Contemporary Issues in Housing Design

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Edited by

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PREFACE

The word ‘house’ has evolved throughout the millennia and infused itself into many languages; however, the basic reference to covering and sheltering has always been preserved. Housing in the contemporary sense refers to a relatively complex structure comprising different shapes and sizes accommodating various functionalities, evolving in accordance with cultural, social, technological, and natural progresses. A house provides more than basic protection, but is the backdrop for the daily lives of occupants, and even a reflection of an individual’s character, beliefs, and socioeconomic status.

Housing design has long been a method of self-expression for the architect, a playground for testing the limits of emerging paradigms, techniques, and technologies. Accordingly, the integration of new knowledge into the process, to help streamline critical principles and procedures, is imperative. This responsibility belongs to the current generation of architects, who were raised by those practicing the traditional medium. They are the ones set to mentor the up-and-coming generation, who will undoubtedly embrace a new set of design tools such as artificial intelligence, data-driven decision making, and augmented/virtual reality technology.

These transformations are not limited to design tools. The capabilities of our dwellings are also transforming, as the future of human-computer interaction is continually defined and redefined. Even though the residential environment is ever-changing, the user is not. Thus, understanding the anatomy, physiology, and psychology of this transformation, within the context of contemporary housing design, bears crucial importance within this fluid context.

New technologies are often associated with brand new constructions but should also be considered as an integral part of the conservation of the existing housing stock. In other words, it is important to discuss the old in light of the new, and to develop a complete and succinct understanding of residential space. Accordingly, discussing contemporary housing conservation concepts will expand on new typologies based in cultural variety, thereby creating new rhetorical standards and characteristic discrepancies.

Even though each residential design problem appears to be case-specific, the architect should always be aware that housing design cannot be isolated from social context. The social aspect of housing is most apparent in times of crisis, during natural disasters, armed conflicts, or political and economic depressions. Design should immediately respond to the situation at hand, and it is crucial to guide the designer through culture, budget, schedule, and logistics limitations. Even senior architects are required to overcome artificial limitations within fictional residential spaces—these being an active and abstract representation of individuals, relationships, and metaphorical reflections akin to the narrative elements of storytelling.

Sustainability is another paramount issue in contemporary housing design, due to its immense potential to minimize the carbon footprint via simple and intuitive measures. While sustainable thinking is considered a virtue for the modern citizen, it is also a means for displaying sensibility toward the environment. However, achieving sustainability can be costly, and that's not only in terms of actual building expenses. The difficulties of getting used to a new way of living on occupants' part, moreover, understanding the idiosyncrasies and designing accordingly on the architects' part, create significant challenges.

This book discusses an array of critical contemporary issues in housing design pertaining to sustainable practices, emerging technologies, heritage conservation, humanitarian efforts, fictional environments and their effects on occupants' physical and psychological well-being. As such, it will serve to develop further understanding and to enrich the perspectives of any designer and educator invested in the subject.

Kutay Güler
Editor

CHAPTER ONE

CONTROVERSIAL CONCEPTS ON CONSERVATION OF MODERN RESIDENTIAL ARCHITECTURE

HÜMA TÜLCE[1]

Chapter Highlights

- The consideration of authenticity, reconstruction, musealization, and facadism should cover both the material and immaterial dimensions of the conservation of modern residential architecture in a balanced way. This interpretation will determine the distance between the misrepresentation of total meaning and its proper conservation.
- Design intent, as an immaterial aspect, can take priority in the conservation process as it relates to modern residential architecture. This understanding introduces a social perspective to the conservation process.
- Authenticity forms the crucial basis for applying conservation principles for reconstruction, musealization, and facadism in modern residential architecture. This debate leads to a contradiction between originality and what has been termed a re-invention of place.
- Musealization is grounded on the mechanisms of representation, which use aesthetical, social, and cultural artefacts as tools. The past, reconstructed by musealization, is not the original evidence, but a version of it.
- Facadism, as an extensive intervention, shifts the interrelationship between exterior and interior, which is the essence of modern residential architecture. Nonetheless, the concept is frequently legitimized by economic development, re-use facilities, and increases

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in service quality as a response to contemporary programmatic requirements.
- Reconstruction cannot introduce the exact meaning behind original design logic; there is a gap between the period of intervention and the past, when the house was built. Thus, it can be argued that the result is a reproduction, a completely new state.

Defining the Field of Conservation

Conservation has diverse origins, varying in theory, practitioner, and subject matter. Nevertheless, the first use of a conscious conservation approach is dateable. Alois Riegl, an art historian, introduced *Denkmalpflege* [the conservation or preservation of monuments] to the Italian Renaissance (Marijnissen 1996). As a conservation theorist, Paul Philippot grounded conservation during the Age of Enlightenment in a similar manner to Riegl. This period–with its radical change in European politics, philosophy, science, and society–formed the notions of reason, rationality, and scientific thought. These notions intersected and grew into historic consciousness over the course of the 18th century. As a result, a new concern toward historic buildings emerged. Within these advances, the theoretical and philosophical framework of conservation gained momentum.

The 19th century debate formed a solid foundation for the theory of conservation, furthered by conservation professionals, and later cemented by international charters, recommendations, guidelines, and conventions. This process, introduced in the following section, reveals the 'who' and 'how' of conventional production at the time, expanding on concepts like material authenticity, reversibility, and minimum intervention. These parameters were key challenges as professionals considered how to conserve modern residential architecture. Being a contemporary phenomenon, modern residential architecture will be embedded after defining a historical and conceptual development in the field of conservation.

The debate on conservation among Eugène-Emmanuel Viollet-le-Duc, John Ruskin, and William Morris formed the basis of this 19th century shift. In fact, many of their theories resulted in the formation of modern conservation theory. Eugène Viollet-le-Duc, as an architect, restorer, and writer who emphasized stylistic restoration, which meant restoring an architectural object in the style of the original (Jokilehto 1999). His approach was criticized by John Ruskin and William Morris. As an art critic, Ruskin stated that every art object is unique, and that material authenticity should be conserved through minimum intervention. This

method could be established by being respectful to the process of the artifact's life. On the contrary, the stylistic revivalism of Viollet-le-Duc was based on a certain period, rather than trying to invoke the process of an artifact's life. As a result, the conservation debate between stylistic restoration and anti-restoration movements formed the basis of the discourse.

From the 20th century onwards, the critical evaluation of the discipline was established parallel to growing consciousness on cultural diversity, and resulted in a more expansive understanding of the subject. Alois Riegl was the first to introduce value judgement. This approach underlined the direct significance of every artifact in relation to its producer, culture, and period. Put another way, every artifact should be evaluated according to its own criteria. In line with Ruskin's concepts, such as minimum intervention and art object as a unique creation, Riegl included a more systematic view founded on the theory of relativity (Riegl 1903). An art critic and historian, Cesare Brandi formulated the conservation principles of minimum intervention, reversibility, recognizability, individual unity, and material authenticity (Brandi 2005). These works contributed to the formation of a distinct field of study, known as modern conservation theory. The above-mentioned theorists and practitioners established the discipline. Conservation became a more scientific intervention, frequently applied to monumental, as opposed to residential architecture.

In line with this process, the charters, recommendations, declarations, guidelines, and conventions of the Venice Charter (1964), the Amsterdam Declaration (1975), the Nara Document on Authenticity (1994), the Burra Charter (1999), the Xian Declaration (2005), the Yamato Declaration (2004), the Quebec Declaration (2008), and the Eindhoven-Seoul Statement[2] (1990) were issued to provide shared understanding on cultural heritage (Ashley-Smith 2009). The Nara Document was the first to include the spirit of place. This notion integrated immaterial aspects of heritage, such as daily practices, traditions, folkways, rituals, and ceremonies, into material expressions, while also underlining the diversity of culture (ICOMOS 1994). As is well known among academics, diversity of culture and the expansion of the scale and production of new building typologies demand the re-evaluation of common parameters. One of the themes to be challenged, positioned at the interface of these issues, is modern residential architecture.

The conventional principles of conservation have been re-interpreted in relation to the spirit, standards, and dilemmas of modern residential

[2] Eindhoven-Seoul Statement was revised in 2014.

architecture. The International Council on Monuments and Sites (ICOMOS), Documentation and Conservation of the Modern Movement (DOCOMOMO), Getty Conservation Institute, Twentieth Century Society (C20), and the Association for Preservation Technology (APT) constituted an international platform for documentation, awareness, and discussion on conservation issues of the modern, including the modern house. The Eindhoven Statement (1990), declared by DOCOMOMO, was the first international statement. This statement addressed the conservation of modern heritage. Other related documents include the Council of Europe's Recommendation on the Protection of the Twentieth-Century Architectural Heritage (1991) and the ICOMOS General Recommendations on the Protection of Twentieth Century Heritage, declared in Helsinki (1995). It is important to note that the theoretical and practical study of the conservation of modern residential architecture is still relatively new. However, the efforts of the stated organizations, such as dossiers, bulletins, electronic newsletters, books, and proceedings were seminal to obtain broader acceptance on the significance of modern residential architecture.

This section, as a summary on the philosophical and theoretical development of conservation, creates a framework that supports the integration of the critical notions and dilemmas of modern residential architecture into the study of conservation. The narratives of modern residential architecture have unfolded multi-faceted and layered arguments surrounding authentic nature including historical context, human and social values, national and regional authorities, and planning and management regulations, all of which are particular to the characteristics of every heritage. Therefore, a "one size fits all" approach could not be imposed on all heritage sites (Avrami 2009). Within the last few decades, this challenge has been met with critical re-assessment using an interdisciplinary and multicultural approach that strays beyond conventional geographical, conceptual, and philosophical parameters.

Developing Core Notions on the Modern

Discourse: Modern Heritage

Modern heritage can be considered an umbrella concept for modern residential architecture. The publications on conservation of modern heritage include the modern house; besides hospitals, schools, pavilions, and performing arts centres. The term is more broadly referred to in the international sense; international charters and declarations involve modern

heritage, but do not specialize in modern housing. The main theme of this sub-section is grounded on the question, "what is modern heritage and how is the modern house included in the discourse of that heritage."

ICOMOS and DOCOMOMO identify the beginning and end of so-called modern heritage as bookending the 19th and 20th centuries, and expand it to include architecture that has an innovative design, material, technology, or which creates social improvement. This revolutionary aspect involves the intellectual and technological precursors of the modern heritage. Thus, its foundation is grounded on Antonio Gaudi's or Victor Horta's theories, cemented in the 18th century. The spatial understanding of modern heritage is formulated into two primary components: typology and region. Its typology was defined by Ron Van Oers (2003, 10), who stated that "…equal attention should be given to many other built forms of these periods, such as urban ensembles and city patterns, infrastructure and works of engineering or landscape designs." In line with this tangible approach, modern heritage is the inventory of human experience and the codes of daily life. Therefore, its intangible aspects should be considered as critically linked to its materiality. In fact, this bond formed the evaluation of cultural diversity. Modern architecture, as being straightforwardly connected with technology and innovation, emerged in Western countries. It has spread to other places through a diverse knowledge network, and has ultimately created its own vernacular language. These frequently neglected geographies have begun to be considered. This approach eliminated solely Western-based emphases on the conservation of modern heritage.

The modern house has recently been included in the vocabulary of heritage, as early as the 1980s. The works of modern residential architecture, firstly inscribed on the World Heritage List, were Casa Mila, Casa Vicens and Casa Batlló, designed by Antoni Gaudí, in Spain (1984); Rietveld Schröder House designed by Gerrit Thomas Rietveld, in the Netherlands (2000); and the Town Houses of the Architect Victor Horta, in Belgium (2000) (UNESCO World Heritage Centre 2006). According to Theodore H. M. Prudon (2008), initial interest in these built forms began as early as the 1950s and 1960s. Awareness of this heritage has developed within the establishment of the conservation of modern heritage as a distinct field since the 1990s (Macdonald 2013). This evolution has eventuated the integration of less iconic, ordinary, and vernacular modern buildings with intangible values and cultural pluralism, which is best exemplified by the Luis Barragán House and Studio in Mexico (2004). This understanding is very much in line with Article 1 of the Venice Charter, which declared the definition of historic monument as "only to

great works of art but also…more modest works of the past which have acquired cultural significance with the passing of time" (ICOMOS 1964). Although the discipline has begun to comprise these diverse notions, it is still in progress. For instance, the insertion of post-war architecture into conservation is a recent phenomenon of the 21st century.

Spirit and Standards: Modern Residential Architecture

The rise of industrialization begat new architectural formation through the emergence of building technology, material, and programme. Another shift, which is more inherent than this formalistic aspect, is the evolution of society as a whole. The new patterns of work and social arrangement formed new lifestyle and architectural production patterns in areas where changes were most pronounced. One architectural solution, which emerged within this process, was modern residential architecture.

This sub-section in particular deals with how modern residential architecture differs from traditional and what its spirit and standards are. Le Corbusier underlined this new spirit in his work *Towards a New Architecture*; according to him, this new epoch began with the rise of industry (Le Corbusier 1931, 3):

> "A great epoch has begun.
> There exists a new spirit.
> There exists a mass of work conceived in the new spirit;
> it is to be met with particularly in industrial production."

During the Industrial Revolution, changes in lifestyle and a general rise in population resulted in the design of modern houses. A secondary, but no less important, benchmark is perhaps the World Wars, referring to European cities and their experiences with sudden and expansive housing shortages due to the heavy destruction of settlements (Sennott 2004). This development required new architectural typologies, highly compatible with the *zeitgeist*[3] of their age. Theodore H.M. Prudon (2008), in his book *Preservation of Modern Architecture*, encapsulated the categories of modern residential architecture. These are the single-family residence, the suburban development, and the multi-story residential building. In addition to this

[3] *Zeitgeist,* based on Hegel's Philosophy, is briefly defined as the spirit of the age and further elaborated by Architectural Dictionary as "the general cultural, intellectual, ethical, spiritual, or political climate within a nation or even specific groups, along with the general ambiance, morals, sociocultural direction, and mood associated with the current era."

formulation, residential architecture is related to the problematics of sheltering, which determined a broader framework. Dormitories or guesthouses are also built environments, where users with different lifestyles may find reprieve.

The modern house can be considered as a manifesto on innovation. This innovation is initially about function, materialization comprising new building materials (reinforced concrete, iron, glass, metals, and plastics), construction techniques, or the development of infrastructure (electricity, drinking water, and sewage management). Cubic forms, straight lines, and large rhythmical arrangements are the outcomes which were experienced in the age of mass-production. As such, the mantra of Josef Frank, "free of Gschnas"[4] or Adolf Loos' equalization of "ornament and crime" are but contrary to traditional doctrines. These are not simple formal selections, but about the concept of truth. In the modern house, material and form play a significant role and should be presented without any artificial envelope. These approaches are also congruent with the *zeitgei*st of their period, this being the period of mass production, standardization, low cost, and time limitations in construction (Loos 1997). The function of this approach is a powerful tool in designing the overall form of a building. It is also the reflection of essence, which is the intrinsic nature formed by an intended meaning. For instance, glass exteriors and large openings are not only aesthetic preferences. These provide connection to landscape, relation between interior and exterior, and introduce more daylight. The modern house is flexible with its free plan coded in accordance with a user's expectations, and is highly compatible with new daily practices.

"In contrast to the heritage of earlier periods, architecture and design of more recent vintage represents the ideals and philosophies of original architects, their clients, and subsequent occupants, many of whom are well-known or even still alive." These words by Theodore H. M. Prudon (2008) underline the preferences of designer, client, user, and their evolution by modern precepts. Roof gardens for sport and recreational facilities, relation between inside and outside using glass surfaces, and free floating spatial organization are all contrary examples to conventional family structures. These components instead began to constitute the infrastructure of a modern society (Macdonald 2009).

[4] Gschnas is defined as a redundant ornamentation or a Viennese term for a fancy-dress ball held during Carnival.

Dilemmas: What to conserve? Why to conserve?

In the wake of globalization, modern residential architecture became functionally obsolete, abandoned, destroyed, or re-used because of a shift in daily practices and consumer expectations. Unlike the traditional house, their conservation is more problematic, and considerably dynamic, owing to determinants like a lack of official recognition, legislative regulations of national and regional authorities, technical advances, and real estate speculations.

These agents produced instability in the "what's" and "why's" of conserving. For that matter, the selection is formed according to the criteria of value judgement, a process directly attached to contemporary values. This approach is related to Long and Labadi's (2010, 2) statement which reads, "heritage protection has never simply been about the past…" These values are related to the meanings that inhabitants attach to built environments and landscapes. Jukka Jokilehto (2009) also asserted this understanding by the inclusion of intangible heritage within heritage conservation, thereby forming a more dynamic platform through a consideration of cultural diversity in every case. This sociocultural understanding of identity, memory, and resident or designer lifestyle is directly linked with the identities of the main actors during the production of the original design intent. Thus, the essence of modern residential architecture is chronologically and stylistically different when compared with more traditional styles (Guillet 2007). In line with its immateriality, conservation should be interpreted as a social process that includes both public consultation and the advice of conservation specialists. This process is known as a bottom-up process, prioritizing the spirit of place and its focus on the authentic characteristics of a building, as well as its inhabitants (Rodwell 2015).

Contemporary conservation programs have considerably diverse objectives, for instance, some use these as a marketing point for organizations looking to use these programs as an educational tool or a base for tourism. These objectives directly impact what heritage means and will mean (Storm 2008). The selection of what to preserve from the diverse narratives of the past becomes a contemporary social, cultural, economic, and political practice following the spirit, standards, and codes of the modern. The modern house, unlike earlier dwellings, calls for new solutions and a deeper understanding. This approach is clarified by the fact that modern heritage "… also requires, where necessary, a brave departure from the traditional precepts and protocols of conservation philosophy" (Kindred 2007, 4). This paradigm will be further explored in the following

section on controversial concepts within the scope of modern residential architecture.

Expanding the Boundaries: Challenging Conventional Tenets

Modern residential architecture, as stated in the second section, has many unique characteristics. These characteristics play a significant role in conserving this genre of architecture, and more specifically, in dealing with fixed conservation principles, rules, and concepts. The controversial concepts selected for discussion are authenticity, musealization, reconstruction, and facadism. Authenticity is the principal concept, which should be evaluated while discussing any conservation intervention. Musealization is a frequently used concept that nevertheless has a dichotomy between misrepresentation and conservation. Reconstruction and facadism can otherwise be considered under the category of unacceptable conservation interventions, though both concepts do possess their own justifications. This section will thus explore what these concepts mean for modern residential architecture.

Foundation: Authenticity

Conservation principles such as material authenticity, minimum intervention, and reversibility were formulated by Cesare Brandi (2005) in *Teoria Del Restauro* [Theory of Restoration], and were later adapted by international documents. These common parameters formed the main themes to be questioned in the sub-section "foundation". Authenticity plays a significant role in the conservation of cultural heritage, on which minimum intervention and reversibility are based. The ICOMOS Venice Charter (1964) was the first document that dealt with the concept of authenticity in terms of conservation. The content of originality in this document covers the material aspects of an artifact. However, Paul Philippot (1995) defined the authenticity of a work of art as "the internal unity of the mental process and of material realization of the work." The inclusion of mental processes here recalls the immaterial aspects of an artifact. The Nara Document on Authenticity (1994) was the first document that underlined immaterial aspects in addition to materiality. The document asserted that "all cultures and societies are rooted in the particular forms and means of tangible and intangible expression which constitute their heritage, and these should be respected" (ICOMOS 1994).

In relation to this dual nature, it is important to define authenticity, as well as explore how its meaning has been transformed to meet the needs of modern residential architecture. Indeed, this is the first challenge encountered in this sub-section. The primary intangible aspect of modern residential architecture is its essence, which brings the precepts of its architects and their clients together rather than its counterpart, pure monumentality. Due to its frequency as "the" architecture of recent ages, the modern house is the manifestation of technology and industry. This combination meant replacing hand-crafted materials with mass-produced and standardized materials, thus offsetting a re-interpretation of material authenticity and age value,[5] theories that have prevailed since John Ruskin's initial doctrines. To reiterate, Ruskin believed each work of art to be unique and unrepeatable. He grounded this uniqueness on craftsmanship by stating "…the spirit which is given only by the hand and eye of the workman, can never be recalled…" (Ruskin 1849, 18-20). Still, this approach falls short, and is ultimately not appropriate for the modern house. The "original state" of the modern is probably due to the use of standardized materials and structural systems. This approach is more akin to Viollet-le-Duc's statement. Rietveld Schröder's "House of Gerrit Thomas Rietveld" is a case that best emphasizes the dichotomy between material authenticity and design intent. For instance, colour is used as a formal composition to express figure-ground or inside-outside relation. The regular maintenance of Rietveld Schröder House was implemented by the Centraal Museum. This maintenance included renewing the paintwork in reference to the original colour chart, a vital intervention that has been performed every five years. Due to being a representation of the De Stijl movement, colour is a respected design element in this house (UNESCO World Heritage Centre n.d.). In this case, newness value is more important than age value since the modern house should consistently look new according to its spirit.

Modern residential architecture is inherently produced in relation to the functional precepts of architecture, which are the outcomes of the rituals specific to modern everyday life. Catherine Bauer underlined this issue as follows "…Housing schemes were quite carefully designed for varied social uses: old people, single women, families at different income levels and so on. Everywhere technical, economic, and social research was going on, including Alexander Klein's ingenious studies of minimal dwelling

[5] Age value defines the monument as an organic object in a state of degradation from the moment it is created. It forms on a visual appreciation of age, regardless of historical or artistic considerations. Concepts such as patina and decay are associated with age value.

plans, based on analysis of family functions and household circulation" (Henderson 2013, 35). In line with this paradigm, the design intent of the modern house is functionality and rationality. It should adapt to contemporary requirements as they relate to mechanical or electrical solutions, thermal insulation, fire protection, and sustainability, so as to continue its function perpetually.

For example, in glass houses, thermal insulation became a frequent problem in the context of contemporary living standards. In A. James Speyer's glass house, single-pane windows were replaced with thermal glazing and its roof and floor were sealed off (Latrace 2017). The original design logic, as being functional, was maintained rather than the original materials. These interventions sometimes appear as technical and legal obligations. The dilemma between conservation principles should be solved by a specialized conservation program, which will provide a balance between material upgrades and authenticity. The modern house is unique and has a venerable life of its own, as Ruskin might put it (Ree 2009). According to the *zeitgeist* of the modern, then, essence has first and foremost priority during the conservation process.

Representation: Musealization

Musealization, as a sub-branch of re-use, is a widespread concept in modern residential architecture following the loss of the original function. The outcome of conversion from habitation to museum is defined as "house museums", the onset of which was earlier than the 1850s. This development was based on Randall Mason's 19th century antiquarian motive to conserve objects (2004).

Musealization refers to dual understanding. First comes the process of detaching an artifact from its original context and representing it within a new meaning. Reconstructed houses and period rooms in museums could be considered within this out-of-context category. For instance, the Metropolitan Museum of Art exhibited the Frank Lloyd Wright Room. Before the destruction of the Francis Little House II (1971), the living room was dismantled and reconstructed under the roof of the museum (Goldberger 1982). Although this display has eminent documentary and educational value, isolating an object from its authentic environment presents a challenge.

The second process of musealization involves museumizing an object while keeping the historical and cultural setting. There are various modern house museums such as the Rietveld Schröder House designed by Gerrit Rietveld, and the Villa Savoye designed by Le Corbusier. The formation

of museums in former houses can be seen as an efficient conservation method, barring its inherent contradictions. How to represent the values of this particular architecture is a mandatory question in musealization. The concept can be understood as a strategy, whereby an object represents the history with an intended economic and political directive. However, this cannot be the only reason for justifying an intervention. The modern house itself evolves into an archival and educational source by being museumized. Despite this mode of thought, Bonelli's expression that "an architectural work is not only a document but is above all, an act whose form is the total expression of a spiritual world…" is critical (Bonelli 1963, 347). The modern house, as a living entity, is where its users experience their everyday life. Therefore, in the re-use process, the actors' involvement should be researched to understand the original design logic. One of the design intents of the modern is functionality, and this notion motivates the adaptation of the selected building for perpetual use. Technical requirements, and visual and physical accessibility for visitors are more complex topics to navigate than the simple service condition of a house. While providing a balance between these factors, the musealization of modern residential architecture can present an optimistic use of place.

Defendants of the musealization of modern residential architecture argue that it is educational, has archival purposes, and can be used as a vehicle for good research. These objectives are required for the comprehension of the design intent. Nevertheless, this type of intervention is conflictual, positioned between ideas of misrepresentation as a result of sterilizations, reconstruction, destruction, or proper memory spatialization in conservation practices (Mason 2004). Musealization should thus adapt to the changing needs of present-day society, while taking into consideration their material and immaterial authenticity.

Reproduction: Reconstruction

Reconstruction is defined as the re-establishment of an object that has been subject to damage (Petzet 2004). Reconstruction became a frequently used intervention method that was used to respond to the expansive damage of the second World War. It not only offered a rebuilding act for housing shortages, but also a radical change to conservation tactics (Bullock 2011). Thus reconstruction, introduced in the vocabulary of international documents with the Venice Charter in 1964[6], faced a negative response.

[6] See Venice Charter article 15.

Randall Mason (2004), on the other hand, interpreted reconstruction as one of the generic approaches to the reproduction of a memory site in conjunction with relocating structures. This intervention is applied to iconic modern houses such as the Bachman Wilson House and the Duncan House, both designed by Frank Lloyd Wright. When there is no other way to conserve an original building, reconstruction is commonly the method used. Still, there is a critical question present: whether the original design logic of the architect can truly be adapted or not. Reconstruction distorts the process of time because of the gap that forms between the period of intervention and the past, which is when the house was built. The meanings will be lost in translation; in fact, this process will lead to falsification. However, conservation is considered as an intervention that provides minimum loss of potential meanings (Vinas 2009). Therefore, reconstruction can contradict conservation aims.

It is nevertheless important to ask: if reconstruction can cause the destruction of total meaning in an artifact, how can it be justified? These justifications arrive in the form of national symbolic value, re-use, tourism, education, and research, all of which are encapsulated by Nicholas Stanley-Price's work on the subject (2009). The Duncan House, designed by Frank Lloyd Wright (1937), was relocated from Illinois to Pennsylvania in 2007. It was opened to house tours with didactic motives. Cesare Brandi (1996, 379) argued, "a copy is a historical and aesthetic forgery; it can only be justified as a purely didactic or commemorative object, and cannot be substituted without causing historical and aesthetic damage to the original." Upon further analysis, it becomes clear that Brandi separated didactic and educationally driven reconstructions from other motivations. Even though reconstruction is utilized as an educational tool, it recalls the question: is it possible to reflect the original design intent, while concurrently avoiding the reproduction of impersonal and homogenized spaces?

In UNESCO's Operational Guidelines for the Implementation of the World Heritage Convention, it is indicated that "Reconstruction is acceptable only on the basis of complete and detailed documentation and to no extent on conjecture" (World Heritage Centre 2012, 22). In the case of modern residential architecture, this detailed documentation should not only cover its tangible aspects on form and function, but also its intangible characteristics, such as the original design logic. Nevertheless, it is usually impossible to include the designer or user into the entire process.

Intervention: Facadism

Facadism or "Facade Retention" is generally identified as a practice that maintains the exterior shell of the building while reconstructing or rebuilding its interior. In the re-use of the modern house, the internal structural elements, the walls, floors and roof, can be dismantled or demolished to adapt the building to its contemporary necessities or specifications. The modern house is designed in accordance with an individual unity, which is defined by Cesare Brandi as the combination of all the elements of an art object (Jokilehto 2009). This unity is situated between modernist features like cubic form, free plan, transparency, mass produced materials, and even furniture. The relation between interior and exterior, or shell and core, forms one of the basic precepts of the modernist design intent. Facade, as an extension of the interior, should not intervene with a different conservation method. Paul Goldberger (1985) underlined that "to save only the facade of a building is not to save its essence; it is to turn the building into a stage set, into a cute toy intended to make a skyscraper more palatable. And the street becomes a kind of Disneyland of false fronts."

In some cases, facadism intertwines with re-use. Villa Müller, designed by Adolf Loos, was transformed into a permanent exhibition hall presenting the house, and a Study and Documentation Centre of Loos. The original materials and structure were conserved to a large extent. The interior was altered due to changes in water and electric supply in some rooms. Re-functioning as an exhibition resulted in the transformation of a bathroom into an exhibition space. Public advertisement was organized to collect period elements and materials. Several lost pieces of the original furniture, carpets, and objets d'art, were reconstructed from existing documentation (The City of Prague Museum n.d.). These interventions did not create an arbitrary destruction or total alteration of the interior. In this way, facade retention and adaptive re-use can be seen as providing a balance between conservation, technical requirements, didactic value, and cost.

To summarize, facadism is not acceptable on the grounds of modern design logic. However, the concept is frequently legitimized by economic development, re-use facilities, and an increase in service quality, which responds to current programmatic requirements.

Means & Ends

The conservation of modern residential architecture has been developed in line with the geographical and conceptual expansion of cultural heritage. This expansion, from individual historic monuments to other built forms, resulted in the re-evaluation of the norms, ethics, and concepts of conservation. In line with this paradigm, the contradictive concepts this chapter is focused on are authenticity, musealization, reconstruction, and facadism. The main scope of this section is to highlight these controversial concepts, their differences, and their intersections.

Authenticity is a prevalent theoretical concept in the conservation field. It also appears at the core of discussions on reconstruction, musealization, and facadism. Besides their theoretical readings, these three concepts are also practical, and produce a re-interpretation of the built heritage. As a result, these concepts entirely differ from conservation with minimum intervention, and reinvent heritage by creating new meaning. Reconstruction, musealization, and facadism present a challenge between authenticity and the re-invention of what a place expresses. This can be exemplified by the transformation of a modern residential building into a museum. One of the main challenges in this practice is how to conserve the authentic plan or materials scheme, all while adapting the building for a new use. This new use calls for spatial and technical requirements for visitors. In this case, the necessities of musealization and material authenticity are contradicted. Authenticity plays an active role in directing the conservation criteria and principles for reconstruction, musealization, and facadism. In that context, the meaning and scope of authenticity becomes vitally important. In the late 20th century, this notion transcended its tangible expression and gained an intangible character which constitutes "…spiritual and intellectual richness for all humankind" (ICOMOS 1994), and ultimately corresponds to the essence of modern residential architecture; that is, the nature of modern living, the design intent of the architect, or the role of its users. In some of the cases related to the conservation of modern residential architecture, the immaterial aspects become superior to the material ones. However, this reasoning should not be used as a formula. This understanding was underlined in article 1.2 of the ICOMOS Charter (2003, 1), which said that the "Value and authenticity of architectural heritage cannot be based on fixed criteria because the respect due to all cultures also requires that its physical heritage be considered within the cultural context to which it belongs." Authenticity in the conservation of modern residential architecture has thus been but a pedestal phenomenon, since reconstruction, musealization,

and facadism respect both of its tangible and intangible dimensions in what can be understood as a balanced and conscientious way.

Reconstruction, musealization, and facadism are evaluated within key themes: reproduction, representation, and intervention. Musealization is grounded on the mechanism of representation, which uses aesthetical, social, and cultural artifacts as tools. The past, reconstructed by musealization, is not the original evidence, but a version of it. This version presents a particular preference on how the artifact is presented and which tools and sources are utilized in the musealization process. In representations of modern residential architecture, the first resource is the building itself. The formal characteristics of the modern house are not the only significant evidences determinant in representation; others include sociological input, and design doctrines. In that context, the significance of modern residential architecture gains new insight. The modern house becomes a resource for research, education, and exhibition.

For reconstruction, the main theme is considered a reproduction. To further explain, reconstruction is defined in the Burra Charter as "returning a place to a known earlier state" (1999). The earlier state is in this case formed by a process of rebuilding. When the documentary evidence is insufficient in the modern residential architecture, there appears a gap in interpretation. Bridging these gaps is necessarily a creative act (Stanley-Price 2009). Thus, the reconstruction does not have the same meaning as the original artifact. In that context, the reconstruction must not be considered as the revival of an original state, and instead must be viewed as a reproduction, or as a new state.

Facadism can be considered an expansive intervention. It damages the relation between exterior and interior, which is the essence of modern residential architecture. It is different from reconstruction in that facadism does not mean a return to an earlier state. Facadism instead offers new formal appearance inside the building. Both concepts are not acceptable for charter and legislation use, largely due to the perceived damage of spatial and temporal relation.

Reconstruction, musealization, and facadism do share one commonality: they all aim to produce long-lasting buildings. However, the problem is not only the prolonged decay and eventual destruction of these buildings; it is more philosophical in so far as we must determine whether a building continues to carry the same meaning, attempts to prolong its lifespan notwithstanding. In that context, how the interventions are implemented becomes of critical importance. The Modern house, produced by the meanings attached to it, has multiple values. These are intrinsic, extrinsic, and economic values, required for the inclusion of

socio-cultural strata, and for political and economic infrastructure. The Amsterdam Declaration (1975) established a model of integrated conservation, which incorporated the social, economic, administrative, and legal aspects of the built environment. This critical interpretation entails a multi-disciplinary approach that assumes the participation of conservation specialists and private and public actors to design a conservation process in an accurate and scientific way. Ned Kaufman (2004, 314) confirmed that "The difficulty is that the field increasingly defines professional competence in rather narrow terms that do not easily accommodate such big, emotional, and complex issues." Due to the superiority of design intent in the modern house, the inclusion of social aspects is an essential constituent in the conservation program.

Although the methods, tools, and objectives of reconstruction, musealization, and facadism are different, the conservation process can be seen as a combination of all three. Musealization can intersect with reconstruction, as is seen at the Frank Lloyd Wright Room exhibit at the Metropolitan Museum of Art. While preserving the room in the roof of museum, it was still (as mentioned) relocated by reconstruction.

The meanings and justifications of concepts are variable from building to building, country to country, and pace to pace. This natural diversity results in a challenge, namely, the difficulties that come with attempting to standardize the unique character of every work of modern residential architecture. The site-specific significance of each modern residential architectural piece demands an equally specific solution.

Finally, the familiarity with modern residential architecture, by way of its considerable quantity and its status as architecture of the recent past, conceals much of what can be called its heritage value (Burke 2007). The lack of recognition also influences their existence on the financial, political, and legislative stage. For these reasons, modern houses are demolished more often than their traditional counterparts. There is thus an urgent need to convey the significance of this particular type of architecture. A big influencer of this trend is globalization and its advancements in the areas of geographical and disciplinary networks. Conferences, seminars, architecture walks, visual and social media platforms, all are tools stimulating promotion and education, thereby drawing attention to these values. To put it succinctly, the conservation of modern residential architecture should expand its boundaries using the practicalities of multi-disciplinary expertise. It should exact the participation of diverse actors and international collaborators, and should promote site-specific legislation that focuses on sustainable and technological development. A comprehensive assessment, dependent upon

the setting of the architectural product, is a mandatory process and may reverse the pre-determined conservation principles, concepts, and ethics.

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CHAPTER TWO

INTEGRATION OF INTELLIGENT DATA IN HOUSING CONSERVATION

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Chapter Highlights

- This chapter will explore the utilization of intelligent data in housing conservation, and investigates each step of the workflow in detail. Modern data collection methods include photogrammetry and reality capture; cleaning, sorting, and transferring raw data; cross referencing data and digital modeling; and lastly, information management, interoperability, and data sharing.
- Although the primary benefit of intelligent data is its ability to streamline the creation of architectural documentation, Building Information Modeling (BIM) platforms simultaneously enable users to organize and analyse data in unexpected and useful ways. Some examples include conducting structural and energy analyses, estimating execution costs, preparing construction schedules, and coordinating teams on-site, etc.
- Advanced documentation techniques enabled the user to create accurate photo-realistic digital models of real-world built environments, tracking the environment's state-of-decay with precision, thereby ensuring objectivity in all future decision making. The graphical capabilities and comparison faculties of such systems enable authority groups to communicate with stakeholders and better illustrate what is being done, what needs to be done, and what will be done.
- Integrated systems are increasingly utilized by local and central authority groups due to a social increase in the demand for cultural

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