There's an Eternal Future for Modern Heritage

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The debate on intervention in Modern heritage does not raise questions which are structurally different from those related to so-called "historic" heritage issues. When we talk about heritage it is a universal discourse with specific typological, constructive and linguistic characteristics for each age. However, due to conceptual, formal and programmatic characteristics specific to Modern heritage "custom designed" intervention criteria need to be established. An awareness of the Modern Movement architectural heritage is recent and it implies an intense debate on its evaluation, the direction of its conservation and also of its reuse.

If the so-called "historic" heritage is subject to laws and regulations taking into account its characteristics, the heritage of the 20th century – and especially those buildings that have not (yet) found a place in the history of architecture – is considered, with respect to regulation compliancy, on the same level as new constructions. As it differs from these, recent heritage has characteristics that require an ad hoc treatment.

First of all, Modern heritage represents a huge built volume. The preservation of buildings and significant sites of the Modern Movement as an artistic expression poses an important physical and economic problem. One of the main tasks of architects today is to reuse existing buildings, most of which are of recent construction date. This will make the phrase "building in existing contexts" commonplace from now on.

Secondly, the massive built volume of the 20th century confronts us with objects that are still largely retained in the limbo of history and architectural criticism. As noted by Bruno Reichlin, "the opening confrontation with the recent, with that which has not been judged, with the anonymity of what is trivial, becomes a problem."[1] On the one hand, architectural historians dealing with the past century are still developing critical tools to understand what place some of these recent works have in the history of architecture. On the other hand, it is difficult to defend some examples of 20th century architecture vis-à-vis the public at large. The enhancement of this heritage is still in progress: it is a complex task and today we live in a very delicate phase, because we risk losing valuable examples of recent architecture if recognition is not given in time. Hence the need to be very careful.

Thirdly, the Modern Movement is often incorrectly – and superficially – considered a style, a simple formalism, while many Modern architects fought against this idea. Walter Gropius, in *The Scope of Total Architecture*, defined Modern architecture as a method: "My intention is not to introduce a Modern Style [...] but to introduce a method or approach that helps address a problem in terms of its particular conditions."[2] The German architect clearly considered Modern Movement architecture to be a process rather than a style.

And fourthly, the heritage of the 20th century is technically fragile, because innovative technologies were not based on a constructive tradition of long duration. Faced with the challenge to build homes, work spaces and facilities for a large number of people and with a limited budget, the architects of the Modern Movement developed several experimental and cheap construction technologies. Their willingness to experiment, combined with a certain degree of professional naivety and a desire to achieve a minimalist aesthetic by using new technologies, is also the source of the technical imperfections of most of these early experiments. However, Modern architects also showed great interest in issues related to the pursuit of efficiency and economy, including the efficient use of materials and a conceptual approach to resource economy. Some of them tried to solve technical problems of building performance which are very close to the themes of today's literature on "sustainable development".

The buildings of the Modern Movement often have a rapid functional obsolescence because they were designed to perform very specific functions. It is sometimes difficult to find a new practical use for these constructions. The idea that the buildings have a functional life of limited duration is not new and it is something that appears early in the literature related to the preservation of Modern heritage.

This perceived obsolescence stimulates ex novo construction. The focus is increasingly on the efficiency and performance, so the intrinsic value of the original building, both on the inside and the outside, is often excluded. But this approach is in clear contradiction with the concept of "sustainable development".

A mission for DOCOMOMO: a supranational comparison of standards and practices for intervention on 20th century heritage

The duration and consistency of both "the icon and the ordinary" in a world increasingly focused on econom-

ic resources depends on the shared recognition of their cultural and social values as well as on their economic viability.

DOCOMOMO enhances the innovative nature of the Modern movement in terms of its social, technical and aesthetic dimensions, and believes that its mission is not only to share the knowledge and ideas of buildings, sites and neighbourhoods of the Modern Movement. The underlying objective is to formulate new ideas for the future of the built environment on the basis of the experiences of the Modern Movement.

For DOCOMOMO conservation and reuse mean to be Modern and sustainable, and to continue to fulfil the collective social project of the Modern Movement. In other words, it is an ever present social, spatial and technological project engaged with the community, taking on the challenge of creating a better place to live.

It is for these reasons that we must address the issue of standards and their impact on Modern monuments.

In Portugal I have been looking at the changes that European standards have imposed on public buildings, especially schools. As recent buildings, they were mostly still in the limbo of architectural history, neither recognised as heritage nor classified as historical monuments. Interventions such as the opening of new emergency exits in load-bearing walls, addition of new stairs for fire safety, replacement of original woodwork with more thermally efficient materials, the insertion of facilities to ensure forced ventilation in workplaces, or the implementation of structural reinforcements for seismic safety, have become mandatory overnight and have had an impact on the many testimonies to the history of Modern Portuguese architecture.

My frequent travels have given me the opportunity to visit several examples of Modern heritage interventions in different countries. This has allowed me to realise how far the updating of legislation differs from one country to another, there being no consistency in the regulatory demands: what is possible in one country may not be in the neighbouring country.

This condition, by itself negative, opens up negotiation opportunities. If the question was addressed to establish heritage regulation standards in a critical way and if the different regulatory approaches and standards were put in common, it would allow the international community involved in Modern heritage preservation to leverage the best practices from each nation in the field of standards – fire and seismic safety, accessibility and energy consumption – but also in the field of intervention examples, key figures (experts, consultants, etc), training, etc.

Below I will present a series of restoration, reuse and updating interventions on public buildings which are subject to more rigid constraints. The projects have been selected for their exemplary character, thus increasing the rich spectrum of cases to be discussed from the perspective of accumulation of knowledge and experience.

1. The restoration of a World Heritage: the Villa Tugendhat

The Tugendhat Villa is an example of a singular restoration where exceptionality was recognised as standard (fig. 1). Legislation was applied with good sense to the security and the requirements of better comfort without putting in danger the spatial and constructive value of the building. In fact, the Tugendhat Villa was recognised by UNESCO as World Heritage in 2001 on condition that extensive restoration be conducted. The house was poorly maintained for decades, during the Nazi and then the Soviet occupations as well as under the Czechoslovakian communist regime. Eventually, it was restored in 1983 to what was believed to be its original state. However, the investigation carried out was very limited and many of the original elements were damaged rather than preserved, and sometimes destroyed.

The recent restoration realised between 2010 and 2012 was based on a complete and careful investigation of the material of the original house, as well as of the subsequent changes to its materiality, including the natural painted plaster.

The research was conducted by a European university and directed by Prof. Ivo Hammer from the University of Applied Sciences in Hildesheim, Germany.[3]

In 1929, Ludwig Mies van der Rohe and Lilly Reich designed the house with such precision, while creating an exceptional way of Modern life, based on an open plan. The works were closely monitored and followed the highest possible requirements of the time. Valuable and rare materials were used: polished chrome columns that are part of the transparency of the grand room and contribute to its crystalline atmosphere; the semi-circular wall of Macassar ebony which defines the dining space and was destroyed by the

Fig. 1: Brno, Tugendhat House, Mies van der Rohe and Lilly Reich, 1929–1930

Fig. 2: The Tugendhat House after restoration work, 2011

Fig. 3: The Tugendhat House after restoration work, 2011

Nazis; the wall made of massive onyx which separates the library from the living room that miraculously survived until today.

In view of this conceptual context and the importance of ensuring the original materiality, this recovery was made as closely to the original as possible, including, if necessary, replacing the existing material by the originally planned material, the intention being to preserve the authenticity of the original structural materials (fig. 2).

Unexpectedly, some of the *Macassar* panels were found in the former Gestapo headquarters at the University of Law in Brno in 2011 and now the original panels surround the dining table again, while the back face was carefully reproduced (fig. 3).

Beyond the physical aspects of the restoration, some structural problems were resolved while the spaces and the lighting quality were carefully restored. The house museum was discretely adapted to welcome many visitors. These measures included temperature, security and fire detection control. Toilets were installed in the basement, which also houses a visitor centre and tours.

2. The headquarters of the Gulbenkian Foundation: the life of a national monument

In spite of the requirement to fulfil the EU rules on energy efficiency, security, fire alarm detection systems and anti-seismic prevention, the classification as a national monument allowed a different exemplary conservation intervention to be conducted at the headquarters of the Calouste Gulbenkian Foundation.

After nearly forty years of being open to the public, the Calouste Gulbenkian Foundation felt the need to adapt to spatial and functional requirements that have changed over time (fig. 4). On the one hand, it was necessary to preserve the original appearance of this prestigious and architecturally unique building, and on the other it was necessary to meet the standards of comfort and contemporary use. The success of this comparison is confirmed in the building's capacity to withstand time and use, and it is justified by the excellence of these original structural characteristics, the construction and the materials. To keep the building alive and updated, various recovery and rehabilitation maintenance operations were performed based on strict criteria of respect for the existing structure and trying not to change the core values of everything that justified the building's recognition in 2010 as a national monument.

The proper maintenance of the building corresponds to the maintenance of the Foundation's self-image, and to the continuity of the strong relationship between intentions and programmes. Thus, the intervention project was developed in a constant dialogue with the existing structure, based on the memory and documentation of its history, the selection of the essential values and the methods and criteria for action.[4] Among the various interventions, I wish to focus on the renovation of the Museum, the temporary exhibitions and the Congress area, including Auditoriums 2 and 3 illustrating the need to adapt the spaces of this great cultural facility to everyday life (fig. 5). The structural characteristics, the material and construction qualities of the building in combination with design flexibility helped to support the necessary maintenance and adaptation required by the use and the passage of time, without disfiguring the undeniable architectural quality. In this sense, it is possible to understand the interventions as restorations, with the values of the initial design being maintained and the regulatory requirements and standards of habitability of this kind of equipment being met.

Fig. 4: Portugal, Lisbon, Calouste Gulbenkian Foundation, Alberto Pessoa, Pedro Cid and Ruy d'Athouguia, 1959–1969

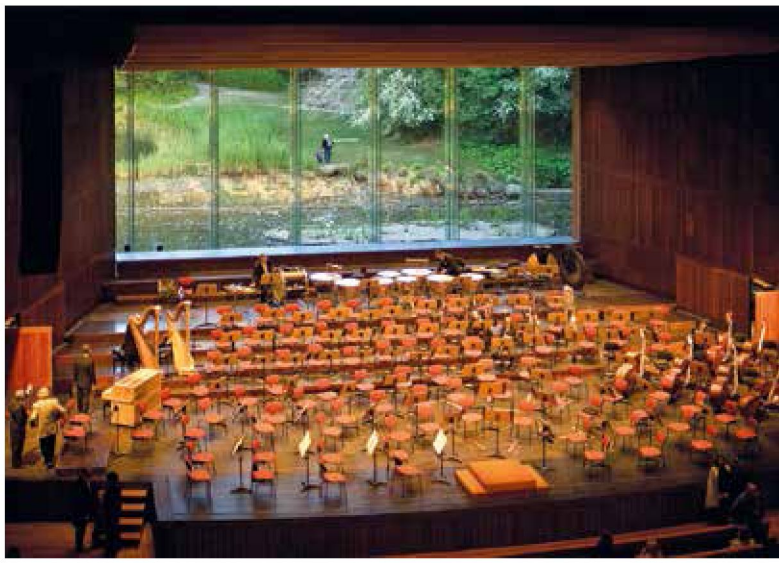

Fig. 5: Calouste Gulbenkian Foundation, Alberto Pessoa, Pedro Cid and Ruy d'Athouguia, 1959–1969; Teresa Nunes da Ponte, 2013

Most interventions conducted meet the technical requirements for compliance with the European codes, while others relate to the current requirements of comfort such as the relationship between space and lighting, new materials, health and environment, at the same time honouring the nobility of the original design.

3. Rehabilitation and expansion of current heritage: the German School of Lisbon and the "Padre António Vieira" High School

As a result of a competition launched in 2007, the rehabilitation programme for the German School of Lisbon considered the total renewal of the entrance space and the construction of a gym and a new building for primary grade (fig. 6). The successful project carried out between 2008 and 2009 by architect João Luís Carrilho da Graça proposed the restoration of the existing buildings – built in 1960 according to designs of Otto Bartning – by enhancing itineraries, the architectural language and the constructive character as well as by finding a delicate solution for the expansion that will complete the existing ensemble (fig. 7). On the south side, the new structure of the primary school, on two levels and partially buried, defines the boundary of the school and works as a sound barrier protecting the site from the noise generated by a nearby highway (fig. 8). On the north side, the sheer volume of the gym merges with the existing building of the auditorium and redraws the entrance to the school.

Together with the restoration of the German School, flexible interventions were made to the existing spaces improving the acoustic performance. New suspended ceilings, in accordance with the renewal of the lighting, were introduced and visual comfort and climate control were increased.

Fig. 6: Deutsche Schule Lissabon, Otto Bartning, 1959

Fig. 7: Deutsche Schule Lissabon, Otto Bartning, 1959; João Luís Carrilho da Graça, 2007–2009

Fig. 8: Deutsche Schule Lissabon, new structure on south side

Fig. 9: Portugal, Lisbon, Padre António Vieira High School, Ruy Athouguia, 1959–1964

Fig. 10: Padre António Vieira High School, Ruy Athouguia, 1959–1964; Teresa Nunes da Ponte, structural reinforcement, 2009

Since the work was carried out just before the adoption of "Directive 2002/91/EC of the European Parliament", it was possible to keep the original windows and frames without the use of double glazing. The upgrading of the infrastructure also included the introduction of photovoltaic panels for harnessing solar energy, thus reducing energy consumption.

This intervention was performed through a Portuguese public programme conducted between 2007 and 2011 and aimed at safeguarding secondary schools or colleges. This ambitious programme, known as *Parque Escolar*, came from a sense of urgency, because the majority of the Portuguese school buildings were built in the 20th century. It involved working at the national level to improve the conditions of use, accessibility, security and comfort of school buildings to ensure energy efficiency and to also strengthen seismic safety. However, the exceptional character of some of the buildings was not always recognised; therefore, most of the operations conducted after 2009 were forced to respond without exception to European standards regarding thermal comfort and energy performance.

The case of the intervention led by Teresa Nunes da Ponte at the "Padre António Vieira" High School in Lisbon, designed in 1959 by Ruy Jervis Athouguia, is one of the most interesting case studies (fig. 9). In this complex – a reference piece of Portuguese Modern Movement architecture – very respectful solutions were implemented, even if it was necessary to give an answer to very drastic regulations: the legislation parameters of European environmental comfort.

Thermal normatives involved repairing frames and glazing. In fact, the simplicity and the thin frames were part of the character to be preserved, but they also raised issues with respect to maintenance. Most of the frames of the sliding windows did not slide any more. Even worse, the tracks, formed by metal bars embedded in the walls, had been deformed over time and rainwater penetrated inside, leading to the deterioration of walls and lintels. It was impossible to suggest recovering the original solution – firstly because of mechanical difficulties and secondly due to new thermal and acoustic requirements – but it was necessary to respect the existing image as much as possible. This led to research on a new aluminium chassis with reduced thickness (20 mm) – very similar to the original solution in steel. Introduced for the first time at the "Padre António Vieira" High School, subsequently this type of chassis was commercialised. The frames of the interior windows on the courtyard façade were recovered and adapted to the new pieces of glass with different thickness and weight.

With regard to fire safety, the intervention aimed at minimising the impact of the measures required by law. The firewall detectors were discretely integrated into the existing structure. Structural reinforcement was conducted in order to achieve the required legislation standards. The solution involved the introduction of metal elements using two different solutions: one that introduced metallic bands that con-

Fig. 11: Japan, Tokyo, National Museum of Western Art, Le Corbusier, 1959, photo 2007

nected the columns with the concrete beams, and another one which added a series of rigid frames (made of metal profiles and vertical elements which were interconnected in a horizontal and a diagonal system) embedded in the existing walls – if the thickness allowed it – or visible and attached to the outside of the walls, as structurally necessary "crutches" (fig. 10).

4. The seismic adequacy of the National Museum of Western Art in Tokyo

Finally, just a brief note on the Kamakura Museum of Modern Art, designed by Junko Sakakura, 1951. The seismic adequacy is a problem to be discussed beyond the heritage question.

In Japan, measures against earthquakes, including the application of the "national seismic standards", have been implemented since the 1920s.[5]

In 1995, the measures of seismic control to all structures built before 1981 were quickly adopted, including the enactment of related policies, such as the law on the promotion of the seismic rehabilitation of buildings by the Ministry of Land, Infrastructure, Transport and Tourism.

In such circumstances, an assessment of the seismic capacity was conducted at the National Museum of Western Art, which was built in 1959. Despite meeting the seismic design codes of that time, it might suffer substantial damage in the case of a strong earthquake (figs. 11, 12). Beyond the need to ensure the safety of visitors and the storage of the valuable museum collection, the museum is recognised as a work of exceptional architectural value by world-famous architect Le Corbusier. Therefore, it was absolutely indispensable to take care of the seismic security issue without delay. First, the architectural value of the building was evaluated, determining that it represents the work of Le Corbusier, the only work by the master of modernity in Japan, where he was investigating methods of seismic reinforcement able to preserve the original structure, on the exterior as well as in the interior. Conventional methods to strengthen this structure included increasing the resistance of retaining walls while widening the columns and stakes in order to improve the ability of seismic response. However, these so-called "conventional" proposals would not have ensured their resistance to earthquakes; it would have produced an unfortunate effect on the original structure with modifications or additions visually and spatially adverse, compromising the character of the building.

Finally, the question was if it would be possible to use the method of seismic base isolation developed for new structures, which were being tested just before. This method operates by absorbing ground vibration, installing a rubber roller device system that will provide seismic base isolation and controlling the necessary seismic behaviour of the building above. According to calculations, it became possible to ensure seismic safety of the building with little changes to the original structure.

But it was still necessary to overcome two problems. The first concerned the construction budget. In comparison with traditional methods this method involved the use of very considerable funds, potentially equivalent to the cost of building a whole new building. The justification for this cost was the need to preserve the original building from various points of view. A file was prepared for a consensus government budget evaluation. The committee obtained the resources to work on the method of seismic isolation structure and on the method of retrofit.

The other question was whether the work would actually be possible. For new structures it was easy to do it, but for an existing building that was not an easy task. It led to the complicated procedure of first raising the building to create a space between the surface and the foundation structure for

Fig. 12: Tokyo, National Museum of Western Art, Le Corbusier, 1959

Fig. 13: National Museum of Western Art, Le Corbusier, 1959; seismic isolation retrofit

the installation of the new foundations. And after the installation of the seismic isolation rubber support devices, the existing building had to be established lower than before (fig. 13). It was the first time this was done in Japan.

In spite of the complexity the retrofit work was completed in March 1998 and can now be viewed through an observation window located in the basement. The Japanese pride in this magnificent work strengthens the candidature of the National Museum of Western Art for UNESCO's World Heritage List. The candidature is also part of an application of masterpieces by Le Corbusier worldwide.

Adaptive re-use as intervention and education strategy

The combination of legal framework and protection involves the reflection on the standards that are applied to the practice of re-use and recovery. The different cases analysed make it possible to define two kinds of situations: when a building is formally classified it is possible to work on the basis of exceptionality and adapt the legislation; or if the building is simply listed, in most cases all the standards apply as if it were a new construction. This will threaten the authenticity of the work and the quality of the re-use design.

Nowadays, beyond the specific case of a careful restoration of a Modern building recognised as a monument (listed or classified), where it is possible to ensure the original value and character, one may argue that the experience of an exclusive and unique restoration has been expanded to a wider practice.

This leads me to face adaptive re-use as a regular architectural practice, and to consider the question of sustainability as a particular challenge for Modern heritage. Interestingly, due to the economic crisis that has hit the real estate market and has created a very high availability of buildings, new opportunities may emerge that will support the recovery and re-use of Modern heritage.

In many cases, new buildings are no longer economically viable. Besides, criticism of institutions and companies often starts when the decision to build new buildings involves the abandonment of old ones. Increasingly, this is considered as socially unacceptable.

The adaptive re-use of Modern Movement buildings is now starting to be recognised as a benefit to the identity of the sites and the sustainability of the life cycle, beyond pure economics. Local governments and national policies are waking up and beginning to develop measures, lifting the regulations that limit the alternative use of abandoned buildings, and providing legislation for temporary use, such as affordable housing for young people, which is absolutely necessary.

As expected, the buildings recognised as heritage by DOCOMOMO are increasingly considered as investments, which may provide new opportunities for the architectural profession. The time has come to approach the teaching of architecture by modifying the curricula and involving students in the development of knowledge and experience directed to an adaptive re-use. There is a growing need to integrate programmes into the history of buildings and to bring together academics that are able to conduct research on documents and interpret the facts with professionals at construction sites who examine effective responses, budgets and deadlines of everyday construction.[6] For all those who work with existing buildings the connection is simple, because the built stock is a matter of values implying a degree of knowledge and culture where buildings

play a key role with regard to quality, durability and economy.

Zusammenfassung

Die Moderne hat ihre langfristige Legitimität als Konzept von außergewöhnlicher Dauerhaftigkeit bewiesen. Indem sie Technik, Form und soziales Engagement im optimistischen Glauben an den Fortschritt miteinander verbanden, bemühten sich die Architekten der Moderne, neue Höhen der Funktionalität und Flexibilität zu erreichen. Eine Herausforderung für DOCOMOMO International ist es, Wege zu finden, mit diesem modernen Erbe angesichts des sich ständig verändernden Kontexts umzugehen. Dazu gehören physische, wirtschaftliche und funktionale Veränderungen genauso wie sich konstant verändernde sozio-kulturelle, politische und wissenschaftlich-kontextuale Werte.

Bei seinem Bestreben zu bewahren und wiederaufzubauen muss DOCOMOMO selbst modern und nachhaltig vorgehen, um weiterhin das soziale und kollektive Projekt der Moderne zu erfüllen, denn Modernität und Nachhaltigkeit gehören zu den primären Eigenschaften des Moderne-Projekts. Aus Sicht von DOCOMOMO setzt sich die Moderne bis heute und in die Zukunft als allgegenwärtiges soziales, räumliches und technisches Projekt fort, das sich verpflichtet fühlt, einen besseren Ort zum Leben zu schaffen.

Footnotes

[1] Reichlin, Esperti 2014.
[2] Gropius, Education, p. 17.
[3] Hammer, Modern and Sustainable 2011, pp. 48–57; Cerná and Hammer, Materiality, 2008.
[4] Tostões, The Buildings, 2012 [2006].
[5] Okada, Le Corbusier 2009.
[6] Graf, Material History 2012.

Bibliography

Iveta Cerná and Ivo Hammer, Materiality, Brno 2008
Franz Graf, Material History and Conservation of Contemporary Building Fabric, in: Nuts and Bolts of Construction History. Culture, Technology and Society, vol. 1, Paris 2012, pp. 135–142
Walter Gropius, Education of Architects and Designers, in: The Scope of Total Architecture, New York 1943, p. 17
Ivo Hammer, Modern and Sustainable, in: Docomomo Journal 44, 2011, pp. 48–57
Ivo Hammer, The Tugendhat House: Between Craftsmanship and Technological Innovation, in: Modern and Sustainable – Docomomo Journal 44, 2011
Tsuneo Okada, Seismic Retrofitting for the Main Building of the National Museum of Western Art, in: Le Corbusier & the National Museum of Western Art, Tokyo 2009
Bruno Reichlin, "Esperti nella messa a norma dell' architettura del XX secolo. Una proposta", in: Roberta Grignolo (ed.), Diritto e Salvaguardia dell'architettura del XX secolo/Law and Conservation of 20th Century Architecture, Mendrisio 2014
Ana Tostões, The Buildings, Lisboa, Calouste Gulbenkian Foundation, 2012 [2006]

Credits

Fig. 1: Fritz Tugendhat (Daniela Hammer-Tugendhat Archive, Vienna)
Figs. 2 and 3: Ana Tostões
Fig. 4: AFCG, Mário de Oliveira, 1969
Fig. 5: AFCG, Márcia Lessa, 2014
Fig. 6: Binário no. 38, 1961
Figs. 7 and 8: Fernando Guerra
Fig. 9: Ruy Athouguia
Fig. 10: Teresa Nunes da Ponte, 2011
Figs. 11 and 13: NMWA
Fig. 12: Zara Ferreira, 2014