

Conservation and Adaptation for Medieval Castles: The Case of Messner Mountain Museums

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Received: 05 June 2022, Accepted: 27 September 2022, Published online: 27 October 2022

Abstract

In international conservation documents, adaptation is considered an important conservation process for culturally important places. It is especially important when the cultural context changes, as is the case with medieval castles, many of which were altered or built for military and domestic use in the Middle Ages. Medieval castles which are no longer used for their initial functions, are mostly non-functional today, and non-functional buildings often disintegrate into nature and disappear in time. Therefore, maintaining their relevance and cultural significance depends on appropriate adaptation strategies. When adapting a historic building, it is essential to design for the current use and needs, referring to conservation principles. It is also important to blend cultural heritage consciousness with creativity, and this can be achieved by balancing conservation and design practices. Therefore, in addition to design parameters, characteristics of the existing building should be meticulously analysed, and design concepts should be predicated on sustaining the existing values and meanings while adding contemporary ones. It is the purpose of this research to discuss and contribute to the theory of adaptation regarding medieval castle conversions by analysing three related case studies from Northern Italy. The findings lead to the proposal of a diagram, the focus of which is on the conceptual parameters of the multi-dimensional theory of adaptive (re)use, to be used for the design process of historic buildings.

Keywords

medieval castle, adaptation, adaptive reuse, architectural conservation, Messner Mountain Museums

1 Introduction

Medieval castles are both military and domestic establishments, many of which were built, formed or substantially changed during the Middle Ages. Today, these castles bear witness to their own and the common past by displaying former economic, social and cultural structures (Petre, 2010). As military technology improved, castles had to be reinforced and developed in height and size (Lepage, 2002) and changed in form and structure. Because of these advancements in warfare, some were partially conserved, while others were destroyed or abandoned (Povilaitytė, 2016). Although many castles are no longer in existence, many still survive and have been restored, modernized, reconstructed or adapted, or lie in ruins (Lepage, 2002). Fortified architecture has different characteristics and states of conservation. Nevertheless, these multi-layered structures are primarily in ruins, and often are recognized in this state as symbols of past conflicts and warfare. Today, castles are no longer used for their initial functions. This

could be due to diminishing levels of violence and war, or as Rizzi (2007) says, they became obsolete because of the development of military technology. In either instance, adaptation is one of the most appropriate options to continue their survival, because non-functional buildings often disintegrate into nature and disappear.

Adaptation refers to the (re)functioning of existing buildings, whether historic or not, in order to conform to current conditions. Particularly for historic buildings, during an adaptation the aim is to create harmony between existing characteristics and new interventions. According to the Burra Charter, adaptation is one of the conservation processes for culturally significant places. Notably, when the cultural context has changed -as is the case with medieval castles- adaptation that encompasses the introduction of additions, changes, new units and contemporary uses, is recommended. However, these adaptations should be distinguishable whilst having respect for and minimum

impact on cultural significance (Australia ICOMOS, 2013). While refunctioning a historic building, it is essential to design for the new use and needs by referring to conservation principles. It is also important to blend historical awareness with creativity. This can be achieved by balancing conservation principles and design approaches. Therefore, in addition to design parameters, characteristics of the existing building should be meticulously analysed, and design concepts should be predicated on sustaining the existing values, meanings, and circumstances, while adding contemporary ones.

This article will focus on the conservation and adaptation of medieval castles by emphasizing the mutual relationships of conservation and design. Three castle conversions of the Messner Mountain Museums have been selected as case studies to discuss the various theories of adaptation and the principles of castle conservation. Although in different conservation states, they were built in the same era with the same functions, are located in the same geographical area, won architectural awards, and were converted into similar functions by the same proprietor, but by different architects with varying concepts of design. These ex-castles-new-mountain-museums will be analysed in the context of adaptation approaches and conservation principles. Keeping Ambrogio Annoni's concept of *caso per caso* (case by case) in mind, these three examples are used here to contribute to the literature concerning the practice of adaptation and conservation for medieval castles. The aim is also to introduce a diagram to be used when determining the design concept for an existing building.

1.1 Methodology

In this study, qualitative analysis was performed using deductive research methodology, in which the theory of adaptation was evaluated through three case studies of medieval castles to verify and re-discover the approaches. First of all, the theoretical information was compiled from academic publications and categorized. This research was supported by the literature review on the conservation of derelict medieval castles. Secondly, a field survey was done on the three castle conversions of the Messner Mountain Museums. These on-site observations were reinforced by literature research in Italian, German and English. Thirdly, the conservation and design approaches of the case studies were compared and integrated with the literature review with the concept of *palimpsest* (Machado, 1976; Plevoets and Van Cleempoel, 2019) and the concept of *contrast*. Lastly, the discussions and findings were identified to

contribute to the theory of adaptation and conservation. The findings also lead to the proposal of a diagram for the design process of historic buildings.

2 Literature review

2.1 Conservation of medieval castles and fortifications

The term medieval castle signifies a military and domestic complex, the majority of which were formed, changed or built during the Middle Ages, defined as an era between the 6th and 15th centuries. During this time castles, familiarized by the Normans as an indication of their feudal power (Wheatley, 2001), had come to dominate the Western landscape. In general, the fortified complex was a place to accommodate the lord and his community and defend and safeguard his land and property (Lepage, 2002).

Although each medieval castle is different due to the topography of the land, materials used, period, intention, fortune and rank of the owners, their prevailing utilization strategies were to provide a commanding position, give protection and create a barrier, provide flanking, allow depth and maintain deterrence (ICOFORT, 2021). They also have common features such as giving accommodation and a place to store supplies and for worship, as well as providing active and passive defence, and having communication and observation tools (Lepage, 2002). In this respect, Aelred of Rievaulx defines a castle as consisting of three main elements: a wall, a ditch and a tower (Wheatley, 2001). To clarify, medieval castles in Europe were generally formed using defensive architectural elements such as fortification walls (inner and outer), towers (defensive, gate and bell towers), bastions, moats, drawbridges, baileys (inner and outer), keeps, dungeons, portcullises, and machicolations, as well as living units and auxiliary units such as chapels, kitchens, storehouses and stables. In fact, castles were built for both military and domestic purposes until the Renaissance, during which the two of architecture diverged from each other. After that, military establishments often became forts under a monarch, and domestic buildings became manors, mansions or unfortified palaces (Augustyn, 2021).

Conserving cultural heritage is based on the values assigned to it. The more truthful and credible sources of information are, the better the values are understood (ICOMOS, 1994). Therefore, integrity and authenticity are essential for assessing the significance of cultural heritage. Integrity is the level of unity and entirety of the cultural heritage and its features. In order to analyse the level of integrity, it is necessary to assess to which extent all

cultural heritage attributes express the values, adequately ensure the representation of the unity, and suffer from negative effects of neglect and development (UNESCO, 2021). On the other hand, authenticity is the measure of how truthful the unity of creativity and realization is, and how the work has been affected by time (Jokilehto, 1999). According to Mattinen, authenticity can be met with unchanging features of the built heritage creating the original atmosphere (Jokilehto, 1999; Mattinen, 1997). For determining all forms of authenticity of a cultural heritage, the comprehension and knowledge of information resources and the meaning of the original and ensuing cultural heritage features are fundamental (ICOMOS, 1994). The sources of information involve substance and materials, design and form, function and use, techniques, traditions, setting and location, feeling, spirit and other external and internal elements (ICOMOS, 1994). The characteristics of resources make the elaboration of not only the tangible but also intangible attributes of cultural heritage possible.

Monumental buildings mostly take a place in people's minds not only with their physical attributes, but also change in their form and function over time. They also sustain their existence and meaning through literature, art, and music as part of the cultural landscape. Even though they have become ruins, they maintain their identity and meaning (Kealy, 2017). From this point of view, castles and fortifications present essential *technical/architectural values* by incorporating specific offensive/defensive technologies; they also have *cultural landscape values* by illustrating the relationship between natural and human-made attack/defence systems, *geographical/territorial values* by being a part of territorial military organizations, *strategic values* by being home to strategic military decisions, *anthropological/human values* by providing protection whilst being the site of conflicts, *identity/memory/educational values* by appearing in the collective memory, *historic values* by embodying past attitudes and world views, and *social/economic values* through adaptations and upgrades (ICOFORT, 2021).

Since Viollet-le-Duc's pioneering restoration work for the fortifications of Carcassone in a stylistic manner, and Ruskin's romantic considerations concerning historical artefacts, scientific restoration and conservation paradigms for historic buildings have developed reflecting the changing social, cultural, political, physical and economic circumstances. In this sense, the conservation of castles and fortifications has shaped the monumental and, later, architectural conservation principles. Today, architectural

conservation has become an integrated, multi-disciplinary and international field. The institutional structure started with ICOMOS in 1965, soon after the Second International Congress of Architects and Technicians of Historic Monuments where the Venice Charter was constituted in 1964 (Jokilehto, 1999). ICOFORT is an ICOMOS International Scientific Committee focused on fortifications, military heritage, and their conservation. Since 2005, ICOFORT has promoted the awareness, conservation, and maintenance of military heritage, advising UNESCO World Heritage, and preparing related conservation documents (ICOFORT, online). ICOFORT's recently published *ICOMOS Guidelines on Fortifications and Military Heritage* presents these ideas and fundamental principles regarding the conservation of military heritage by referring to former conservation documents¹.

According to the ICOFORT's ICOMOS Guidelines (2021), castles and fortifications are parts of territorial military systems with spatial, functional and stratigraphic complexity. Therefore, they require multi-disciplinary, transnational and holistic research and decisions. These fortifications were designed to be closed structures to provide protection from attacks. However, today their accessibility must be enhanced in order to integrate them into contemporary life. They are important in the collective memory and cultural identity of specific groups. Thus, it is essential to interpret their values consensually to avoid excluding or dominating certain sensitivities. Interventions should be evaluated on a case-by-case basis and be compatible with the tangible and intangible characteristics of military heritage, considering durability and safety requirements in compliance with the international conservation documents. Traces of destructive historical events on military heritage should be conserved rather than repaired. Materials and techniques used for structural consolidation are preferred to have minimal impact. New additions and interventions should be aesthetically, mechanically and functionally suitable and not harm the legibility of the building's multilayeredness (ICOFORT, 2021).

There is no doubt that, like any other cultural property, every castle has different characteristics and states of

¹ These documents are Athens Charter, Venice Charter, Burra Charter, Washington Charter, Charter for the Protection and Management of the Archaeological Heritage, Nara Document on Authenticity, International Cultural Tourism Charter, Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage, "Baños de la Encina" Charter, Charter on Cultural Routes, Charter for the Interpretation and Presentation of Cultural Heritage Sites, The Quebec Declaration, Valletta Principles, Florence Declaration (ICOFORT, 2021).

conservation. As military technology advanced, fortifications were formed, destroyed, and reconstructed. Today, some are partially conserved while some are destroyed or abandoned (Povilaitytė, 2016). Despite the fact that many castles have been destroyed, many others still survive, some in ruins, others restored, modernized, reconstructed or adapted (Lepage, 2002). Nevertheless, these multilayered structures are mostly in ruins, and this is widely accepted because they are symbols of past conflict and warfare.

Ruins are fragmented remains of human-made constructions which surrender to the effects of time, nature, climate, history and culture. They have symbolic value because they signify the continuity of life (Ginsberg, 2004). They stir strong emotions in societies because of the sense of place, and the secrets and stories within them, their link to former times (White, 2007), and because they ensure tangible connections between humans and nature (Stone, 2020). Ruins can be designated as follows: *picturesque display*, *conservation as it is for testimony*, *conservation as it is with effects of nature*, *intentional ruination*, *restoration to obtain wholeness*, *anastylosis*, *reconstruction*, *replication*, *benign neglect*² and *managed decline*³ (White, 2007). According to Ginsberg (2004), *building on*, *building with*, or *rebuilding* are means to bring ruins into the future. Although his suggestion is to conserve the ruin as it is in association with contemporary life, without imposing its forms but pursuing its targets and methodologies with respect to the ruin, these contemporary interventions are the means to illustrate the past to the future generations, in both creativity and conservation (Ginsberg, 2004).

An analysis of several examples in Europe shows that castles in ruin are converted by using strategies such as conserving them as they are while taking measures for durability and safety (Šalek Castle), protecting them under enclosures or shelters (Andraz Castle), enhancing their accessibility by installing walking paths and viewing terraces (Monteregioni Town Walls), restoring them with contemporary techniques and materials (Reichenberg Tower), partially reconstructing them (Spish Castle), integrating them with nature (Sitno Castle), revitalizing them with technological additions (Trsatska Gradina), and reusing them for different functions. These functions can be

for recreational/cultural purposes, such as archaeological parks (Archaeological Park of Poggibonsi), museums (Doria's Castle), sets for cultural events (Old Castle Celje), art installations/art performances (Klenová Castle), film sets (Potštejn Castle), thematic parks (Zumelle Castle) and stops for trekking routes (Šalek Castle), as well as for educational purposes (Bečov Castle), residential purposes (Castle of Sant'Ambrogio di Torino) and commercial purposes (Velenje Castle) (Soldano et al., 2017).

On the other hand, the adaptation of military heritage is often highly recommended because their original functions are normally obsolete. However, this reuse strategy must be compatible and sustainable, and not cause harm to authenticity and integrity. This strategy is promoted to embrace all communities, to spread knowledge about history, technology, science, and to transmit messages for peace, acceptance and inclusiveness (ICOFORT, 2021).

Conservation means to take actions for getting decay under control and managing the change in flux (Feilden, 2003). In other words, it is the process of minimum intervention and management of change in order to retain the significance of cultural heritage (Evans, 2014). The purpose of conservation is to care for, reveal and maintain the tangible and intangible values, and promote the meaning and uses of cultural heritage for the benefit of present and future generations. Its degree can vary from preservation (through maintenance, stabilization and/or repair), to restoration (through reinstatement, reassembly and/or removal), from reconstruction to adaptation (ICOMOS New Zealand, 2010). Since Ruskin and Brandi, architectural conservation theory is based on the notion of truth and the sub notions of universality, reversibility and objectivity. However, recently, these notions are discussed in the light of contemporary theories that exchange truth for use, function, and value of cultural heritage. This social turn/subjective approach, defined as functional conservation, is the common characteristic of contemporary theories (Muñoz-Viñas, 2002). In this case, adaptation of cultural heritage has also come into prominence.

2.2 Theory of adaptation

Adaptation is a process of making an existing structure, historic or not, comply with contemporary conditions. During this process, not only the function of the existing structure changes, but also its physical integrity. Machado (1976) suggests focusing on the relationship of the existing and the new in a formal rather than functional aspect. He uses the notion of *remodeling*, signifying the "formal intervention

² An approach that allows ruins to decline in managed manner. Its degree is between managed decline and planned ruination (White, 2007).

³ An action plan which lets ruins safely follow their natural way to decay (White, 2007).

on existing form", rather than other related terms such as adaptive reuse, architectural recycling or retrofitting, and likewise rather than the clusters of different terms such as insertion, addition, deletion, subtraction, transformation, reproduction, invention and derivation. He states that when a building is refunctioned, different interpretations ensue. In this sense, remodeling turns into an approach for formal interpretation (Machado, 1976).

Change is inevitable for progress, but it must be managed. Converting an existing structure means finding a balance between past and present, while involving the traces of the past and the trends of the present while understanding that the present will be the past in the future. Therefore, one can say that it combines both conservation and architectural design. Despite Machado's anticipant theoretical determination on remodeling, the alteration of existing buildings both in form and function shapes approaches in adaptation theory. Plevoets and Van Cleempoel (2019) classified these approaches into five groups: *typological*, *architectural*, *programmatic*, *technical* and *interior*. The *typological* approach deals with pristine typologies of existing buildings; the *architectural* focuses on different design strategies of integrating new elements into the existing structure; the *technical* searches for technological solutions in the context of energy efficiency and sustainability; the *programmatic* pays attention to the new functions rather than existing ones, and the *interior* is related to interior design solutions and interventions. They base particularly the *architectural approaches* on the metaphor of the *palimpsest* discussed by Machado in his early publication (Plevoets and Van Cleempoel, 2019). Machado links remodeling to rewriting in the context of this metaphor:

"The past provides the already written, the marked 'canvas' on which each successive remodeling will find its own place. Thus, the past becomes a 'package of sense', of built-up meaning to be accepted (maintained), transformed, or suppressed (refused)" (Machado, 1976:p.49).

Plevoets and Van Cleempoel (2019) mention that the architectural interventions based on Machado's concept of the palimpsest were analysed by different scholars like Robert (1989), Cramer and Breitling (2007), Jäger (2010), Brooker (2017), and Brooker and Stone (2018). Robert focuses much more on the physical aspects of these interventions by creating classifications: *building over*, *building within*, *building alongside*, *building around*, *recycling materials or remains*, *giving new function*, *building in the style of* (Plevoets and Van Cleempoel, 2019; Robert, 1989). Cramer and Breitling suggest three principles for adapting

existing buildings: *defining an appropriate function*, *doing interventions sensitively*, and *constructing extensions or additions for contemporary requirements*. According to them, *corrective maintenance*, *adaptation*, *modernization* and *replacement* are design strategies for existing buildings depending on the degree of the alterations and interventions; on the other hand, *unification*, *correspondence*, *fragmentation*, *delineation* and *junction* express the relationship between the old and the new (Cramer and Breitling, 2007). Jäger (2010) uses *addition* for merging new components, *transformation* for changing the form, appearance and structure of existing buildings, and *conversion* for adapting a new use to obsolete buildings. The eight strategies offered by Brooker (2017) are *reprogramming* to repurpose the existing structure for a new use, *narrative* to enhance the storytelling possibilities of the existing structure, *artifice* to craft or assemble the existing structure, *intervention* to integrate the new into the old in a distinguishable manner, *installation* to place non-site-specific elements for temporary purposes, *insertion* to place site-specific elements fitting the existing structure, *superuse* to add recycled and upcycled materials and *on/off site* to use prefabrication elements. Plevoets and Van Cleempoel (2019) add three different terms combining physical attributes and aesthetic balance: *aemulatio*, the fusion of the old and the new; *facadism*, dealing with façade but focusing on its contrast between old and new, and *ruination*, protecting its crumbling features.

Another approach to evaluating the formal aspect of adaptation is the dramatic architectural composition between the existing and the new based on the concept of *contrast*. Starting from the beginning of the twentieth century, the idea of contrast was emphasized by the avant-garde modern and its repudiative attitude towards traditional architecture, Alois Riegl's determination of the contradictory sides of heritage values, Camillo Boito's intermediary principles between restoration and anti-restoration movements, the Athens Charter, and the Venice Charter. However, according to de Solà-Morales Rubió (1985), the idea of contrast was the zeitgeist of the modernist era; and today, the relationship between the old and the new is set on understanding the existing structure and the idea of *analogy* based on the comparison of differences and similarities. Even so, some scholars still embrace the idea of contrast, scholars like Bloszies (2012), who argues that architects always do consider contrast, but its degree can range from *extreme* to *restrained* to *referential*. Analysing the protagonist examples in the historical

context, starting with the Castelvecchio restoration by Carlo Scarpa in the 1960s, Cramer and Breitling define the design strategies in existing buildings chronologically as *fragmentation, continuity, as found, and contrasting*. They argue, however, that today the possibilities of interventions on existing buildings shift between *conformity* and *contrast* (Cramer and Breitling, 2007). Tyler et al. (2009) also refer to the relationship between the past and the present as *contrasting, matching* and *compatibility*, but this relationship should be identified with regards to the context of time and place. The respect to context is to understand and interpret the spirit of place and time, and creativity should be blended with this process.

3 Case studies: from ruinous castles to the Messner Mountain Museums

Reinhold Messner, a prominent mountaineer, established and runs a group of six museums called the "Messner Mountain Museums" situated in the Dolomites, Italy. The first museum, Curiosa, was opened in a flea hut in Sulden in 1993. Although Curiosa is no longer used, it inspired the creation of a network of museums devoted to the world's mountains. Today there are six museums, established in different years but all devoted to the various aspects of mountains and mountaineering. They are located in Belluno and South Tyrol, mostly at an altitude of over 2000 m above sea level. Three of them are castle conversions (Firmiano, Juval and Ripa), one is a military base conversion (Dolomites), another one is a farmhouse extension (Ortles), and the last one is a new design by Zaha Hadid Architects, built at the peak of Kronplatz (Corones). Messner preferred adapting existing buildings, especially castles, rather than building new museums, because of their unique locations and the difficulties of getting permissions for new constructions at that altitude (Schlorhauser, 2008). In 2018, the series of these museums were awarded the Andrea Palladio Prize Italy (Dedalo Minosse International Prize, online).

3.1 Firmiano: the concept of reversibility and suspension

Burg Sigmundskron, or in other words Castel Firmiano, is an important historical, political, and visual landmark on the cultural landscape of South Tyrol (Chiorino, 2016). This stronghold, one of the region's earliest examples of fortified structures, is located in the southwest of Bozen/Bolzano, on the porphyry hills of Mitterberg, with a view

of the Texel and Schlern mountains and the junction of Eisack and Etsch river basins (MMM (a), online).

The first known records from the 10th century suggest that the name of the settlement was Formicaria, later known as Formigar, Firmian and Sigmundskron, respectively (Messner, 2016). Since the 11th century the castle changed owners several times. One of the influential owners of the castle was Archduke Sigmund, who made major interventions by transforming it into a defensive fortress with the latest technology and changing its name to Sigmundskron. Today most of the castle's remnants are from this period. Only the small part of the former premises at high level, known as the chapel, was built before him, and can be still seen today (MMM (a), online). This settlement also has political-symbolic value for being the location of the call for autonomy during the 1957 protests. In the 1990s, the ruin was bought by the Autonomous Province Bozen and was awarded to Messner in 2003 to run the mountain museum (Messner, 2016) for thirty years (Waiz, 2009).

Museum Firmiano is dedicated to human's enduring fascination with mountains (MMM (a), online), and is situated on the premises of Sigmundskron Castle. This museum also houses the headquarters of the Messner Mountain Museums since it opened in 2006. Paintings, sculptures, photographs and art installations about mountains and mountain cultures around the world are presented alongside the ruins of this ex-fortress.

The architect of this museum, which was designed between 2001 and 2003 and implemented between 2003 and 2006, is a local architect, Werner Tscholl. His main idea was to conserve the ruinous condition of the premises with minimal interventions and minor additions (Fig. 1; Özmen, 2022a). He considered three layers together: the museum, the castle, and the new architecture (Messner, 2016; Mulazzani, 2013). On that account, he set up some conservation and design principles. First, the form, material and structure of the fortification were carefully analysed (Schlorhauser, 2008), and minimum conservative treatments were made through strengthening and cleaning the existing structure (Mulazzani, 2013) to protect them against further deterioration (Messner, 2016). Secondly, all interventions and additions were made to be reversible and recognizable. Except for the new entrance building in steel, all additions were integrated into the gaps of existing buildings. Here, self-supporting black steel structures were suspended from trusses and detached from existing walls, so they could be removed easily in the future. Untreated mesh sided and

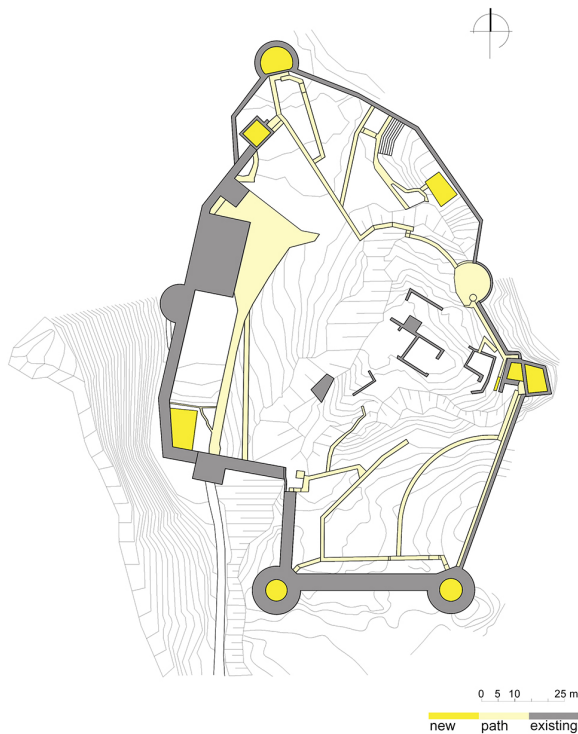


Fig. 1 Schematic representation of the existing and the new in Firmiano (Özmen, 2022a)

steel framed walking paths, integrated neither apart nor joined to the fortifications, connect these visiting spaces. All other technical requirements were installed out of sight by means of new interventions. Thirdly, only steel⁴ was used as the main construction material for new interventions to create a contrast between the existing and the contemporary. The existing material of the castle is porphyry stone (Schlorhauser, 2008) which is the local material of the hilltop where the castle is located, and this singularity in the sense of materiality inspired the concept of new material use (Bricolo, 2016). However, steel was used in different areas with different kinds of finishing textures such as untreated, exposed, rusted and matt waxed; as different building elements such as structural frames, staircases, railings, parapets, and cladding; and in different forms such as profile, pressed sheet, and mesh. This provided many possibilities to create compatible and various solutions. Moreover, glass was used to indicate the relationship between old stone and new steel (Pivetta, 2012). Therefore, not the glass itself but the effect of its transparency was visible. And lastly,

⁴ In his interview, Tscholl mentioned that the construction material is raw iron (Bricolo, 2016). However, the construction company stated that variants of steel were used during construction (Metall Ritten, online; Schlorhauser, 2008). Tscholl probably emphasized "iron" in a contextual way because of its metaphorically strong meaning.

the silhouette of the fortress, part of the collective memory for ages, was respected through integrating all interventions and additions to the inner side and under the level of the fortifications (Bricolo, 2016). That is to say, the new form follows the existing. The characteristics of the new seem to be light and floating in the presence of strong old stones (Messner, 2016), so that the contrast between existing and new is dramatized. The three layers of the experience show a narrative unity and poetic attitude (Peckham and Tozzi, 2007). One can say that this romantic and western approach (Bricolo, 2016) is compatible with Camillo Boito's picturesque restoration. The first phase of this project won several awards, like the Premio Architettura di Città Oderzo (The Architecture Award of the City of Oderzo) in 2006 and Premio Internazionale alla committenza Dedalo Minosse – Premio di Riconoscimento (Dedalo Minosse International Prize for commissioning a building - Recognition Award) in 2008 (Metall Ritten, online).

In the second phase, from 2014 to 2016, Tscholl was asked to build a screening room over a rock amphitheatre in line with the northern wall. Inspired by the idea of the camera obscura, he designed this new insertion as suspended and supported by steel rods and cables. This 5 × 9 m structure was added along the main walking path, accessible with the help of a footbridge (Fig. 2; Özmen, 2019a). The inside was covered in wood, except for the big opening that is screened by means of a curtain, otherwise a window with a view of nature. The cladding material of the façade is a pressed sheet of metal, the same as the main material of the walking paths and the castle's conversion (Chiorino, 2016).

3.2 Juval: the concept of transparency

Castle Juval, which has been the summer dwelling of the Messner family since 1985 (Fischnaller, 1997), was



Fig. 2 Addition of the screening room and the walking paths (Özmen, 2019a)

reorganized for a wider exhibition about mountains in 1995, along with its residential function. According to its opening date, Juval is known as the first of the current Messner Mountain Museums, considering the closure of the mini-museum *Curiosa*. Juval, dedicated to the magic of the mountains, hosts a large number of art collections. The gallery for the paintings of the world's sacred mountains, the Tibetan collection, a special exhibition about Gesar Ling, a mask collection from five different continents, the expedition cellar and the Tantra room are visitable parts of the museum (MMM (b), online), as are the Messner library of adventure and the Tillman Riemenschneider murals. The main building, annexes, towers and courtyards are furnished with exotic and local artworks (Messner, 2011).

Castle Juval is located on a hill at 927 m from sea level between the Etschtal and Schnalstal valleys in Vinschgau (Fischnaller, 1997). It is reached by a winding path starting from the village of Staben at the foot of the hill. Messner has developed not only the fortified castle but also the cultural landscape of the hill, because he aims both to make Juval a self-sufficient area and to keep South Tyrolean mountain farming alive (Lüfter, 2016).

The first records about the castle are from the end of the thirteenth century, when it was ruled by Lord Hugo von Montalban (Fischnaller, 1997). Throughout the centuries of its history, the owners changed several times. It was purchased in 1540 by Hans von Sinkmoser, who gave the castle much of today's appearance by transforming it from a medieval castle into a Renaissance mansion (MMM (b), online). The Renaissance frescoes by Tillman Riemenschneider were added during this period (Arkitexture, online). In 1913 the ruinous castle was bought by William Rowland, who made it habitable through an extensive restoration (MMM (b), online). Purchased by Reinhold Messner in 1983, the castle was once again extensively renovated (Messner and Huetlin, 2014).

Originally conceived as a summer residence and later also a museum, restoration works aim to sustain the integrity of the three different periods of the castle, medieval, Renaissance and twentieth century, and combine them with contemporary additions (MMM (b), online) (Fig. 3; Özmen, 2022b). During the restoration works carried out under the supervision of Walter Dietl and Karl Spitaler between 1984 and 1985, the wooden bridge outside the gate was repaired to improve access, the parts with static problems were consolidated, the roofs and the keep were restored, the installations were renovated, most of the door and window profiles, floors and ceilings were conserved as much as possible, the window and door profiles in bad condition and few of the

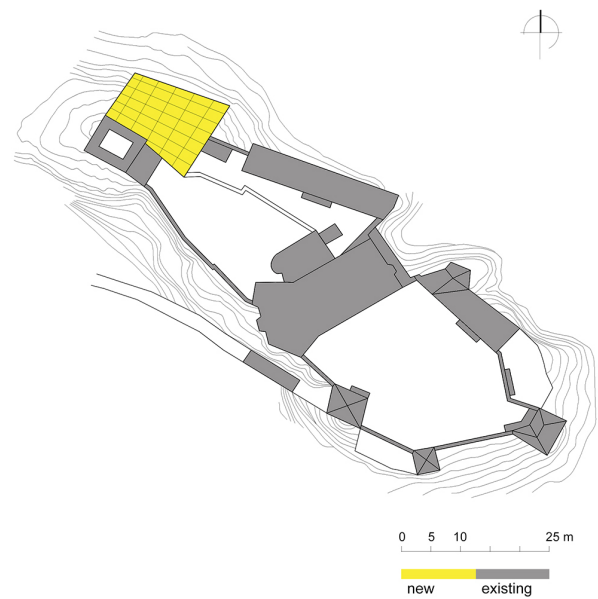


Fig. 3 Schematic representation of the existing and the new in Juval (Özmen, 2022b)

floors and ceilings were reproduced in wood by adhering to the Renaissance style, other floors, ceilings and unadorned walls were decorated with exotic elements, and the staircases of the east tower and annex were reproduced in wood. The spatial arrangements of the main building were made compatible with the previous plans implemented by architect Adalbert Wietek during the restoration in the 1920s. In the second phase of the restoration works in 1986, the bailey was rehabilitated and insulated. However, since the Renaissance murals had to be protected, thermal insulation and a heating system could not be installed in the main building. In the third phase, between 1988 and 1989, conservator Josef Leiter undertook the conservation of the murals. The north wing was thought to be in a ruinous state for 400 years and was left as a symbol of transience (Messner, 2011). Experts from the council of monuments, accompanied by architects, made contributions to the restoration works (Lüfter, 2016).

The northern wing of the castle was arranged when a museum function was added in the 1990s. This part was covered with a transparent roof, reminiscent of its old form, in order to conserve its ruinous state and prevent further deterioration (MMM (b), online). The glass gable roof, designed by Robert Danz in 1995, was constructed in 1997 (Baunetz Wissen, online). This gable roof protects and displays the historical structure thanks to its transparent surface. It also informs about the edifice's initial appearance by preserving its former shape (Fig. 4; Özmen, 2019b). The transparent roof, made up of glass panels and galvanized steel elements, protrudes approximately 25–40 cm above the masonry stone walls. The glass panels are placed on a fish-bellied girder.



Fig. 4 Castle Juval towards the northern wing (Özmen, 2019b)

The galvanized steel elements are attached to the gable walls with minimal intervention by a core drilling method. The roof seems to float on the historical walls by means of these features. It covers an area of 200 m² in a trapezoidal plan. Because of this irregular shape, the glass panels' angles and dimensions are also different from each other. These panels consist of two green laminated glass layers of 8 mm thickness (Fischnaller, 1997). The green film is used to enhance the spatial effect (Messner, 2011). Danz's roof project received the International Architecture Prize for New Building in the Alps in 1999, and the Rodan tension system developed for this project won the iF Product Design Award in 2001 (Messner, 2011).

3.3 Ripa: the concept of invisibility and transience

Bruneck Castle is located on a higher hill of Bruneck/Brunico, a city on the historic Venetian trade route in South Tyrol. The castle has a panorama of the medieval city of Bruneck, the Zillertal Alps, and the Ahrn Valley. The castle and its relationship with Bruneck represent an example of medieval urban settlements in the region (Hempel, 2011). Ripa Museum, the fifth of the Messner Museums considering the opening date, is situated in Bruneck Castle. The keep was converted into a mountain museum exhibiting mountain people's cultures, daily lifestyles, beliefs and tourism activities in Europe, Africa, Asia and South America. The name of the museum, "ripa", can be translated as mountain person because "ri" means mountain and "pa" means human in Tibetan (MMM (c), online).

Bruneck Castle, also known as *Castrum Bruneke* was built by Bruno von Kirchberg, the Prince-Bishop of Brixen, in 1250. After its construction, the city of Bruneck started to develop at the foot of the castle's hill. During the 14th century, Prince-Bishop Albert von Enn made some

extensive additions, such as the moat, fortifications, and the four gates. In the 15th century, Prince Bishop Ulrich Putsch made the keep higher, expanded the living areas, and added a pointed roof (MMM (c), online). In the 19th century, the moat under where the suspension bridge is today was filled, so that the castle became accessible via the south gate. The courtyard and living areas were changed considerably during these extensive works at the end of the 19th century (Hempel, 2011). The Foundation of the Südtiroler Sparkasse bought the castle in 2004 for use by Reinhold Messner and the city council of Bruneck as a museum (MMM (c), online).

The castle was renovated and converted into a museum by Kurt Egger, Gerhard Mahlnecht and Heinrich Mutschlechner (EM2 Architekten) between 2009 and 2011. The concept of its restoration was to retain all the historical layers within the principles of monument conservation and to take measures for security and accessibility (N.N., 2012) within universal design standards. Reinhold Messner and the South Tyrolean Office for Monument Conservation under Dr. Waltraud Kofler Engl, accompanied by the design team, provided technical support and consulting on the conservation works. In this context, traces and changes from different periods, such as the Renaissance and Baroque rooms, the Gothic vaults, and the murals in the inner courtyard were clearly displayed (MMM (c), online). The restoration also contributed to the comprehensive research and evaluation of the artistic and historic value of the castle. During these works, a prince-bishop's chapel with well-preserved 16th century frescoes and ceiling construction was revealed, and today is open to the public within the museum tour (Hempel, 2011). In addition to the restoration works, the adaptation approach intends to take a temporal place in the long history of the castle by adding temporary and removable units (Fig. 5; Özmen, 2022c). Therefore, all new additions and pieces of the exhibition can easily be removed in order to clearly unveil the historic fabric of the castle when necessary. The existing spaces of the castle, reorganized for the museum function, were envisioned to be insufficient for the exhibition of large collections (Hempel, 2011), so removable extensions with minimal impact were built. Two of the additions are the temporary exhibition hall and the ticket office with the museum shop, located along the southern and eastern ramparts, respectively. They are single-floor wooden buildings varnished in light grey (Fig. 6; Özmen, 2019c). Another extension is the underground annex, Zwinger. This 375 m² annex, built from exposed concrete and covered with

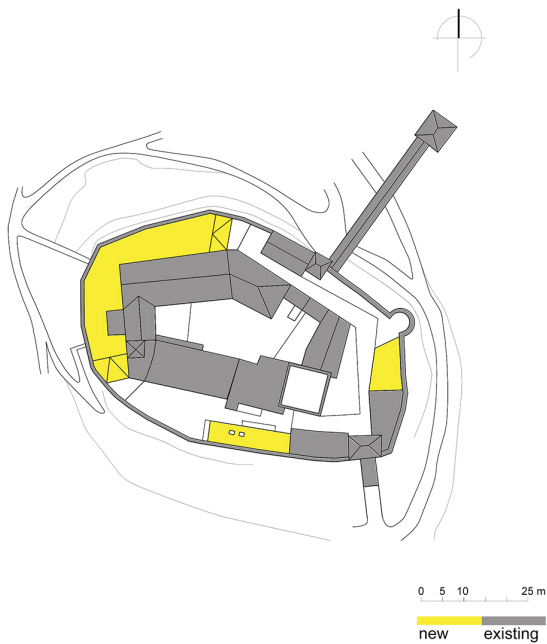


Fig. 5 Schematic representation of the existing and the new in Ripa (Özmen, 2022c)



Fig. 6 Addition of the ticket office (Özmen, 2019c)

a green roof, has taken the place of the moat along the western wall. Its walkable green roof not only gives a reference to its former function as greenery, but also prevents its being easily perceived. Transparent slits on this roof allow skylight to filter in and physically separate the annex from the fortification wall. Thus, the contrast between the existing and the new is displayed (N.N., 2012). With this extension, contemporary architecture positions itself more as a guest in relation to host building, the castle. All additions and interventions are made with new materials, such as glass, steel and wood, so as to be distinguishable and compatible with the authenticity and integrity of the host building. This adaptive reuse project won the first prize in the 7. Südtiroler Architekturpreis-category of renovation in 2013 (Architekturstiftung Südtirol, online)

and the Holzbaupreis Südtirol-category of restoration in 2018 (Turrís Babel, 2018).

4 Discussions and results

Section 4 will evaluate the three case studies according to their conservation principles and adaptation strategies. The practical information obtained from the case studies will be analysed with the theoretical research mentioned in the literature review.

4.1 Conservation

Firmiano, Juval and Ripa are multilayered medieval strongholds. Over the centuries, they have been abandoned, transformed and refunctioned several times. Each intervention concluded with changes, new additions and/or destructions. As a result, Firmiano and Juval have survived in ruinous states, whilst Ripa is in a better condition. In all three cases, layers from different architectural periods are respected and preserved. In Firmiano, the ruinous condition is cleaned and preserved with minimal impact. In Juval, only the north wing is maintained as a ruin, and the rest is restored to obtain the wholeness. The ruinous main building is renovated, its missing parts are reproduced, and its broken parts are partially replaced and partially restored. Its Renaissance murals are cleaned and conserved. New decorations and missing elements are inserted in the Renaissance and the Far East style. In Ripa, the whole complex is consolidated and rehabilitated. Incompatible additions are removed. Murals and ceiling decorations are revealed and conserved. The suspension bridge over the moat is renovated. As part of the exhibitions, inner and outer courtyards are rehabilitated in all cases. Technical requirements are installed in all museums discreetly (Table 1).

As a conservation approach, compatibility with these existing tangible attributes is important. Furthermore, new interventions also respect their intangible features, taking into consideration its place in the local history and collective memory through adding subsidiary exhibitions. On the other hand, with the new function dedicated to the culture of mountainous communities in the world, the converted castles embrace all humanity and nature together and transmit messages for peace and inclusiveness rather than being the site of conflicts.

4.2 Adaptation

Referring to the schematic representation of the existing and the new indicated in Figs. 1 to 3, and the classification according to the literature research as shown in Table 2, adaptation strategies of the case studies are considered in two approaches: *palimpsest* and *contrast*.

Table 1 Ruin conservation principles of the case studies referring to the literature review

Ruin conservation strategies for castles (Soldano et al., 2017)	Firmiano	Juval	Ripa
Conserving as they are by taking measures for durability and safety	+	+	+
Protecting under enclosures or shelters		+	
Enhancing accessibility by installing walking paths and view terraces	+	+	+
Restoring with contemporary techniques and materials	+	+	+
Partially reconstructing		+	
Integrating with nature	+		
Revitalizing with technological installments	+	+	+
Reusing with different functions	+	+	+
Ruin conservation strategies (White, 2007)	Firmiano	Juval	Ripa
Picturesque display	+	+	
Conservation as it is for testimony	+		+
Conservation as it is with effects of nature	+	+	
Intentional ruination	+	+	
Restoration to obtain wholeness		+	+
Anastylosis			
Reconstruction		+	
Replication		+	
Benign neglect			
Managed decline			

From the *palimpsest* point of view, all of the examples are narrative designs, interweaving the history and the present. Firmiano and Ripa are fragmented because of sustaining the interventions of all periods and adding a distinguishable contemporary layer. However, in Juval, only the north wing is fragmented in this sense, whilst its main building is unified and completed. In Firmiano, new additions and extensions are installed alongside the fortified wall, interior structures are within, and walking paths are over, within and alongside the historical remnants. In Juval, the glass shelter is inserted over the historical remnants of the north wing with minimal impact, interventions are within the main building, and the agricultural units are arranged around the fortifications. In Ripa, temporary wooden units are installed alongside the fortifications, an underground annex is inserted in the moat, and new additions for the circulation and the junction units are installed within the historic fabric.

From the *contrast* point of view, contemporary distinguishable elements are used for new additions and

extensions in all cases except for the main building of Juval. They have material contrast in this sense. However, their shapes are analogical with the historic structures. The degree of contrast is referential in all three cases, both referring to and emphasizing the formal features of the historic fabric. Nevertheless, in the main building of Juval, new interventions are made in conformity with the former and non-local styles and materials.

5 Conclusion

In this article, three castle conversions of the Messner Mountain Museums were analysed to investigate the balance between conservation and adaptation.

In Firmiano, criteria such as conserving the ruinous state, not intervening in the historical remnants, not completing the original form, being able to remove the additions and interventions in the future without leaving any trace, using a single material, and contrasting between the old and the new whilst leaving the silhouette untouched were set by the architect during the design process. In deference to conserving as it was, all additions were made to be reversible, recognizable and suspended. These attitudes introduce various keywords such as *reversibility* and *suspension* to the adaptation strategies of existing buildings.

In Juval, two different intervention approaches stand out in the recent restoration works. The first is the rehabilitation in the main building during the 1980s, and the second is the roof insertion over the north wing in the 1990s. The first intervention process was for residential use, focusing more on the owner's demands. The reconstructed elements and the addition of imitations of exotic cultures can be criticized. On the other hand, the main objective of the second intervention process is the addition of a museum function, leaving the original material visible. The ruinous north wing is conserved as it was and protected by a transparent shelter, emphasizing the extant. *Transparency* can be considered as a keyword for the adaptation strategy.

In Ripa, the approach is mostly conservation-oriented, so that both adaptations to the contemporary living conditions with minimal additions and exhibition facilities are met without harming the heritage values and the integrity of the historic fabric. The additions form a distinguishable layer. In a contrasting manner to the stone setting, new units are designed to be removable and dismantlable by considering the transience of the museum function. The subterranean annex with its walkable green roof that has taken over the function of the former moat emphasizes the notion of invisibility in such a way that it is not immediately perceptible, although it is distinguishable when

used, and also removable if required. In this sense, additions are made with the help of shape, material and technology, reflecting today's zeitgeist in two different attitudes: *transience* and *invisibility*.

This article also intends to introduce a diagram weighing on the variables between conservation and design rather than focusing only on formal and functional changes. These three examples of castle conversions were

selected for several reasons. Firstly, these monumental buildings were built for the same purposes in the same era. Secondly, they were adapted to be mountain museums by the same proprietor in recent years. Despite the fact that they show many similar features, they reveal different solutions, because both conservation and architectural design are case-specific issues. Besides, designing on an existing building is based not only on different adaptation

Table 2 Adaptation strategies of the case studies referring to the literature review

Concept	Author	Adaptation strategies	Firmiano	Juval	Ripa
Palimpsest	Robert (1989)	Building over	Walking path	Glass roof	
		Building within	Steel structures	New replacements and decorations in the main building	New contemporary additions esp. for accessibility
		Building alongside	Walking paths and new units in steel		New wooden units and Zwinger
		Building around		Unterortl and Oberortl	
		Recycling materials or remains			
		Giving new function	Whole	Whole	Whole
		Building in style of		Decorations in style of Far East and Renaissance	
	Cramer and Breittling (2007)	Corrective maintenance	Whole	Whole	Whole
		Adaptation	Whole	Whole	Whole
		Modernisation	Whole	Whole	Whole
		Replacement		Main building	
		Unification		Main building	
		Correspondence			
		Fragmentation	Whole		Whole
	Delineation and junction	New additions in glass	Glass roof	Glass elements between old and new + metal clad passage	
	Jäger (2010)	Addition	New units, structures and walking paths	Glass roof + new replacements in main building	New units, structures, circulation and transition elements
		Conversion	Whole	Whole	Whole
		Transformation			
	Brooker (2017)	Reprogramming	Whole	Whole	Whole
		Narrative	Whole	North wing	Whole
Artifice			Main building		
Intervention		Existing remnants	Main building	Historic fabric	
Installation		All new additions		Wooden units	
Insertion			Glass roof	Zwinger	
Superuse					
On/off site	Steel building elements	Glass roof	Wooden and steel building elements		
Plevoets and Van Cleempoel (2019)	Aemulatio		Restoration of main building		
	Facadism				
	Ruination	Existing remnants	North wing		

Continuation of Table 2

Concept	Author	Adaptation strategies	Firmiano	Juval	Ripa	
Contrasting	de Solà-Morales Rubió (1985)	Analogy	Reference from existing form and concept	Restoration of main building	Reference from existing form of buildings and fortifications	
		Contrast	Contemporary distinguishable elements	Glass roof	Contemporary distinguishable elements	
	Bloszies (2012)	Extreme				
		Restrained				
		Referential	Reference from existing form and concept	Reference from existing form of roof: Glass roof	Reference from existing form of buildings and fortifications	
	Cramer and Breittling (2007)	Conformity		Restoration of main building		
		Contrast	Contemporary distinguishable elements	Glass roof	Contemporary distinguishable elements	
	Tyler et al. (2009)	Contrasting	Contemporary distinguishable elements	Glass roof	Contemporary distinguishable elements	
		Matching		Restoration of main building		
		Compatibility	Reference from existing form and concept		Reference from existing form of buildings and fortifications	

strategies, as mentioned in the literature review, but also on the degree of interventions, the design idea, and the conservation approaches.

As seen from the case studies, the adaptation approach is not only related to the formal and functional change of the existing buildings. It is also influenced by endogenous parameters such as the tangible and intangible features of the existing building, and exogenous parameters such as the contextual and conceptual attributes. While the contextual ones are determined in accordance with the physical, social, cultural, economic and political dimensions of the building and its setting, the conceptual ones are concerned with the involved actors, especially the architect's motives for creativity and cultural heritage awareness. As a result of this dynamic decision-making process, the outcome is always supposed to be unique. However, this process should not be occasional. Aside from the contextual, the diagram of the conceptual attributes in Fig. 7 (Özmen, 2022d) shows that determining the design concept for adaptation depends on the subjective factors of creativity and cultural heritage consciousness, and the objective factors of conservation and change. The subjective ones are defined by the values and meanings of the existing building, and the objective

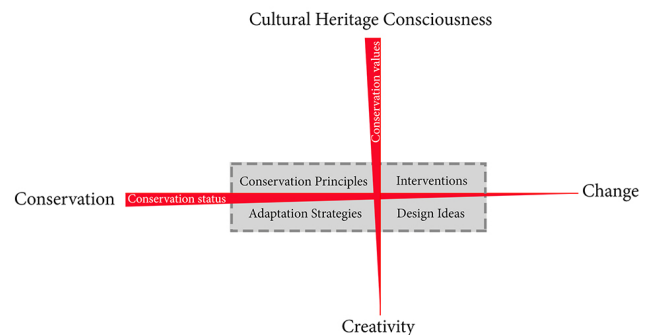


Fig. 7 Diagram to determine design concept for existing buildings (Özmen, 2022d)

ones are determined by the degree of its conservation status. Consequently, the area generated by the weight of these factors on this two-dimensional diagram can provide the concept and the trace of the contemporary work. This result, shown as a variable grey area in Fig. 7, illustrates the combination of conservation principles, interventions, adaptation strategies, and design ideas. When all factors are taken in consideration together, as in the diagram, it is possible to define the proportions of these interwoven outcomes, the impact area of which always changes according to the case.

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