-Fernández (Las Palmas de Gran Canaria, 1884-1980) forms part of the major cultural movement which emerged in the Canaries during those avant-garde years marked by the work of Oscar Domínguez, Bretón, Agustín Espinoza, Eduardo Westerdahl, Sartoris and the *Gaceta de Arte* review, all of whom managed to establish such early, direct links with Central and Northern European cultural and artistic centres.

In this context, therefore, it must be understood that the Cabildo is not an isolated example but rather, quite the contrary, it is immersed in a vast cultural production which, in the case of Miguel Martín-Fernández, consists of several hundred rationalist works of great interest such as the Casa del Niño Orphanage, the Psychiatric Hospital and the ICOT housing estate, designed in a studio ever open to renowned collaborators from abroad, outstanding among whom were R. Oppel (1932-1936) and R. Schneider (1933).

The site chosen for what was to be the headquarters of the island government was the end of the axis which connects the historical centre of Las Palmas de Gran Canaria with the former gate of the walled city, aligned with other representative buildings such as the Cathedral, the Gabinete Literario and the Conservatoire. This significant site, on the edge of the city where the walls once stood, constituted the first point of interest. The building, public by antonomasia, would be erected with its back to the historical centre and facing the emergent districts of the expanding city. Furthermore, the layout of the new city was defined simultaneously by the same architect; the choice of site was therefore by no means arbitrary but deliberately made for that specific project.

The Extension Plan for the City of Las Palmas set out to articulate the different areas which were beginning to become consolidated along the extensive coastal strip with the city's historical nucleus. In order to achieve this aim, Martín-Fernández introduced a curious articulating system of axes and tridents in which the public buildings would be placed.

This plan obeyed the hierarchical, ordered idea of the modern city and can therefore be placed in the same historical context as the projects by Eliel Saarinen and Burley Griffin for Canberra, by Burnham and Bennet for Chicago, or Le Corbusier's geometrical drawings for the Plan Voisin or his Ville Contemporaine for three million inhabitants.

The simultaneity, therefore, of the plan and the project led to the logical confluence at the same point of both elements: the trident (not merely a hierarchical element but the instrument that wove the urban fabric) and the Cabildo.

Thus, in a rather classical way which was nonetheless characteristic of those years, the urban space was opened in order to focalize the public building and centre attention on its emblematic condition.

From this same viewpoint, the architect had recourse to the usual solutions in order to emphasize the building's public character, offsetting it and creating a podium à la Mies with a tangential entrance and erecting a tower with neither a functional nor articulating purpose.

The proportions of the tower are significant, since this element did not form part of the composition in the initial phases of the project. It progressively acquired importance, and by extension height, until a further floor was added to it in 1938 by the architect in charge of the works, Eduardo Laforet, who thus endowed it with its present-day appearance. It seems as if this purely emblematic element, for no reason other than its representational and denoting function, came progressively to dominate the freer, more suggestive composition in the early sketches, transforming the

building's exterior into a clear urban referent in its direct relationship with the trident.
Generally speaking, the composition is a highly skilful articulation of volumes in a classical three-bay layout: the central access bay; the eastern bay which resolves the party walls and the western bay which adjusts to the non orthogonal alignment of the corner of Calle de Pérez Galdós. Thus at all levels there is a clear conflict between the inherent representativeness of the buildings and the confident assumption of modern forms on the part of the architect.
Nonetheless, while the rationalist project was intended to be the focal point of the urban space, in this case the trident, and to this end the scale of the representative or monumental elements was accentuated, in the project by Alejandro de la Sota the public character of the building is emphasized on the basis of other principles.

The project by Alejandro de la Sota

De la Sota's project maintains a difficult balance between, on the one hand, the annexing of the old building and, on the other, its absorption by a new piece of total, yet fragmented, value.
This fragmentation is fruit of the analysis of the programme, in which cultural, representative and labour uses are translated literally into constructed form. The translation of pure idea into form and the direct passage from flow charts and ideograms to form. As in the case of his César Carlos student hall of residence, here de la Sota has recourse to "analyzing the programme, giving it form and simply composing it" when it comes to organizing the building.
The rationalist building, which performs the representative functions, maintains its own entity while forming part of a new global order, an order which is achieved, on the one hand, by accepting the existence of the added body of the attic and extending it until it meets the party wall and, on the other, by raising the height of the skylight over the central street in order to bring it closer in scale to the administrative body.
However, unification is attained above all through the use of the same formal code enhanced by facing the whole complex with the same material, which will presumably be white-coloured sheeting.
This facing of what is essentially a heterogeneous complex brings to mind Juan Navarro Baldeweg's comments on his Río Segura mills project, pointing out that the diverse forms which emerge from the base of the mill are interrelated through use of the same facing, recalling the image of Brancusi's studio, in which the different forms of the pieces appear unified by a coat of white dust. Navarro says: "Brancusi has a white beard, a white coat, a white dog and the whole of the studio is covered by a fine film of white powdered marble".
De la Sota employs subtle strategies in order to achieve the independence of parts within the whole.

Cabildo Insular of Gran Canaria, M. Martín-Fernández, 1929-1932. Actual state.

The bay destined for cultural use is detached both from the party wall and from the rationalist building thanks to the insertion of a thin glass fissure. To emphasize the fact that the separating element is air, nothingness, it is also detached from the façade of the wall section above. Consequently, it is a continuous fissure in the form of a frame which makes the white plane float above the ground, separate from the building.
This body accommodates the pedestrian flow on Calle Bravo Murillo through the use of one of de la Sota's usual recourses: weightlessness and the idea of burying chaos. The box of the cultural building levitates above the glass pane which reveals the first basement which contains the element of greatest circulation, namely the exhibitions hall.
The idea of raising a heavy weight on top of a light element was already present in the Maravillas Gymnasium, in which the brick wall seems to rest on the basement ventilation grilles and in the idea of the suspended cube of the Gobierno Civil in Tarragona. The Miesian concept of burying the most chaotic part of the programme and making what implies greater lightness of use transparent is a recourse which de la Sota also applies to his Pontevedra house in which the world of sleep is buried and that of ideas elevated. Here the elevation of the world of ideas is translated into the cranium-shaped bubble which floats above the entrance hall, an unusual strategy in de la Sota whose antecedents can be found in the Archigram bubbles or in recent projects by Koolhaas and Foster.
In the case of the building devoted to work, independence is achieved by offsetting it with regard to the original building. As a result of this, the Calle Pérez Galdós is widened to form an entrance atrium and, in turn, the denoting sense of the tower in the rationalist project is accentuated.
The tower, which was merely a monumentalizing element, acting as a backdrop to resolve the twist of the building towards the corner, in the extension project acquires an articulating character between the old building and the new, at the same time indicating the entrance to the inner street or intercommunications space of the new Cabildo.
The volumes into which the building is divided are now an administrative body, a representative body and a cultural body which also houses the conference room, all articulated by this interesting street-like space. However, there is also a fourth, empty space which imposes its presence by virtue of the absence of construction in a sector of the city as historical as this one.
In de la Sota's extension project it is therefore understood that the public building offers a different reply to the urban fabric, permitting a complex interrelationship between spaces and opening out the fabric by eliminating historical buildings which formerly stood there.
In the rationalist city, the void functioned as an articulating public space. The offset in the fabric formed by the access podium articulates the building with the party wall and the confluence of streets. On the other hand, public space in the contemporary city tends to be engulfed and interiorized inside the building while the exterior void remains as such, without values of use or of articulation with the fabric.
The void in de la Sota's project is the interior street in which all the inner articulations of the building converge; it is also the rear patio which assumes its residual nature with the presence of the gigantic party wall. It has no value as urban articulation, it appears unexpectedly in the fabric, where a house should be, and its sole function is that of a lung for the office building.
In other words, as we said earlier the building absorbs the exterior void, the latter acquiring an interiorized nature.
A further characteristic of the contemporary city is the disappearance of frontiers between public and private space, as opposed to the closed, hierarchical position maintained by these spaces in the rationalist city.
From the conceptual point of view, in the extension project urban public space penetrates the building as an inner street which spatially and functionally interrelates its different parts. Meanwhile, in the opposite sense the building invades the public space by using the awning or canopies and prolonging the wooden flooring outwards on the pedestrian walkway. This appropriation of the street conceptually and physically links the Centro Insular de Cultura, on the opposite side of the street, to its mother entity, the Cabildo.
The entrances to both buildings must also be understood in this context. As we have seen, in Miguel Martín-Fernández's project access is classically single and central, although this effect is offset by the use of the podium's tangential staircase.
In the extension, however, much is made of the contradiction between the classical, continuous condition of this urban section and the freer, more open nature of the new building. De la Sota's project features a more complex interrelationship between the city and the building which is reflected, among other things, in the multiplicity of accesses which depends on the different urban stimuli and polarities as occurs, for instance, in contemporary projects such as Jussieau's library or the 20th-Century Museum by Herzog and de Meuron.
De la Sota's multiple accesses are fruit of the different urban flows and of the idea of fragmenting the programme. On the one hand we have the aforementioned flow of Calle Bravo Murillo, which penetrates the cultural building to leave by the cafeteria and the rear patio to join Calle de Buenos Aires. On the other, we have the representative building, for which de la Sota recovers the original rationalist entrance, access to which is configured tangentially on the corner where the streets meet.

Finally, the entrance to the administrative building is offset and accommodates the flow of pedestrians on Calle de Pérez Galdós.
The traditional city establishes a monument-urban fabric relationship which defines public and private areas, establishing a hierarchy. On the other hand, in the contemporary city the public building begins to lose its monumentalizing character as regards the urban fabric and comes more to resemble an office block. This is what in a way occurs with the new Cabildo building.
The rationalist building is now engulfed by the total organism which incorporates cultural uses, conference room and exhibition halls in a mixture of uses characteristic also of present-day programmes.
The symbolic and physical union established by the Calle Pérez Galdós awning with the Centro Insular de Cultura establishes a situation of multiple interconnexion which is similarly characteristic of a new response to the city. It points out how the extension project reflects on a small scale the idea that might be formulated concerning the contemporary city in which pride of place would be given to fragmentation, multiple interconnexion, hybridization of uses and the non-definition and consequent weakening of limits between architecture and public space.
The rationalist project establishes a focal-type relationship with the city, hierarchical and with precise limits, while Alejandro de la Sota's contemporary project presents a multi-polar relationship with the city, featuring varied interrelationships and responding to the different urban vectors and flows by blurring their limits.

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The Modern Movement in the Canary Islands: Urban Renewal, Architecture and Criticism

All technical and cultural developments that took place in the Canary Islands after 1927, including two particularly exciting periods between 1931-1936 and 1936-1951 constitute, in my opinion, one of the important experiences in 20th-century Spanish culture and architecture and one with decisive repercussions. During this time there was feverish building activity taking place and more than one thousand works were completed, of which approximately 80% remain today. Projects were developed following the lines of the Regional Plan of Madrid and of the Athens Charter. In addition, the *Gaceta de Arte*, an avant-garde magazine, was published and included contributions by Mies van der Rohe, Hilberseimer, Alberto Sartoris, the theorist Boukharine; a reprint of an issue of the Parisian *Surrealism Bulletin*; a special issue on Picasso and articles by the most important international critics. Finally, Alberto Sartoris' ongoing ties with the islands resulted in a group of works which are worthy of inclusion in any international repertoire.

Until 1975 when a first piece appeared on Rationalism in the Canaries, written by Sergio Pérez Parilla, little was known about the movement's importance due to the dearth of publications and the islands' geographical distance. Nonetheless, twenty years later evaluations of Spanish Rationalism remain unchanged, producing a seriously distorted picture which is untenable at a time when the inventory and classification of the Modern Movement's architectural patrimony is being carried out on an international level.

The Canary Islands is an out of the way, seabound territory and due to its tricontinental location and European relations and especially because of its being a free port in international commerce, the islands underwent two successive cycles of settlement by colonial powers in search of new territories. The British presence followed by the German took place in the periods 1850-1918 and 1918-1948, respectively. This presence represented, twice over, the dividing up of the commercial and cultural-social territory but above all it meant the guarantee of a technical dependence which had direct repercussions on the architectural model, that is, on its structural features and materials.

As a result, this was just one more episode in the English-German rivalry which has left its clear mark on 20th century history. On the islands this rivalry was most obviously manifested in the confrontation with the cultural and artistic tendencies following one on the footsteps of the other: Eclecticism, Historicism, Modernism and finally, Rationalism.

In 1927 the territorial government of the Canaries was consolidated on a political and institutional level with a political-administrative structure established through legislation enacted by Calvo Sotelo, out of which came the *Ley de Cabildos* (Law of Island Councils).[1] Thus the first generation of island politicians succeeded the 19th-century political oligarchy. As a result came the first confrontation between those who championed a nationalist cultural autarchy and those who supported cultural production of a universal nature and were committed to the modern concept: regionalism versus the avant garde.

The majority of the civil projects carried out in the 20th-century happened in two decades: the 20s and the 30s: the ports of Santa Cruz de Tenerife and Las Palmas de Gran Canaria, the airports of Gando (Gran Canaria) and Los Rodeos (Tenerife), maritime avenues in both capitals, roads, bridges, etc. This building activity brought out the age-old rivalry between the capitals of the islands of Tenerife and Gran Canaria which have contended for the position of capital of the archipelago since the Conquest.

The quantity of real estate in the provincial capitals doubled and there was considerable diversification in the urban landscape. Government and office buildings, industrial headquarters, housing developments and fancy private estates reflect the exciting activity taking place in this field and a diversity worthy of study.

Urban development

On this first point there are two cases of modern urban development which were inspired by the Athens Charter: The General Plan of Santa Cruz de Tenerife (1933) and the Zuazo Plan for the city of Las Palmas, an outstanding element of which is the Maritime Avenue project.

The change produced in maritime traffic by the appearance on the scene of liquid fuels affected land transport as well. The port capitals needed a planning approach which, for the first time, would go beyond the area strictly considered urban and operate on a territorial or regional scale. The issues of zoning, ordering of traffic and pedestrian routes and sanitation are included in the General Plan drawn up by José Luis Escario for the city of Santa Cruz de Tenerife and was the author's first experiment following his participation in the Regional Plan of Madrid.

This plan took on the creation from scratch of an industrial park located in the southern outskirts which was to include a petroleum refinery and a complex of chemical industries. The plan also called for an overland link between the port and the interior

of the island. A maritime avenue which led to the sea served as the new connection between the access to the port and the new inland route which later branched off both to the north and the south of the island.
A network of city roads of various classifications and the design of new bridges rounded out this modern plan for the city of Santa Cruz de Tenerife. The street plans included the solution of truncating the corners of the principal cross streets - inspired by the so-called Salmon Law - on which a considerable number of impressive rationalist buildings, greatly varied in design, were located.
Growth activity in Las Palmas increased as a result of the incorporation of various surrounding towns into the metropolitan area. The city originally grew up around the Guiniguada ravine and meeting the technical requirements of the 20th-century ports meant a change of location of the new facilities to the other end of the city, near the islet, leaving an inland area which needed to be consolidated into a residential area. The resulting linear city was given definition in the project developed by Miguel Martín Fernández de la Torre and, above all, Secundino Zuazo. The latter's presence in Las Palmas, motivated by social/political reasons, led to his participation in some projects which were decisive for the future of the city.
Thus, he developed the project for the maritime avenue as part of the design of the General Plan for the city of Las Palmas. The entire layout for the high speed road, the open construction of the most densely built up areas and the areas earmarked for sports facilities and green zones - in summary, the ideas of the Athens Charter put into effect - served to turn this city into one of the surprising examples of modern urban development during the autarchic period.

The rationalist architects and architecture

The second point to be commented upon is the existence of an appreciable number of rationalist buildings reflecting a great diversity of tendencies within the so-called International Style. The presence of this architectural aggregation in the main cities of the archipelago indicates an assimilation of the demand worthy of note.
More than one thousand rationalist projects exist here, primarily in the cities of Las Palmas and Santa Cruz de Tenerife. There are some particularly interesting examples in some larger towns and the capital of Palma, Santa Cruz de la Palma which are the subjects of heated discussions within the regionalism vs rationalism debate. A close look at the architectural patrimony of the rationalist movement in Spain reveals that the place where there is the largest concentration of rationalist buildings, of interest for their great diversity, is in the Canary Islands.
The introduction and later assimilation of the new architecture is exceptional in the case of the Canaries, as it occurred within less than a decade, and developed during the autarchic period parallel with other examples of new architecture linked with the technological aspects of the Movement.
It is an accepted fact that the architect Miguel Martín Fernández de la Torre from Gran Canarias, who studied at the Escuela de Madrid as part of the generation of 1925, was the driving force, starting in 1927, of a type of architecture inspired by some European works which applied new formulas in the use of concrete on the façade. Over the years his architectural studio became one of the most competitive on the islands with an active presence of European, and particularly German, architects.
There is limited information on this fact, however, due to the determination on the part of the architect's family to obviate the importance of the contribution made to his work by the German architect Richard Ernst von Oppel. At present research is being done on Oppel in Germany which will surely shed important light on his training and his experience in construction which is evident in his works from the time he joined Martín's studio in 1932.
Miguel Martín and Richard E. von Oppel are responsible for what, in my opinion, is one of the most important and, unfortunately, little known works of Spanish Rationalism: the Cabildo Insular (Island Town Council) of Gran Canaria.
A similar case is that of architect José Enrique Marrero Regalado who worked in Madrid from 1926 to 1932 and who has projects in various cities throughout Spain, including Madrid, Santander, Zaragoza, and others. In 1932 he began working in the Canary Islands in collaboration with the German architect Rudolf Schneider.
Unlike Richard E. von Oppel, Schneider's history is very unclear and his task in the studio was to make preliminary sketches for buildings still at the idea stage. It is certain that Schneider was there in connection with the creation of the Colegio Alemán in Santa Cruz de Tenerife and his presence in the city had to do with efforts to make the new German architecture known. Proof of this was his realationship with a parliamentary representative and town councillor involved in certain episodes in the Anglo-German conflict. Marrero's studio reached a production level of more than one hundred buildings in one year during the difficult decade of the 30s and all, on the average, of high quality.
Nonetheless, the architect whose projects introduced a truly modern concept is José Blasco Robles. He studied in Barcelona in the generation of Josep Lluís Sert and Sixto Yllescas and presented the new architecture from a coherent perspective dominated by structural minimalism, rationality in the use of materials and a modern classicism rooted in the Mediterranean aesthetic. His work is little known although over the years it improved, becoming increasingly timeless.
Particularly noteworthy among his 300 works are the Arroyo building (1933) and the Colegio Alemán (1932).
Added to these three names are a dozen other architects who worked on the islands, among them, Domingo Pisaca y Burgada, Rafael Masanet y Faus,

Casa Palazón. J. E. Marrero Regalado, Santa Cruz de Tenerife, 1935.

Javier Felip Solá, Pelayo López y Martín-Romero, Fermín Suárez Valido, Tomás Machado y Méndez and Enrique Ruméu de Armas.

Gaceta de Arte

The third point to be mentioned is the critical role which the magazine *Gaceta de Arte* played in this period. This was an organ produced by the intellectual minority of the island of Tenerife and it managed to become an internationally known avant-garde document which carried on the debate regarding acceptance of the new aesthetic and the resulting technical and ideological consequences.

From its pages, the Bauhaus' new typography, the missionary zeal of the manisfestos and the carefree critical pieces guided by the democratic spirit, plus the solid ties established with other similar magazines such as *Revista A.C.*, turned this into an international document of the avant-garde.

Alberto Sartoris

Finally, the presence of the Italian architect Alberto Sartoris and his connection, thanks to his friendship with Eduardo Westerdahl, with the Spanish Altamira School meant the continuation of the climate of support which was critical of the Modern Movement on the islands and the creation of works, late on the scene, which were exceptional in Spain for that period.

Alberto Sartoris' contact with the Canaries began in 1933 when Eduardo Westerdahl asked him to submit a piece for the magazine *Gaceta de Arte* which was later followed by other articles.

Nonetheless, in spite of the impediments posed by the martial climate of the 40s, the two were able to establish contact during the organization of the First Seminary on Contemporary Art which was the first step toward the creation of the Altamira School. After 1949 Sartoris was involved in a series of trips, meetings, collaborations and works with important repercussions, some on the scene of avant-garde art criticism and others on the professional landscape of the islands. We know that Sartoris participated in the discussion about the General Plans for Santa Cruz de Tenerife and Las Palmas. We know, as well, of his critical piece in defence of maintaining modern architecture rather than embracing the official regional architecture which was taking over the cities of the archipelago, until then distant from the vernacular aesthetic.

The collection of his writings and talks in the Canaries forms part of his world-wide 'missionary' activity. There also remain, however, a collection of projects, and some completed buildings, which serve as a reference and testimony to the existence of the avant-garde spirit in the Canary Islands.

Notes

[1] *Los Cabildos* or Island Councils are, from a political/administrative point of view, equivalent to the *diputaciones*, or county councils, and in the Canary Islands were in operation from the time of the Conquest as government organs similar to the Castilian councils which had republican autonomy overseen by the Royal High in litigations, in which the Crown participated directly.

Arroyo Building, J. Blasco Robles, Santa Cruz de Tenerife, 1933.

Jaume Sanmartí

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The Restoration of the Casa Bloc

The GATCPAC legacy

The GATCPAC, Catalan Artists' and Technicians' Group for the Development of Contemporary Architecture, was founded in 1930 by the architects Sert, Torres Clavé, Illescas, Rodriquez Arias, Churruca, Subiño, Almansa and Perales. This group had in the magazine *Revista A.C.* its principal medium of expression at a time when the rise of the Second Republic had created expectations for a social and political transformation highly desired by the most progressive segments of Spanish society. GATCPAC constructed buildings; organized exhibitions promoting architecture, the decorative arts and urbanism; and undertook important urbanistic works – the principal of which was the Plan Macià (1932-1934). Through their enthusiasm, Sert and Torres Clavé gained the collaboration and support of Le Corbusier in the urbanistic proposal that, after the Plan Cerdà, was of most consequence to Barcelona. The design was to be based on the open, setback block directly inspired by Le Corbusier's proposed *redent*.

The Casa Bloc, designed by the architects Sert, Torres Clavé and Subirana and constructed over the period 1932-1936, should be understood in the context of a residential prototype for the new Barcelona that the Commissioner of Working-Class Housing for the Generalitat was promoting. The housing project inherited, from the debate initiated in Europe during the 20s, a basis of several clearly defined directives: economy, hygiene, and rationality.

In 1931, a small duplex housing complex that has since disappeared was built on a lot adjacent to that selected for the construction of the Casa Bloc. In view of this pilot project's success, the construction of a group of 207 duplex apartments was speedily initiated on a larger parcel of 9.000 m². In evident reference to its rotund volumetric measurements, the housing group would later be known as the Casa Bloc.

The Casa Bloc, a building with an articulated floor plan, integrates perfectly with the urban layout of the Sant Andreu district. It is composed of five sections, each 10 m deep, that delimit two open spaces of 2.800 m² in size. These spaces are separated by a pedestrian pass that runs beneath the central section of the *redent*. Owing to its setback form, the building adapts well with the network of minor streets and buildings that define the local fabric.

From the outset, the Casa Bloc was planned as residential units with a ground floor that would accommodate services directly related to the housing, such as day nurseries, assembly halls and a library. These services were to lie in proximity with the open spaces intended as community gardens. The six storeys of the building designated for housing were organized by means of a unique type of duplex unit without interior double-height space. The surface area of 75 m² was furnished with a combination living and dining room with balcony, kitchen, laundry room and bathroom, all on the access level; three bedrooms were located on the upper floor.

The system of construction made the use of traditional and modern methods compatible. In effect, the metallic structure of the building, formed of two 4 x 10 m modular bays, was made of metal bars organising the porches and framing into an arrangement facing alternate directions. The object of this was to make the structure more adaptable to specific sections of the building.

The traditional method of brick construction was used in executing the frameworks; the vaults of the interior stairways serving the apartments; the Catalan-style balconies; and the façades's exterior walls, which were finished with stucco. The windows and blinds were constructed of wood. The general stairways were a repetition of the solution already put into practice in the Anti-Tuberculosis Dispensary, a work in Barcelona by the same architects.

The degradation of the Casa Bloc (1940-1980)

With the Republic's defeat in the Civil War, the Republican heritage began to suffer a process of cultural and physical ruin. The Casa Bloc, an undertaking emblematic of the Republic, received severe punishment. The administration of the property, which had never been inscribed in the Property Register, passed to the Board of Settlement of the Property of the Generalitat, and the apartments were awarded to persons not involved with the project.

In 1944 a block of apartments for the police, with frontage on Passeig Torras i Bages, was constructed, and this destroyed the initial geometric congfiguration of the *redent*. This was accompanied by the partial occupation of the ground floors and of the open space adjacent to the area affected. The second negative development with regard to the original project was the partial occupation of the second open space and its ground-level annexes by a school and various parochial institutions. Finally the entire west section of the Casa Bloc was converted into a residence for widows and orphans of the National Army, which meant the total privatization of the remaining open space and the complete destruction of the building's interior. Paradoxically the original façade, which showed the duplex composititon of the builing, remained intact.

This alteration in the use of the building lasted for practically forty years, during which time the Casa Bloc was also subjected to the natural process of aging. This was especially patent in communal spaces: stairways, lobbies, and passages of access to the apartments. In addition to this natural process, there should be mentioned an unfortunate renovation of the system of general services that was performed without

the least care for or attention to the architectonic features of the building.
Reforms to the interiors of the aparments have consisted in changing the tiles and surface finishings; in slightly altering the kitchens and bathrooms; and in doing away with the laundry rooms. One lamentable alteration realized in practically all the apartments has been the occupation of the dining room balconies, haphazardly substituting the exterior walls and advancing them as far as the façade to gain interior surface space.

The rehabilitation of the Casa Bloc and its urban surroundings

The incomplete documentation extant in 1980 did not reflect with precision the actual state of the building. The most informative plans were reproductions from *Revista A.C.*, documents of great historical value but of little technical interest, since they did not entirely correspond to the actual finished construction. It was essential to survey the building's true state and to diagnose the construction in order to evaluate its pathologies and to define the scope of the restoration project.
At the end of 1984 the Barcelona County Council, in its capacity as administrator of three of the building's five sections, initiated the process of rehabilitating the Casa Bloc - taking into account, however, that a continued process of degradation begun fifty years earlier could not be reversed overnight. A strategy both radical in its objectives and flexible in its procedure had to be designed - this owing to the multiplicity of institutions with jurisdiction over the Casa Bloc: the City Council, the Army, the National Police, the Barcelona County Council and finally, since the restoration of autonomous government in 1977, the Generalitat of Catalunya.
The first undertaking, which was realized by the Barcelona County Council in collaboaration with the National Police in October 1986, consisted in razing the horse stables and police installations, thereby recovering practically all of the open space. This operation, one of great physical impact and symbolic significance, marked the beginning of the process of restoring the Casa Bloc.
The first objective has been to rehabilitate section 1, with thirty apartments and with frontage on Carrer Almirall Pròixida. This activity centres on the façades, roof, and communal spaces. Following the initial phase will come work involving the central block (3) and that with the façade on Passeig Torras i Bages (2), which sections are both under the County Council's authority. In continuation section 4, with frontage on Carrer Lanzarote and occupied by military families, is to be rehabilitated; leaving for the last phase section nº5, the restoration of which is conditioned by the transference of the widows' and orphans' residence.
The restoration of the Casa Bloc has more than an exclusively architectonic dimension. At the same time this intervention sets forth to act as an inductor for the process of urban requalification. That a building should be remarkable in its special architectural significance and for its open spaces, is motive for inscribing its restoration within a framework superior to strictly aedilitian problematics.

The directives of the project

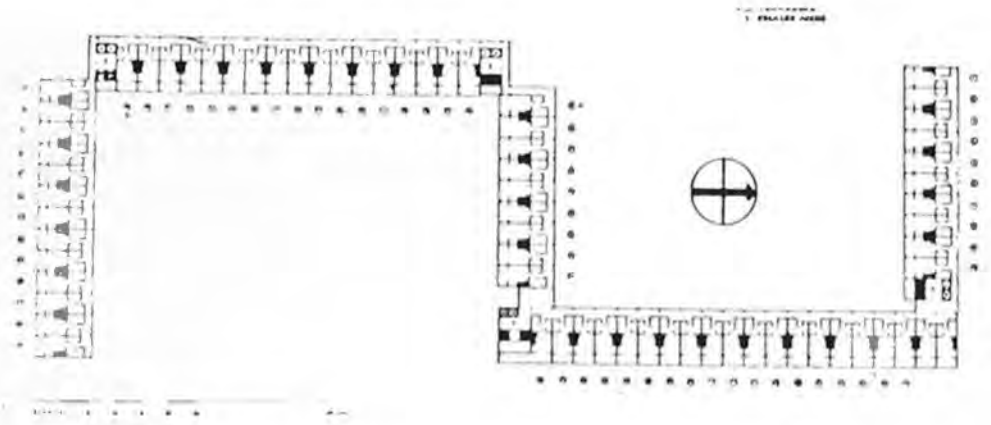
In our judgement, the works on the Casa Block ought to be orientated by a necessary reference to the building as *edifice-manifesto*. The irregularity of the construction process, owing to the Civil War and especially to the absence of facultative direction after 1938 (with Sert in exile and Torres-Clavé killed on the Aragonese front), throws doubt upon some partial aspects of the realized project which do not correspond with the images published in *Revista A.C.* The impossibility of resorting to the authors of the project or of consulting their archives, which have disappeared or been destroyed, sets the theme of the activity's limits on grounds that are little defined. In this sense, the literal restoration of those elements presumably altered appears difficult and in some extemes, of doubtful validity.
In view of this, the restoration project should avoid imitative measures in restoring a building that was vanguardistic in its moment and that is still valid today in its urbanistic and residential dimensions. The restoration project should follow the inital plans of the GATCPAC architects; returning the building to its original *redent* form; liberating the open spaces from spurious constructions; and redefining the shape of the ground floors in order to maintain the pattern that the building holds in relation to the ground.
The selection and design of elements responds to a threefold objective: fidelity to the formal language of the initial project; adaptation to current technology; and the selection of materials which correspond to an inexcessive budget and assure reasonable maintenance.
With respect to housing, decisive action must be taken in redirecting the modifications of the principle balconies of the dining rooms and those situated at the corners of the blocks. The other changes, common to rehabilited apartments, are due to conformity with new utilities systems and the updating of the kitchens and bathrooms which logically retain their locations near the entry so as to receive ventilation from the access corridor.
Work on the façades has respected the sense of their general composition, and consisted in redesigning their elements to conform with a funcionalism respectful of the building's language. The textures of the current materials that remain visibly apparent are a chromatic reference to the bi-tonal treatment of the access passages of the apartments, which in the original project had an expressionistic flavour.
Contained in the Casa Bloc's communal spaces are the general systems for the complex, and these should be revised in their entirety to comply with the regulations now standing. The installations for the general distribution system of utilities must necessarily pass through the access passages of the

apartments, and with dimensional requirements unforeseeable when the building was constructed. Consequently the project should conserve the form of the passageway section so that it is analogous to the original, placing the registrable ceiling in such a way that the corner of the framework - and with it that section of the building - remains unaltered in appearance.

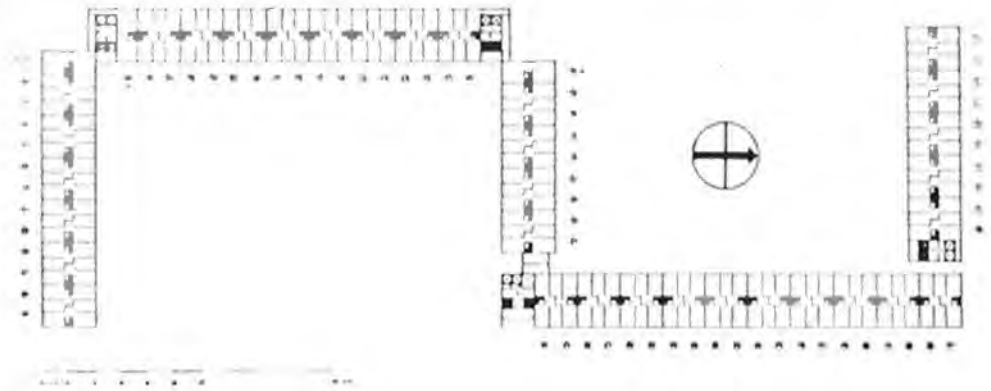
Phases completed: a work of fundamental prospection

With the surveying of the existing state of the Casa Bloc, the work project was given an indispensable though inadequate basis. The evident signs of degradation shown by the façades and communal spaces raised serious doubts about the building's true level of deterioration, the limits of the works needed for reform and the project's economic feasibility.
Prior to the drafting of the project, certain prospection works were carried out relative to the building's key points: the structure, sanitation system and wiring. The object of these works was to gather maximum information about the building's real condition and to enable the range of the project to be defined with utmost precision.

The metallic structure, covered by a veneer throughout the building, was examined at those points where flaws in the cement plaster revealed expansive oxidation, such as in the pillars and joists of the housing's access corridor façade, the central pillars next to the down pipes of the apartments' kitchen and sanitary plumbing, and the metal structure of the framework underlying the roof. The result of this prospection of structural elements was that no serious pathologies were detected in general; contrary to what could have been suspected on a first examination, given the building's poor appearance. The veneer covering the metal structure had functioned relatively well during those fifty years, even in spite of the absence of maintenance work.
Where evident and continued oxidation problems were discovered, was in the interior stairways. The persistent filtration of water used in cleaning had severely oxidized the lateral metal plates of little section that support the steps, which made it necessary to entirely replace the structural elements of the stairway. The use of modest materials occasioned the logical problems of wear as time passed. This is evident in the stucco of the façade, where a mixed mortar was



Planta pisos. Planta inferior de las viviendas con los corredores de acceso.



Planta pisos. Planta superior de las viviendas, con los dormitorios.

Casa Bloc, GATCPAC: J.Ll. Sert, J. Torres-Clavé, J. B. Subirana, Barcelona, 1932-1936.

used; in metalwork such as railings and grilles; in the cement tiling of the exterior passageways; and in the other elements of the zones subject to the heavier wear that collective use produces.

Block 1, with frontage on Carrer Almirall Próxida

The first phase of the Casa Bloc project consists in restoring the section of the building that lies perpendicular to Passeig Torras i Bages with its main façade on Calle Almirall Próxida. In this section, work has been done on the facade fronting the street, which contains the access passages of the apartments; the façade of the open space, where there are dayrooms and bedrooms; the roof; the nucleus of the stairway; the elevators; and the gallery for utilities and general distribution systems. There has been no work on the interior of the apartments.

The nucleus of vertical circulation has been reconstructed and the walls stuccoed, while the frontal piece of the elevators has been furnished with a metal finishing that unifies the doors and blind bays and contains a new interior lighting system. The natural lighting of the stairway has been improved, maintaining the graduated illumination provided by a continuous vertical window that was restored after photographs of the original project published in *Revista A.C.*

The interior space of the stairway and lobby has been closed off, isolating it from the exterior passageways by using glasswork similar in design to the elements of the exterior wall. The space in which the elevators operated, before they were dismantled in 1941, has dimensions sufficient for the installation of two ample elevators and of a registrable vertical service gallery on each alternate landing.

In duplex housings with an access corridor, this space admits the installation of distribution systems, which currently present a technical complexity much superior to that of the 30s. The solution chosen for the project is integrated with the other elements that appear in the access façade of the apartments. The level surface of the passageway ceiling bends above the entrance door, facilitating access to the installations that serve the apartments. The light fixtures are located at these points. The section of passageway retains a shape analogous to the original, the ceiling remaining separate from the pillars so that the corner presented by the passage's structural framework, as seen from the exterior, remains unaltered in appearance.

The finish of the façades is in a line continuous with the earlier bi-chromatic solution, which is still perceptible despite the passage of time. Above a very light grey-green colour, with which the exterior surfaces of the façades have been painted, the backs of the passageways stand out in ash green. The metal elements, such as the grilles, railings and ceiling, are painted a metallic colour similar to the galvanized coating of the down pipes, roof protections, and other elements. The wooden windows have been retained except for those in the dining rooms, these having been substituted by prefabricated windows of white pvc that bear a partial resemblance to the carpentry of the pre-existing ones. All of the wooden roll-type blinds have been substituted by similar plastic ones.

The most decisive work has been carried precisely in the façade of the dining rooms: two sliding picture windows were designed to compass the 4 m space of the structure's span, thus moving the span back behind the line of pillars and, in this, creating a running exterior space that reinforces the facade's horizontal composition. The unification of the exterior walls has signified an evident formal improvement while maintaining the earlier increase of space obtained by advancing the exterior walls and occupyng the balcony. With the elimination of the façade's exterior walls, inasmuch as they had remained interior, the living space gains dimension and width.

At the same time that block 1 was being restored, an apartment was rehabilitated to demostrate how substantial housing improvements could be obtained by making minimal reforms in utility areas in order to incorporate common household appliances such as washers and driers, which would free the façade of clothes lines.

Exterior space

The latest work on the Casa Bloc has been the interior and exterior restoration of the second vertical nucleus of accesses, which serves blocks 2 and 3, and which presents a highly conspicuous facade on Passeig de Torras i Bages. The project has followed the same criteria as the previous phase - that is, with certain reservations, since this stairway provides access to the police housing constructed in 1944 and is still to be demolished.

Access to this nucleus of circulations is gained from the pedestrian pass that runs beneath the central block (3), and separates the two open spaces. Work here has centered on conditioning the covered pass and the exterior space contiguous with the patio that serves as the school playground and access way.

The down pipes of the central building have been renovated, reducing the number of free-standing pipes in the public porch by doing away with those that were concealed beside the metal pillars. The pipes are of galvanized steel, their lower sections are left exposed, and they are situated near the pillars of the central bay. Their original brick veneer has been substituted by the concrete seen on all the ground floor pillars remaining in the covered area that incorporates the illumination of the public space and conceals the horizontal drain pipes.

With these works concluded in October 1991, the Casa Bloc is in condition to be restored in its entirety following the model that has been used up till now and that has supposed, in this first phase on block 1 with thirty apartments, an average investment of 2,000,000 pesetas per apartment.

Appendices

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