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Research Paper

A Critical Investigation of Priorities in Adaptive Reuse Theories within the Interior Architecture of Valuable Buildings: A Comparative Study based on the Nara Document Parameters

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Abstract
Changing and repurposing existing buildings for their continued use was quite common in the past and structurally safe buildings were adapted to meet new functions and needs. In modern conservation theory, Adaptive Reuse is an important means of preserving cultural heritage. The main question is what are the priorities and shortcomings of adaptive reuse theoretical references within interior architecture based on comparative study with Nara Document parameters. The research method of this study is qualitative, with logical argument as a strategy. The priorities were studied and then the most important weaknesses and drawbacks of these approaches to Adaptive Reuse were analyzed in a comparative study with the Nara Grid by 32 semi-structured interviews with experts in the fields of Architecture, Interior architecture and conservation. The results show four main Adaptive Reuse priorities extracted from the reviewed literature: Host Space Function, Programmatic Approach to New Use, Technical Requirements and Design-oriented strategies and solutions. These theoretical priorities do not negate each other; in fact, they are rather complementary. However, if one of them gains more importance in the process it can lead to many losses. of their most important disadvantages, the following are worth mentioning: A physical outlook and a lack of attention to intangible and soft values, a lack of attention to the meaning and characteristics of functions of the building in the past, ignoring the human presence and its needs, ignoring architectural details and interior architecture, lack of interdisciplinary research, and lack of adequate strategies in line with building values. It seems like the issues mentioned above could be avoided and redeemed through an emphasis in conservation policy on fixed feature spaces, semi-fixed feature spaces, and informal spaces in interior spaces, as well as considering human needs and social sciences in the redesign process, and following each priority and approach in the redesign process accordingly.

Keywords: *Adaptive Reuse, Valuable Buildings, Interior Architecture, Priorities, Nara Grid.*

1. INTRODUCTION

Changing and repurposing existing buildings for their continued use, has become increasingly important. The demolition and destruction of these buildings is not only harmful to the environment but also harmful to the local identity, cultural heritage and socio-economic values. In the past decades, interventions in existing buildings to preserve and sustain have become a creative challenge in the field of 1 (Powell, 1999; Schittich, 2003). The Adaptive Reuse of valuable buildings has been mentioned in international heritage conservation policy documents and charters as a recommended solution (ICOMOS, 2004; Jessen & Schneider, 2003; J. Jokilehto, 2007; Machado, 1976). Moreover, this type of reuse has been studied in related fields such as urban regeneration, engineering and recycling, sustainability, economics, management … etc. (Bullen & Love, 2010). Other terms such as "Remodeling", "Retrofitting", "Conversion", "Adaptation", "Reworking", "Rehabilitation" and "Refurbishment" have been used in reference to the concept of Ada0259se (Graeme Brooker & Stone, 2004; Giebeler et al., 2009; Habibi & Maghsoudi, 2011; Machado, 1976).

Adaptive Reuse is not an emerging phenomenon. In the Renaissance classical buildings were modified for new

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purposes and during the French revolution religious buildings were auctioned, sold off and altered for industrial or military purposes (Cunnington, 1988; Dubois, 1998; Falamaki, 2011; Linters, 2006). These interventions and modifications were however in many cases implemented with little regard to cultural purposes or to protect the building's value (Perez de Arce, 1978); the driving forces being essentially either functional or financial gain (Powell, 1999).

One of the few cases in which international conservation policy documents directly referred to Adaptive Reuse is article 5 in the Venice Charter: "The conservation of monuments is always facilitated by making use of them for some socially useful purpose. Such use is therefore desirable but it must not change the layout or decoration of the building. It is within these limits only that modifications demanded by a change of function should be envisaged and may be permitted." (ICOMOS, 2004).

During the last decades of 20th century, some of reputable architects like Carlo Scarpa, Raphael Moneo and Herzog & de Meuron were involved in some important Adaptive-Reuse projects as a design challenge. Will the reuse of any space, environment or historic site, which compies with the restoration of values established in the field of preservation and restoration, lead to their conservation? Due to negative responses of conservation experts to this question, this research investigates the reasons among theoretical references published after 1970s. To analyze the shortcomings of approaches in Adaptive Reuse in already existing valuable buildings, the following questions should be explored about: What are the priorities in the field of interior architecture in relation to the Adaptive Reuse of valuable buildings? What are their shortcomings and drawbacks? Which policies can be applied to address these? The approach of this study is qualitative with logical argument as a strategy. Logical argument as a suitable research strategy can evaluate conceptual frameworks that lead to the explanation of a wide range of facts (Groat & Wang, 2015).

The scope of this study and, consequently, the literature review, in terms of time is limited to the 1970s onwards; and in terms of subject, it is limited to literature on Adaptive Reuse in the field of architecture, specifically the field of interior architecture. In this research paper Interior Architecture is viewed as a layer of architecture in which one is in direct contact with the building. A dimension in architecture in which human behavior and activity in space is affected. Due to the widespread discussion of adaptive reuse, this research is focused on interior architecture. In other words, relation with neighbors, principles of façade regarding to adaptive reuse and context issues and etc. are out of the scope of this paper. After reviewing the history of Adaptive Reuse and defining its importance, theoretical sources on the subject of Adaptive Reuse were reviewed. Then, the most relevant topics in the reviewed literature were classified and four predominant approaches to Adaptive Reuse of valuable buildings were selected and evaluated. In the fifth paragraph of the Values and Authenticity section in the Nara Document on Authenticity it is mentioned that depending on the nature of the cultural heritage, its cultural context, and its evolution through time, authenticity judgments may be linked to the worth of a great variety of sources of information. It continues by naming these aspects, such as form and design, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling and outlines specific artistic, historic, social, and scientific dimensions. Van Balen (Van Balen, 2008) offers a conceptual framework called the Nara Grid which intends to make it applicable. This matrix has effectively helped rediscover different dimensions and aspects encompassing Adaptive Reuse. Then, as previously mentioned, the theoretical priorities of each expert were matched to their corresponding concepts on the Nara Grid through interviews. Finally, consequences and shortcomings were categorized as per suggested by experts and several policies and solutions were proposed to address them.

2. OBTAINING THE MAIN PRIORITIES FOR ADAPTIVE REUSE

As aforementioned, the repurposing of existing buildings is not an emerging phenomenon. In the past, structurally safe buildings were adapted to changing needs and functions. Since the 1970s, however, Adaptive Reuse has become an important issue for architectural and conservation research (S. Cantacuzino, 1975; Markus & Markus, 1979; National Trust for Historic Preservation, 1980).

After reviewing theoretical sources addressing Adaptive Reuse, it comes to attention that although generally viewed as an interdisciplinary concept (Cramer & Breitling, 2007; Giebeler et al., 2009; Rabun & Kelso, 2009), existing studies approach it from either a conservation and maintenance perspective (National Trust for Historic Preservation, 1980), an architectural (Jäger, 2012; Powell, 1999; Robert, 1989) or an engineering (Giebeler et al., 2009; Gorse & Highfield, 2009) perspective. Moreover, oftentimes their goal is not to reach an interdisciplinary approach (except for Cramer & Breitling (Cramer & Breitling, 2007)). This problem stems partly from the fact that the field of value and authenticity, which has been subject of much international research (Feilden, 2007; Frey, 1997; Jukka Jokilehto, 2006; Kerr, 2004; Mason, 2002), relies mostly on concepts from history, art history and archeology and therefore Adaptive Reuse is considered less of an interdisciplinary concept. By categorizing the extent to which topics are addressed, four dominant priorities were selected from studies: Host space functions, programmatic approach for new use, technical requirements, and design-oriented strategies and solutions. Perhaps one could fit the first two categories into one due to their similarities in covering the same subject matter: the function and purpose of space. The first is however concerned mainly with the function of the building, which is to be Adaptively Reused, and the second focuses on the activities taking place within the space, or the proposed activities for the building in

question. Regarding the third category, technical and physical requirements prevail over other concerns. Design-oriented solutions are also completely different from previously mentioned categories and focus mainly on the processes and strategies in redesigning to repurpose buildings. Even though design-oriented strategies in practice emphasize on the relationship between previous and new forms, only this approach considers non-physical and conceptual aspects in Adaptive Reuse.

2.1. Host Space Functions

The book "New Uses for Old Buildings" (S. Cantacuzino, 1975) was the first written text in which Adaptive Reuse was explicitly delved into. In 1975, the author wrote another book on this subject. Its Introduction focuses on the history of Adaptive Reuse and its impact on preservation followed by a selection of examples around the world arranged by their host spaces. Cantacuzino mentions eleven different functions and a possible guest activity for each: (1) Churches and Chapels, (2) Monastics and Religious Establishments, (3) Fortifications, gates and barracks, (4) town houses, country houses, outhouses and other ancillaries, (5) Schools, (6) Corn Exchanges, (7) Barns and Granaries, (8) Mills, (9) Malting and Breweries, (10) Warehouses and other industrials, (11) Pumping stations. Cantacuzino (Sherban Cantacuzino, 1989) complemented this fundamental book with another book in 1989 with a very similar structure, focusing on six functions that were further divided into seven sections: (1) Public Buildings, (2) Private Buildings, (3) Commercial Buildings, (4) Industrial Buildings, (5) Churches, (6) Rural Buildings. James Douglas is another author who has based his work on Adaptive Reuse on the host space functions and has focused on the opportunities and threats of Adaptive Reuse (Douglas, 2006). Several other studies have been conducted with the same perspective which have examined approaches in Adaptive Reuse and their opportunities in certain building types, such as religious buildings (Alavedra, 2007; Heritage, 2001; Morisset, Noppen, & Coomans, 2005), industrial buildings (Bordage, 2002; Henehan, 2003; Stratton, 2003) and residential buildings (Nichols & Adams, 2013; Van de Wiejer, 2012) Many other authors have followed this methodology, providing a preliminary study and organizing a few case studies according to the function of the building and host space (Cunnington, 1988; Latham, 2000). In addition, others have focused on the Adaptive Reuse of a particular type of building, such as a religious (Alavedra, 2007; Heritage, 2001; Morisset et al., 2005) or industrial (Bordage, 2002; Henehan, 2003; Stratton, 2003) buildings. In the section dedicated to this priority in Figure 1, two points are made clear. First, which buildings have attracted the most attention (for instance, industrial buildings, residential buildings and churches) and which were much less studied (for example, religious buildings other than churches, military buildings and commercial buildings). Until very recently in the past decades, most studies conducted on Adaptive Reuse corresponding to the host space as an Adaptive Reuse priority. However, it gradually lost its appeal due to its inefficiency in practice; one of the most important arguments being its lack of attention to the unique characteristics of each building.

2.2. Programmatic Approach for New Use

This approach aspires to prioritize necessities for new activities to take place and the interventions needed to realize it, rather than the preservation of the host building (Fisher, 1992; Powell, 1999). This means that a specific function or program is prioritized and chosen first, then it is implemented in an appropriate host building that is later designated. The literature on this concept is not very strong and rarely any studies have examined a specific program in Adaptive Reuse. Given the newfound attention to this approach by politicians and governments, development of research in this area is imperative. Some suggest that in addition to solving practical and functional issues, this approach could also mitigate and eliminate social issues and harm. For instance, issues such as providing access to housing for an aging population in the already existing fabric within cities are among topics studied by this approach.

As figure 1 depicts, housing, culture and education are programs which Adaptive Reuse has mostly tackled. Industrial, military and religious functions have not been as much in the spotlight, which is not surprising given that these programs often require special architectural specifications and are therefore usually placed in new buildings or modified buildings totally unlike their original shape and form.

2.3. Technical Requirements

Some sources have examined Adaptive Reuse as a technical issue and as a result have also written guides with the same technical perspective on how to adapt a building to host new functions. In 1987 High field published a short book titled "The Rehabilitation and Reuse of Old Buildings" in which he first discussed the benefits of reconstruction and then dedicated a chapter to technicalities such as improving fire resistance, temperature performance, building acoustics, moisture control and insulation, and density and decay of timber. Finally, he examined several case studies, which in practice is a description of them from a technical point of view (Highfield, 1987). In the next decade he published more studies following this concept (Gorse & Highfield, 2009). In addition, a large part of Douglas' work (Douglas, 2006) addresses the technical aspects of Adaptive Reuse. In sources with this outlook, although sometimes conservation issues are implicitly referred to, the host space or building is merely considered a shell or container carrying their goal functions within. Therefore, little attention is paid to the preservation of the building value.

In the past decades, ecological needs have posed more complex technical challenges to designers of recently adaptively reused spaces (Carswell, 2011). In all studies and literature dedicated to these issues, there is an emphasis on Adaptive Reuse being a sustainable process;

one of the consequences of the design world's ever-increasing concern over environmental issues is the abundance in theories and research on this issue (Gelfand & Duncan, 2011; Giebeler et al., 2009; Greenan, 2011; Rabun & Kelso, 2009). Even though the number of resources needed for Adaptive Reuse is far much less than a new construction, most authors studying technical requirements in Adaptive Reuse agree that historical buildings perform poorly in terms of energy efficiency. In this regard, as Giebeler et al. have mentioned, it must be noted that the technical requirements in this field are significantly different from a standard construction process (Giebeler et al., 2009).

Technical Requirements

Published Articles	Upgrade	
(Douglas,2006) (Highfield,1987) (Gorse&Highfield,2009) (Giebeler,Fisch,Krause,Musso,Petzinka,&Rudolphi,2009) (Rabun&Kelso,2009)	Structural Frames (Timber, Steel)	Load bearing Structures
(Rabun&Kelso,2009) (Giebeler,Fisch,Krause,Musso,Petzinka,&Rudolphi,2009) (Gorse&Highfield,2009) (Highfield,1987) (Douglas,2006)	Floors	
(Douglas,2006) (Giebeler,Fisch,Krause,Musso,Petzinka,&Rudolphi,2009) (Rabun&Kelso,2009)	Walls	
(Rabun&Kelso,2009) (Giebeler,Fisch,Krause,Musso,Petzinka,&Rudolphi,2009) (Douglas,2006)	Ceilings	
(Douglas,2006) (Gorse&Highfield,2009) (Rabun&Kelso,2009)	Foundations	
(Rabun&Kelso,2009) (Gorse&Highfield,2009)	Heavy-lifting	
(Gorse&Highfield,2009) (Highfield,1987)	Internal surfaces	Building Envelope
(Douglas,2006) (Gorse&Highfield,2009)	new floors	
(Gorse&Highfield,2009) (Highfield,1991)	Façade	
(Rabun&Kelso,2009) (Gorse&Highfield,2009) (Douglas,2006)	Accessibility and circulation	
(Highfield,1987) (Gorse&Highfield,2009) (Giebeler,Fisch,Krause,Musso,Petzinka,&Rudolphi,2009) (Rabun&Kelso,2009)	Fire-resistance	Comfort, Safety and Energy Efficiency
(Douglas,2006) (Highfield,1987) (Gorse&Highfield,2009) (Giebeler,Fisch,Krause,Musso,Petzinka,&Rudolphi,2009) (Rabun&Kelso,2009)	Thermal performance	
(Highfield,1987) (Gorse&Highfield,2009) (Giebeler,Fisch,Krause,Musso,Petzinka,&Rudolphi,2009)	Acoustic performance	
(Douglas,2006) (Highfield,1987) (Gorse&Highfield,2009) (Rabun&Kelso,2009)	Preventing moisture and dampness	
(Douglas,2006) (Rabun&Kelso,2009)	Indoor air quality	

Programmatic Approach

Published Articles	PROGRAM
(Powell,1999) (Latham,2000) (Cantacuzino,1975) (Fisher,1992) (Cantacuzino,1989)	Dwelling
(Powell,1999) (Latham,2000) (Fisher,1992)	Library
(Cantacuzino,1989) (Latham,2000) (Cantacuzino,1975) (Powell,1999)	Theatre
(Latham,2000) (Cantacuzino,1989)	Care
(Powell,1999) (Cantacuzino,1975) (Latham,2000) (Fisher,1992) (Cantacuzino,1989)	Education
(Powell,1999) (Cantacuzino,1975) (Latham,2000) (Cantacuzino,1989)	Retail
(Cantacuzino,1989) (Fisher,1992) (Latham,2000) (Cantacuzino,1975) (Powell,1999)	Office
(Latham,2000) (Cantacuzino,1975)	Leisure
(Powell,1999) (Cantacuzino,1975) (Latham,2000) (Fisher,1992) (Cantacuzino,1989)	Museum & Exhibition
(Cantacuzino,1989) (Fisher,1992) (Cantacuzino,1975)	Mixed-use development
(Latham,2000)	Industry

Host Space Function

Published Articles	TYPOLOGY	Category
(Latham,2000) (Douglas,2006) (Bordage & Faure, 2002) (Stratton,2000) (Henehan,Woodson,&Culbert,2004) (Cantacuzino,1989)	Factories	Industrial Buildings
(Cantacuzino,1975) (Latham,2000) (Douglas,2006) (Stratton,2000) (Henehan,Woodson,&Culbert,2004) (Cantacuzino,1989)	Warehouses	
(Cantacuzino,1975) (Cunnington,1988) (Latham,2000) (Douglas,2006) (Stratton,2000) (Cantacuzino,1989)	Mills	
(Latham,2000) (Cantacuzino,1989) (Cantacuzino,1975) (Cunnington,1988) (Stratton,2000)	Malting and Breweries	
(Cantacuzino,1975) (Cunnington,1988) (Latham,2000) (Douglas,2006) (Alavedra,2007) (Morisset,Noppen&Coomans,2005) (English Heritage,2003) (Cantacuzino,1989)	Churches	Religious Buildings
(Cantacuzino,1989) (Cantacuzino,1975)	Monasteries	
(Cantacuzino,1975) (Cantacuzino,1989)	Governmental Offices	Semipublic Buildings
(Douglas,2006)	Museums	
(Cantacuzino,1975) (Cunnington,1988) (Latham,2000) (Henehan,Woodson,&Culbert,2004) (Cantacuzino,1989) (English Heritage,2005)	Schools	
(Cantacuzino,1975) (Latham,2000) (Douglas,2006) (Cantacuzino,1989)	Hospitals	
(Cantacuzino,1989)	Courtrooms	
(Cunnington,1988) (Latham,2000) (Douglas,2006)	Offices	
(Latham,2000)	Libraries and Theatres	
(Cunnington,1988)	Hotels	
(Douglas,2006)	Post offices	
(Cantacuzino,1975) (Latham,2000) (Stratton,2000) (Cantacuzino,1989)	Railway Stations	
(Latham,2000) (Cantacuzino,1989)	Castles	Residential Buildings
(Cantacuzino,1989) (Latham,2000) (Cunnington,1988) (Cantacuzino,1975)	Country houses	
(Cunnington,1988) (Latham,2000) (Douglas,2006) (Cantacuzino,1989)	Farm houses	
(Cantacuzino,1975) (Cunnington,1988) (Latham,2000) (Cantacuzino,1989)	Town houses	
(Latham,2000) (Cantacuzino,1975)	Barracks and Fortresses	Military Buildings
(Latham,2000) (Henehan,Woodson,&Culbert,2004)	Department Stores	Commercial Buildings and Bazaars
(Cantacuzino,1989) (Cantacuzino,1975)	Currency Exchange	
(Cantacuzino,1989) (Cantacuzino,1989) (Latham,2000)	Banks and Bazaars	
(MacKeith,1986)	Passage	

Fig 1. Internal classifications of each priority: Host Space Function, Programmatic Approach for New Use and Technical Requirements (Plevoets & Van Cleempoel, 2012)

The chosen priorities, namely the host space function, programmatic approach for new use and technical requirements, are summarized in Figure 1. Theoretical issues prioritizing the host space function are further divided into industrial, religious, semi-public, residential, military and commercial buildings. Residential, library, theater, sanitary, educational programs as well as commercial, office, leisure, museum and exhibition, mixed-use and industrial programs were classified as matters concerning the programmatic approach for new use. Studies prioritizing technical requirements and solutions were also categorized further into load bearing structures and components, building envelope and comfort, safety and energy efficiency.

2.4. Design-oriented strategies and solutions

This priority differs from the previously discussed approaches and approximates architectural design. Most recent research on Adaptive Reuse in interior architecture often follows this approach (Graeme Brooker & Stone, 2018). The origins of this theoretical priority can be traced back to Machado's ideas. In "Architecture as a Palimpsest" Machado contemplates a set of writing metaphors to illustrate different ways of thinking in redesigning a building, such as rewriting, underlining, partially erasing, writing between the lines, etc. (Machado, 1976). He questions the long-accepted principle most studies until recently had focused on: the form-function principle, which the host space function as a principle focuses on. Instead, he emphasizes on a form-form approach. He believes this relationship to be of vital importance. He goes on to say that redesigning is not about form production, but rather the meaning of the past and the process of the architect or designer, which must be considered essential. He believes that in the redesigning process the past becomes more relevant because it is essentially what is replaced and transformed in the process. The past is drawn on a canvas which a successful design will take place. Therefore, the past transforms into a "package of sense" of composed meanings that is either accepted, preserved, altered, or rejected (Machado, 1976). This way Machado focuses on processes and strategies in Adaptive Reuse, and in his article titled "Architecture as a Palimpsest" he contemplates a series of metaphors to propose different ways of thinking about redesigning. Fred Scott's ideas are close to Machado's approach. Its motif being that redesigning is more like a duet than a solo. Rather than a work of art created with one's individual talent, it can be thought of as the art of response; this response can be achieved through creating harmony or, alternatively, generating a type of conscious conflict between the current and new condition (Scott, 2007).

Even though Robert does not explicitly refer to Machado's article, he does adopt the notion of the Palimpsest metaphor to explain the concept of transformation. He proposes seven concepts of transformation which he had identified in an outstanding collection of cases from ancient history to the post-modern era. These are: (1) building within, (2) building over, (3) building around, (4) building alongside, (5) recycling materials or vestiges, (6) adapting to a new function, and (7) building in the style of. Each of these concepts refers to a specific type of physical intervention (Robert, 1989). These ideas can also be observed in the writings of Brooker and Stone, who, like Robert, define various design strategies for Adaptive Reuse by examining case studies. They propose three strategies: (1) Intervention, (2) Insertion, and (3) installation (Graeme Brooker & Stone, 2004). Their approach also begins with physical intervention, however, they focus is on the "affective" aspect of each adaptation. They believe that by applying any of their proposed strategies, one can accept, change or reject the meaning of a building. Through an understanding and interpretation of the spirit of a specific place and the specific aspects of the context of the building, designers can intensify, change the space and even bring it back to life. The building is linked to its surrounding environment and the building's aspects are unique to its particular context. Designers could put these aspects to use as a basis for other layers in the design process (Graeme Brooker & Stone, 2008; Robert, 1989).

The application of categories and a covert concern over a sense of place can be observed in Jägers work; Jäger made use of three new categories: (1) Addition, (2) Transformation, and (3) Conversion (Jäger, 2012). Cramer and Breitling developed these ideas differently by differentiating between "design strategies" and "architectonic expressions". The common denominator in all these approaches lies not only in their practicality but also a poetic understanding of Adaptive Reuse, much more similar to Machado's ideas than any of the other mentioned approaches (Cramer & Breitling, 2007).

Figure 2 illustrates the strategies proposed by different authors. Each author's strategy is outlined in their designated column. Even though each author has their own individual description of their proposed Adaptive Reuse strategies, a marked similarity can be observed.

Based on the goal of this study, which is to find gaps in the priorities of Adaptive Reuse, research on this topic in the field of interior architecture were examined and four dominant priorities were identified: Host space functions, programmatic approach for new use, technical requirements and design-oriented solutions (figure 3).

The advantage of design-oriented solutions is that it establishes a connection between the previous three theoretical priorities and also takes non-physical aspects and the building concept into consideration. One must however bear in mind that in this approach bears the risk of the design idea presiding over technical requirements and goal programs, which could neglect many aspects of the host building and ultimately not achieve the goals of Adaptive Reuse.

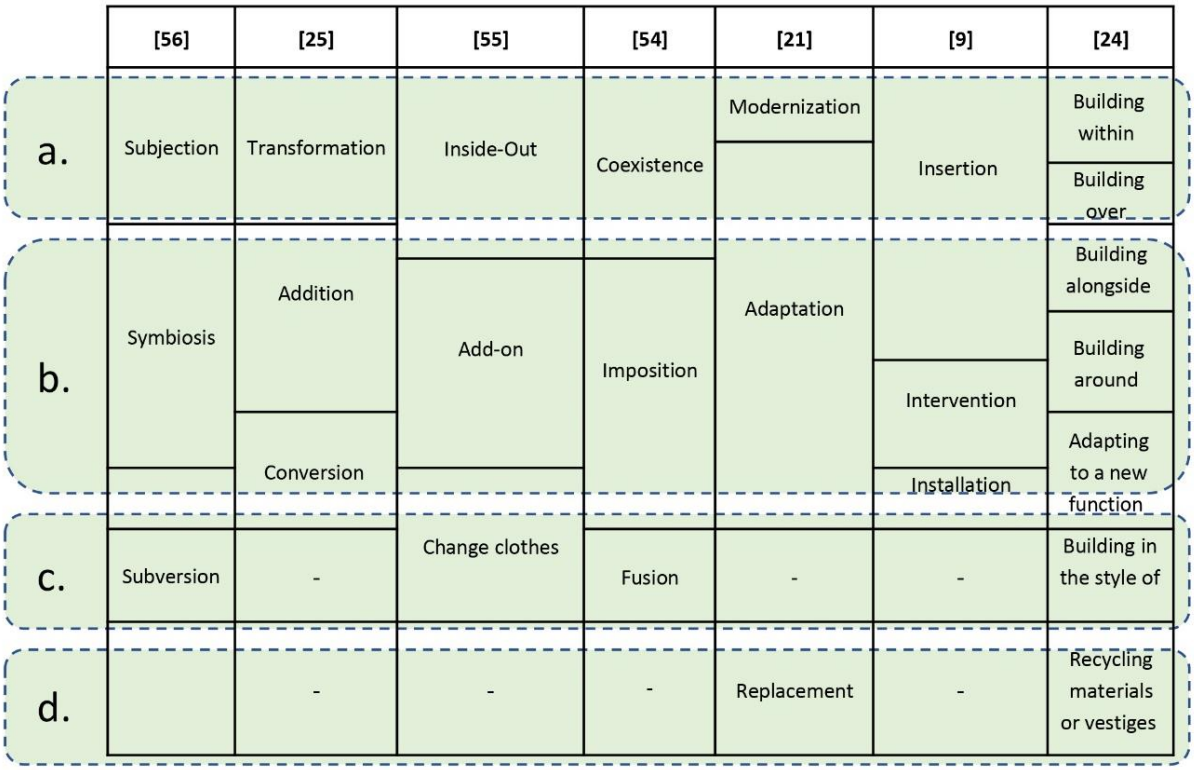

Fig 2. Design-based solutions for Adaptive Reuse in Interior Architecture

a- Interior spaces of the host building were changed. The host building's exterior was left intact.
b- Although some additions have been made, which have changed the appearance of the building in indoor spaces as well as the building's exterior, a clear difference between new and old can be seen.
c- New and old coexist and have achieved a balance. As a result, the building has changed considerably.
d- A completely physical outlook prevails. Building materials are even used in other constructions.

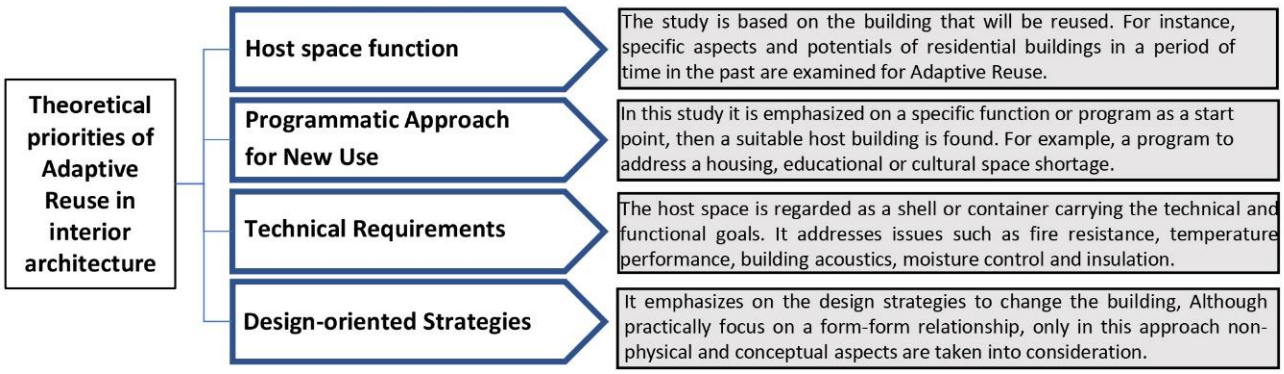

Fig 3. Summary of four dominant priorities

3. A COMPARATIVE STUDY WITH THE NARA GRID

As stated in the introduction, the Nara Document on Authenticity provided a list of certain parameters in the fifth paragraph of the Values and Authenticity Section (N. ICOMOS, 1994) which Van Balen (Van Balen, 2008) adapted in a conceptual framework called the "Nara Grid" (figure 4). This framework allows the recognition of many distinctive valuable dimensions and aspects in Adaptive Reuse. Nara Grid is a capable method in different purposes. For example, this is used in authenticity evaluation (Eshrati, Bahramjerdi, Mahabadi, & Azad, 2017).

For this comparative study, a semi-structured interview was conducted with a group of experts in three specific fields of expertise: Conservation, architecture, and interior architecture. These interviews were conducted independently from one another. The experts' profile; their styles and characteristics, were summarized in Table 1. After introducing and explaining each priority, the four chosen approaches were first placed on one their 24 corresponding spots in the Nara Grid, and then the focus of

that approach on that specific item was measured on a five-point Likert scale. Then, each expert generally explained the gaps they found in literature on Adaptive Reuse, their consequences, and their proposed solutions. These solutions were then placed in Table 2 after the elimination of cases outside the scope of interior architecture.

In Figure 5 the organization of the chosen priorities according to the Nara Grid in the field of Adaptive Reuse proposed by experts can be observed.

Aspects ↓ / Dimensions →	Artistic	Historic	Social	Scientific
Form and design				
Materials and substance				
Use and function				
Tradition, techniques, and workmanship				
Location and setting				
Spirit and feeling				

Fig 4. The Nara Grid based on the Nara Document on Authenticity (Van Balen, 2008)

Table 1. Experts' profile in the semi-structured interviews

Experience in Adaptive Reuse			Academic Background			Gender		Specialization	
Both	Professional Projects	Academia and Research	Ph.D	Master's	Bachelor's	Male	Female		
4	3	4	2	5	4	7	4	11	Conservationist
4	2	7	3	7	3	3	10	13	Architect
7	1	0	0	6	2	4	4	8	Interior Architect

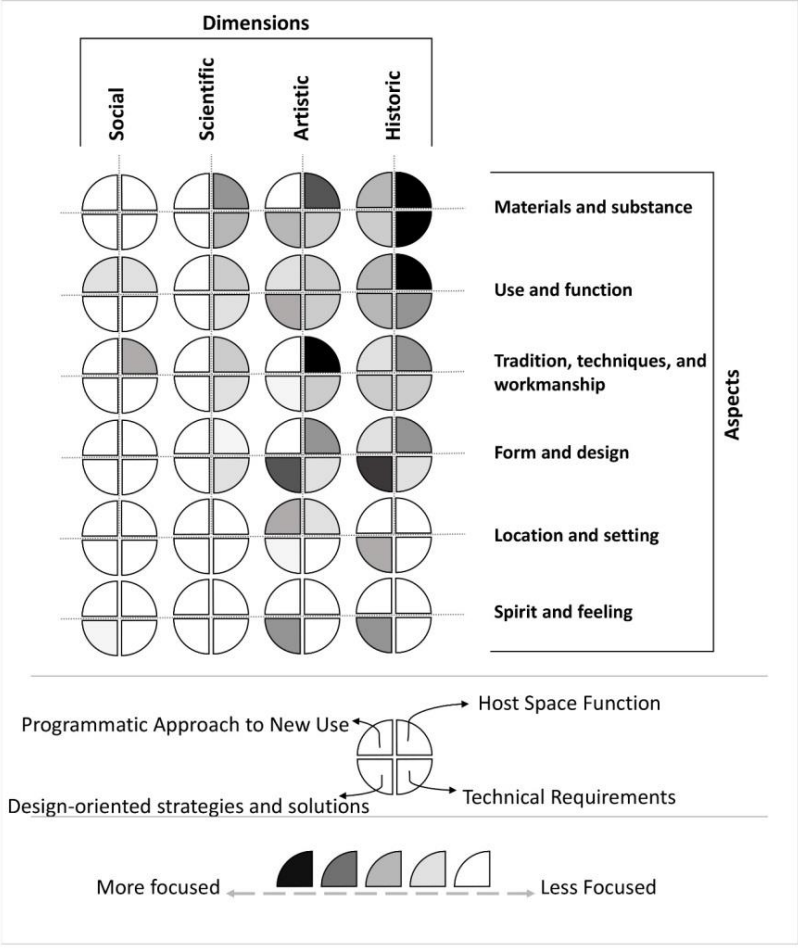

Fig 5. An evaluation of covered dimensions and aspects by priorities in Adaptive Reuse in Interior Architecture in a comparative study with the Nara Grid

After categorizing and coding the gathered information, the following items were identified as the gaps and drawbacks of research on Adaptive Reuse. Table 2 illustrates the consequences and possible policies to address these shortcomings:

- Most of approaches to the Adaptive Reuse of valuable buildings often look at it from a mere physical perspective. Even in design-oriented strategies, which approximate design language in the scale of a single building, the outlook is still merely physical and much less attention is paid to the characteristics, atmosphere and unique requirements of each space. In contrast, most sources cite the conservation of both tangible and intangible values to be the main argument of protection by communities, where the assessment of the level of conservation of values should serve as the basis of the Adaptive Reuse of valuable buildings. In Figure 5 one can clearly observe a decreasing amount of resources dedicated to these aspects; from "Materials and Substance" to "Spirit and Feeling".
- Despite the general consensus among experts that presence and the adaptive reuse of the building for new activities is the best way to conserve non-monumental national buildings, very limited parts of conversation documents and studies have addressed the procedures and necessities of human presence. Lack of attention to behavioral sciences and the impacts and necessities of human presence in an adaptively reused building seems to be one of the reasons for the failure of Adaptive Reuse in buildings.
- As Jaenen (Jaenen, 2008) has pointed out, despite their high importance in Adaptive Reuse priorities, architectural details and details in interior architecture are often ignored in the Nara Grid. Despite the fact that the atmosphere of a building is a gestalt of fixed feature spaces, semi-fixed feature spaces and informal spaces (Hall, 1966). "Decorations" are only considered important in buildings with historical value (heritage) and "technical details" are only paid attention to when repairing technical flaws or reinforcing the building. Despite many experts' opinion that indoor spaces should also be considered in the criteria of cultural heritage conservation, only fixed-featured spaces of a building are acknowledged in conservation criteria and policy in most countries.
- The generally empty spectrum of the social dimension observed in Figure 5 confirms the fact that the impact of the building meaning and purpose in Adaptive Reuse has not been researched enough. The meaning, social functions and aspects of life in the past in the building to be adaptively reused are generally ignored in research. One of the few studies dealing with this issue is a study by Brooker (G. Brooker, 2009). In this study the Adaptive Reuse of specific buildings, whose narrative in history and functions were not deemed acceptable by society, were examined and several design strategies were proposed to make use of them as a starting point for change. Categorized research in design-oriented priorities generally tends to offer a more in-depth analysis of the specific meanings and aspects of a building due to their emphasis on the unique aspects of each building.

Table 2. Summary of experts' opinions in an analysis of Adaptive Reuse priorities in Interior Architecture

Theoretical gaps/flaws	Consequences	Policies
A physical outlook and lack of attention to intangible values	Loss or neglect of certain values through Adaptive Reuse	A balanced focus and classifying values in proportion to the characteristics of the building itself.
Omitting the human presence, its necessities and its interactions with space	Incessant repetition and unnecessary changes due to irresponsive and lifeless spaces in the building despite efforts	Understanding the necessities of guest activities in terms of behavioral sciences and the needs of stakeholders before redesigning.
Ignoring architectural details and interior architecture	Loss of initial atmosphere in the building Disregarding the building's history Damaging decorations and details in indoor spaces in the building	Paying attention to scales in interior architecture, especially to semi-fixed feature spaces and informal spaces.
Lack of interdisciplinary research	A partial and consequential outlook with a loss of values as a repercussion, affecting the redesign process, resulting in a loss of teamwork and weakened roles in each discipline	A holistic approach and developing a conceptual framework in redesign with related disciplines involved.
Disregarding past building meanings	Lack of a flow of life in the building as previously planned Lack of employability and development of building values	Social studies on the past life of the building and its proposed future
Lack of attention to soft values	Historical, sociological, psychological, artistic, cultural, moral, and religious aspects are often overlooked in buildings that are not very old.	The recognition of values is not limited to historical buildings and monuments. Understanding values as potentials for a relative advantage minimizes the risk of them being ignored.

A simultaneous focus on the above-mentioned policies and an integrated approach to the mentioned priorities based on each building's values can help promote the theoretical literature of Adaptive Reuse in interior architecture in order to protect building values and their development in the redesign process.

4. CONCLUSION

The repurposing of existing buildings is not a new phenomenon. In the past, structurally safe buildings were constantly adapted to new needs and functions. In modern conservation theory, Adaptive Reuse is considered one of the most important solutions to preserve values. The various approaches in Adaptive Reuse`s theoretical references within the interior architecture boundaries (the building and inside layers) can be divided into four dominant theoretical priorities: host space functions, programmatic approach for new use, technical requirements, and design-oriented solutions. These approaches to Adaptive Reuse were analyzed in a comparative study with the Nara Grid parameters by 32 semi-structured interviews with experts in the fields of Architecture, Interior architecture and conservation.

After coding and categorizing the gathered information, this was identified that it is important to follow the structure and sequence of each approach in the redesign process; otherwise, values will ultimately not be conserved and much potential will be neglected. Also, these theoretical priorities do not negate each other; in fact, they are rather complementary. However, if one of them gains more importance in the process it can lead to many disadvantages. Generally, their most important disadvantages are: A physical outlook and a lack of attention to intangible and soft values, a lack of attention to the meaning and functions of the building in the past, ignoring the human presence and its needs, and ignoring architectural details and interior architecture.

Based on the policies summarized in Table 2, different solutions were suggested according to the characteristics of the host building, programmatic approach for new use, technical requirements, and design-based solutions regarding the specific time and place for the Adaptive Reuse of a building. The following points could help largely to eliminate the shortcomings of Adaptive Reuse: (1) Recognizing fixed, semi-fixed feature spaces and informal spaces of indoor spaces in conservation criteria, (2) Considering human needs and social sciences in the redesign process, (3) finding the appropriate timing and combination of theoretical priorities applied in the redesign process.

To future researches, it is suggested to study Adaptive Reuse from the perspective of the social and behavioral sciences to be able to examine the necessities and consequences of human presence in a space.

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