Adaptive reuse: Its potential role in sustainable architecture and its relationship with restoration and rehabilitation

Reutilización adaptativa: su papel potencial en la arquitectura sostenible y su relación con la restauración y la rehabilitación

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Abstract

Today, many publications on architecture address the topic of adaptive reuse as a current movement which involves recycling old abandoned structures according to the principles of the circular economy with the purpose of reducing damage to the environment. The present article addresses the objectives and potential consequences of adaptive reuse in order to determine to what extent this architectural movement promotes the principles necessary to preserve historic architecture in the future or whether it is simply a trend. The historic relationship between restoration and reuse is described, defining some ideal characteristics of sustainable cities of the future, and reviewing the principles of a circular economy in relation to ecological construction to discuss whether adaptive reuse is a defining characteristic of cultural heritage conservation today.

Keywords: adaptive reuse; circular economy; rehabilitation; restoration: sustainable cities

Resumen

En el presente, muchas publicaciones sobre arquitectura tratan el tema de la reutilización adaptativa como un movimiento actual que implica reciclar viejas estructuras abandonadas según los principios de la economía circular, con el fin de reducir los daños al medio ambiente. Este artículo aborda los objetivos y las posibles consecuencias de la reutilización adaptativa, con el fin de determinar hasta qué punto este movimiento arquitectónico promueve los principios necesarios para preservar la arquitectura histórica en el futuro, o bien, si se trata simplemente de una tendencia. Asimismo, se describe la relación histórica entre restauración y reutilización, se definen algunas características ideales de las ciudades sostenibles del futuro y se repasan los principios de la economía circular en relación con la construcción ecológica, en función de debatir si la reutilización adaptativa es una característica determinante de la conservación del patrimonio cultural en la actualidad.

Palabras clave: reutilización adaptativa; economía circular; rehabilitación; restauración; ciudades sostenibles

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Introduction

This work is part of the research "Ecourbanism, econeighborhoods, urban resilience and urban historical landscape. The new way of understanding the planning of the city and the territory", approved by the Divisional Council of CyAD, UAM, in the ordinary session 4/2019 for a period from June 24, 2019, to June 24, 2022, and extended, in the ordinary session 20 of October 20, 2022.

Adaptive reuse of buildings is undergoing unprecedented growth, and architectural specialists predict that in the future, fewer buildings will be built and more will be reused. Adaptive reuse may be defined as a process by which an unused or ineffective element is turned into a new element that can be used for another purpose. Thus, adaptive reuse in architecture involves the occupation of abandoned structures, for uses other than those for which they were originally intended. Industrial designers refer to this as recycling (Dormakaba, 2020).

This architectural recycling results from the need to save energy in the production of construction materials —one of the most energy-intensive and highly polluting industries. While heritage buildings have traditionally been preserved through restoration, rehabilitation, and reuse, some architects and engineers, untrained in the proper conservation of this heritage, seek to modify the form and function of historic buildings by recycling them. This leads to the question as to what extent these professionals should exercise such architectural freedom.

The question arises as to who is promoting adaptive reuse. Perhaps the trend of reusing heritage involves taking advantage of the global environmental crisis so that less stringent heritage conservation laws can be put in place, placing this heritage at risk if untrained architects intervene. Although green building is incompatible with the use of metals, concrete, large windows that let heat escape in cold climates, and over-reliance on artificial heating and cooling systems, adaptive reuse often uses these materials and construction techniques. Therefore, is adaptive reuse really intended as ecological architecture?

To determine the true objectives of adaptive reuse, the economic changes promoted by capitalism in recent decades, which in turn have led to significant cultural changes, must be taken into account. The hypothesis posed in this paper is that the ways of intervening in cultural heritage will vary as economic relations —and in turn public policies— are transformed within capitalism. Furthermore, the future existence of the discipline of adaptive reuse will depend on social and economic conditions, possibly indicating an adequate future approach to intervening in historic heritage architecture. Nevertheless, it is worth considering that the traditional disciplines of restoration, rehabilitation, and pre-existing forms of reuse will continue to prevail in cultural heritage conservation, increasingly adapting to new global ecological demands. To determine the viability of this hypothesis, the interests that underpin this discipline must be defined.

To identify the interests behind adaptive reuse, the issue of cultural heritage must be understood as part of the current cultural context strongly influenced by globalization (Rojas, 2015). Globalization can be defined as a current arm of capitalism, in synergy with the fundamental pillars of modernity: the State, science, and cultural identity (Brünner, in Rojas, 2015, p. 157). In turn, modernity can be regarded as "a project of integrative, liberating rationality", while modernization is rather "an instrumental economic reductionism of modern rationality" (Rojas, 2015, pp. 146-147).

Just as a conflict arises between modernity and modernism, a conflict also arises between culture and globalization with respect to people's identity and cultural heritage. Nevertheless, popular culture seems to have spread throughout the world as never before, in strict collaboration with so-called "development" and economic growth, even as a generator of employment (Rojas, 2015), especially in the transnational cultural industry of tourism. In the context of this dominance of global economic interests, adaptive reuse emerges in the confrontation between these interests and local social forces.

According to Hernández (2008), as a result of the radicalization of modernity and the acceleration of globalization, the concept of cultural heritage has undergone a series of transformations. First, while cultural heritage was formerly restricted to classical monuments of Western culture, it has been broadened to include any cultural object with social and geographic value. Secondly, while it previously referred to traditional or preindustrial rural "national" heritage, it is currently understood to include urban and other modern forms of heritage characterized by the cultural dynamics of globalized modernity. Furthermore, while it had been limited to tangible moveable and immoveable heritage, it now includes intangible and immaterial heritage recognized by national legislation.

The concept has also gone from addressing only national heritage to include local and global heritage, in turn broadening the promoters of heritage to involve not only nations – especially those with a nationalist tendency, but also UNESCO, civil society, and private companies such as tourism and advertising. Tourism, for example, has become one of the world's largest and fastest growing economic sectors, having increased from 25 million tourists in 1950 to an estimated 1,6 billion in 2020 (Bandarin & Van Oers, 2014, p. 154), although the numbers may have declined due to the COVID 19 pan-

demic. Therefore, the socioeconomic impact of the growth of tourism in each nation, city, and locality must be considered, as well as its effects on cultural heritage. Finally, cultural heritage has come to include natural heritage. It is in this context —further characterized by a confrontation of economic and social forces— that adaptive reuse arises.

The main objective of this article is to contribute to the understanding of:

1. The origin of adaptive reuse in architecture;
2. Its relationship with the disciplines of restoration and rehabilitation that have traditionally dealt with the conservation of cultural heritage;
3. The policy of reuse which arose as a result of restoration of the historic center of Bologna;
4. The place of adaptive reuse in the current economic and social context. In this way, it could be determined whether adaptive reuse is a viable green architecture for the future or just a fad.

Before addressing this topic, it is important to analyze the development of the architectural discipline that since the 1970s has been known as reuse, and is now known as adaptive reuse, as a structure is adapted for a use other than that for which it was originally built. Within architecture, the concept of reuse has undergone major modification in recent decades. Arising in the 1970s, in the early 80s it was often confused with concepts such as "recovery", "renovation", and "restoration". As Di Battista (1995, p. 89) points out, "It is not a problem of lexicon but rather of understanding that reuse is not recovery, it is not restoration, it is not renovation", each of which denotes very different types of architectural intervention.

The concept of reuse in architecture originated in Italy as a consequence of the urban struggles of the late 1960s, mainly over access to housing, as well as legislative modifications following intervention in the historic center of Bologna to preserve historic architecture while promoting social welfare. While previously "urban renewal" had often implied a speculative or "perverse" use of heritage, resulting in marginalization of some social groups, in this new context left-wing conservation specialists developed an ideological-political position regarding the manner in which intervention on heritage buildings should be conceived based on the concept of reuse, according to the following precepts (Dezzi Bardeschi, 1981, p. 306):

1. Reuse involves an already existing object, structure, or material context (building, city, territory), prioritizing the use of built structures (use value) over the construction itself (material value).
2. Housing deficits can be reduced through the reuse or recovery of existing residential structures along with the provision of the necessary public services, prioritizing public over private use of historic buildings and other spaces, with the objective that the historically marginalized urban classes appropriate collective use of urban spaces.
3. Reuse involves the functional recovery of architecture that has lost its use value due to economic fluctuations that have made existing constructions incompatible with new forms of use.
4. Reuse makes it possible to limit or stop urban sprawl, according to a critical understanding of the modernist conception of architecture that runs the risk of rapidly substituting all existing buildings and counteracting in the discriminating construction of such modern architecture.

Since reuse is closely linked to the restoration and rehabilitation of heritage buildings, it is important to distinguish these three concepts. Restoration has traditionally been defined as a set of actions aimed at recovering the original image of a building (Figure 1); rehabilitation involves refurbishing an existing building to make it suitable for its original use; and reuse consists of reemploying a building after repair (Pulin, 1985, pp. 8-9). However, these definitions lack precision. While the concept of restoration had previously been applied in an orthodox manner to that architecture which is generally considered a work of art of great historic significance, the concept of rehabilitation that emerged from the Bologna Plan of the 1970s involved attention to what was previously known as "lesser historic architecture". As a part of Mexico's Popular Housing Renovation Program following the 1985 earthquake in its capital

Figure 1. The discipline we know as restoration is applied to monuments[1]

Source: Cedeño (1980). CC BY-NC

1 *Note*: Restoration in Mexico is an orthodox discipline involving use of traditional construction materials such as nopal cactus, quicklime, large pieces of wood, sand, and tezontle stone, making it an expensive and extremely slow progress. Photograph of restoration of the Zacualpan church in Morelos.

Figure 2. The origin of rehabilitation in Mexico is the product of the 1985 earthquakes[1]

Source: Cedeño (2009). CC BY-NC

1 In response ti the 1985 earthquakes in Mexico City which caused great destruction of built heritage, the Popular Housing Renovation Program provided theoretical and technical support for rehabilitation. Photograph of property affected by earthquakes in the Mexico City's Escandón neighborhood

city, the *Technical Manual of Procedures for the Rehabilitation of Historic Monuments in the Federal District* [Mexico City], published by the municipal government, defined rehabilitation as a broader concept than restoration.

According to this document, rehabilitation involves all historic monuments and heritage buildings in urban centers. This publication recommends that theories should not be applied in an orthodox manner as in restoration —that is, emphasizing specialized building techniques and materials, pointing out that there is an insufficient number of experts to restore these historic monuments in this manner. Finally, it states, "These constructions, more than representing a challenge in matters of restoration theory or technique, are a problem of a social and economic nature". As they are not works of great historic or artistic significance but rather cultural assets, considered of lesser importance, they should be evaluated to determine whether or not it is worthwhile to recover and rehabilitate them for reuse (González et al., 1985, p. 13).

In the case of Mexico City, before the 1985 earthquakes the most adequate technique for architectural intervention into historic heritage continued to be restoration, while for "built heritage" —or so-called "lesser" historic architecture, as a consequence of the destruction of entire neighborhoods the most appropriate technique was considered to be urban rehabilitation (Figure 2).

Upon conclusion of rehabilitation and restoration to improve the condition of a building, it may be reused, which involves "reemploying a building following its reparation". Thus, rehabilitation emphasizes the physical aspects of the building, while reuse emphasizes its social function (Pulin, 1984, p. 8). Worldwide since the 1970s, interest in conserving historic centers and heritage zones through rehabilitation and reuse has been growing and is expected to continue, with the objective of preserving not only heritage constructions but also the urban contexts that connect them, as well as supporting the people who inhabit them (Cedeño, 2015). With the passing of the years much industrial and built heritage —including 20th century constructions— has been abandoned and neglected. Given the need for housing —as well as infrastructure for business and services— and considering the contribution of fabrication of construction materials to the global environmental crisis, what was known at the turn of this century as architectural recycling has grown and evolved into what is today known as adaptive reuse.

Methodology

This article begins by reviewing the history of architectural reuse together with that of restoration of historic monuments in order to contribute to understanding the relationship between these two disciplines throughout recent history. Following this, it analyzes the role of the sustainable city, as well as new approaches to understanding urbanism and the role of adaptive reuse in this discipline. It then addresses the circular economy in relation to adaptive reuse and debates its current role in architecture by presenting how the principles of permaculture may guide sustainable architecture that contributes to a circular economy. Finally, the article discusses the future panorama of historic heritage, which should be maintained using ecological construction practices. This article uses comparative methods to develop a historical framework for adaptive reuse.

The paper adopts the definition of Hernández of cultural heritage as "a social construction understood as the symbolic, subjective, procedural, reflexive selection of cultural elements (of the past) that —through mechanisms of mediation, conflict, dialogue, and negotiation in which diverse social agents participate— are recycled, adapted, refunctionalized, […] revitalized, reconstructed, or reinvented in a context of modernity" (2008, p .27).

It also incorporates Bandarín & Van Oers's concept of "urban conservation", which responds to important objectives for the conservation of historic cities such as safeguarding the authenticity or integrity of their physical and social structures, which is only possible as long as the historic city continues to represent values "that society aspires to preserve". These values act as guardians of identity and collective memory that help maintain a sense of continuity and tradition for aesthetic pleasure and as spectacle (Bandarín & Van Oers, 2014). A historic city contains historic heritage, consisting of properties that given their historic and artistic significance have been categorized as worthy of comprehensive protection and should be preserved through restoration. Some historic buildings do not fall into this category and can be intervened individually through rehabilitation, reuse, and —more recently— adaptive reuse.

Environmental issues have modified the way of understanding cities. Specialists now speak of sustainable cities of the future in which residents live in harmony with the environment. However, some deny the possibility of achieving such cities despite successful examples, such as the case of Freiburg,

Germany, considered the world's most ecological city, raising the question as to whether being an ecological city is the same as being a sustainable city.

In response to environmental problems resulting from the neoliberal economy, humanistic and environmental principles have been applied to achieve an adequate resource use. One of these resulting principles is the circular economy, which proposes that once goods have finished their useful life, instead of becoming waste, they should be reused or recycled, with the aim of reducing the consumption of non-renewable energy and materials.

Results

Brief History of Architectural Conservation

Reuse in the History of Humanity

Throughout the history of mankind, architectural restorations and reuses have been carried out with an emphasis on one or the other, according to the dominant values of society of the time.

To understand the historical role of reuse in architecture, it is important to refer to Valerio di Battista in his book "*Il riuso: casistica, problematiche, potenzialità*" (1995), in which he sets out his point of view on the origin of the discipline of architectural reuse. According to this author, the history of reuse is evident in the history of constructions made by mankind, as human settlements have been used by several generations for different purposes, and it is precisely the continuity or destruction of such settlements and their values that has determined the permanence or the decline and disappearance of ethnicities and cultures (Di Battista, 1995, p. 90).

As occurs during periods of war, famine and epidemics —and as movements in favor of the poorest population groups have promoted— when reused, the value of old structures as a resource prevails over their symbolic value. This has occurred, for example, with religious structures, transforming pagan temples into Christian basilicas or building churches on the site of Roman baths (Di Battista, 1995, pp. 90-91). Over the course of history, built heritage is sometimes simultaneously valued as a resource and for its symbolic value, although sometimes one or the other prevails.

Origins of Conservation of Monuments and the Birth of Restoration

Concern for conserving heritage buildings dates back to the early 18th century when interest in classic architecture was growing. At this time, the work of the Italian architect Vitruvio became popular; classical cities such as Herculaneum were discovered; significant excavations were carried out in Rome, Sicily, and Pompei;

Figure 3. The interest in classical architecture was the predecessor of restoration[1]

Source: Cedeño (2012). CC BY-NC

1 During the XVIII century, the study of classical architecture became popular, and collectors promoted interest in historic monuments. J. Winckelman played a very important role upon cataloguing many classical artworks. Photograph of the Aspendos Theater in Turkey, which is a classic example of Roman architecture

and archeology began to be considered a science, leading to the creation of the neoclassic architectural style. The growing interest in classical art led to the development of renowned private collections, such as that of the Vatican. In the midst of this artistic climate, the Prussian historian Johann Joachim Winckelmann, who had arrived in Rome in 1755, was asked to classify the Vatican's Greek and Roman art collections, and his subsequent knowledge and appreciation of classical art provided the basis for the nascent science of archeology (Ceschi, 1970, pp. 26-34). This attention to classical art led to a growing interest in Greek and Roman architecture and, in turn, its conservation (Figure 3).

Restoration arose in the XIX century, following the French Revolution, with Eugène Viollet le Duc, and later appeared in England with John Ruskin, who had a totally contrary position.

The French Revolution was characterized by robbery, looting, and other acts of vandalism resulting from a legal void common during wartime and other social upheavals. The National Commission of Historic Monuments relied on the French arquitect Viollet le Duc, a renowned designer, historical observer and writer, who was very knowledgeable of architectural styles, for whom restoration consisted of recovering the original style. For this reason, each style was studied in depth with respect to each of its structural, decorative, and furnishing particularities. Le Duc considered Romanesque (the main style of the Middle Ages) and Gothic to be adequate for churches due to their religious quality; the solemn Renaissance style, for public buildings; the lavish Baroque style, ideal for theaters and palaces; Pompeian and medieval, for villas; Moorish and Rococo for cafes; and the Greek-Roman, for public baths.

According to le Duc, the architect should approach a building with deep humility, depersonalizing himself —that is, substituting his own considerations for the taste and artistic temperament of the artist who originally executed the work (Figure 4). Nevertheless, it has been argued that more historical heritage was destroyed as a result of this theoretical position of French archi-

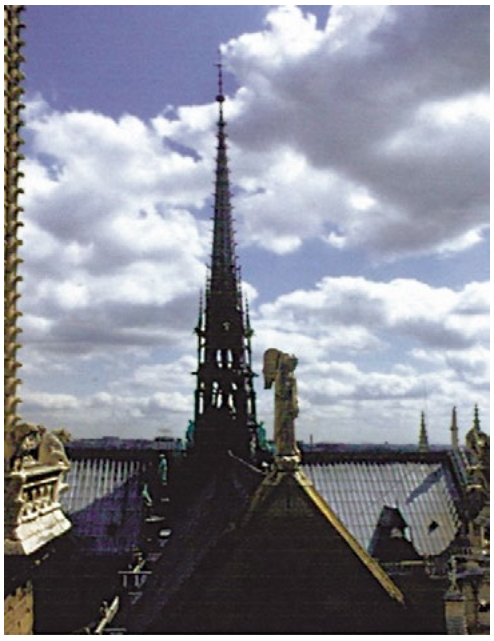

Figure 4. Violet le Duc's vision of restoration[1]
Source: Cedeño (1982). CC BY-NC)

1 Violet le Duc played a very important role in restoration of architectural heritage destroyed during the French Revolution. Photograph of Our Lady of Paris, where le Duc "invented" the central spire and gargoyles

Figure 5. John Ruskin's view of restoration[1]
Source: Cedeño (2016). CC BY-NC

1 Photograph of the Tecalli de Herrera Cathedral in Puebla, Mexico, which was "restored" according to the principles of J. Ruskin

tects than by the Revolution itself (Ceschi, 1970, p. 69). However, this should not be attributed to the position of le Duc, but rather to the lack of training of French architects who aimed to follow him. Nonetheless, it can be considered in le Duc, the first attempt to carry out an adaptive reuse.

The Industrial Revolution resulted in social and material degradation of urban contexts, which contributed to modifying the hierarchy of values attributed to historic monuments; for the first time, values related to sensitivity —particularly aesthetics— were prioritized. From the 1850s on, historic monuments were venerated by the majority of European nations (Choay, 2007, pp. 114-115), and many large European cities were modernized, principally under the argument of fomenting hygiene in poorer neighborhoods.

However, behind these efforts were speculative interests, as illustrated by the "modernization" efforts of engineer Georges-Eugène Haussmann in historic Paris, which influenced other European cities (Choay, 2007, p. 161). Furthermore, under the guise of "fixing up" neighborhoods for health reasons, European governments created large avenues designed to facilitate the mobilization of their armies in the event of popular revolts.

While England was the cradle of the Industrial Revolution, this nation continued to be closely bound to its traditions, and the English public in general continued to involve their historic monuments in their daily life. According to Choay (2007, pp. 122-123), for the British, "monuments of the past are necessary for life in the present, not as decorations nor as archaisms, not only as bearers of knowledge and pleasure, but rather as part of daily life". Thus, it can be deduced that the English never lost sight of the use value of their heritage.

Thus, the artistic movement that some authors refer to as cultural urbanism, characterized by the romanticism of XIX century England, was founded by John Ruskin and William Morris, and promoted by Viennese architect and historian Camillo Sitte (1843-1903), who considered that policies and architectural practices of the time were destroying many historic European urban centers. In his masterpiece, *Der Städtebau* nach *seinen künstlerischen Grundsätzen* (1890), he analyzed the components of ancient and medieval cities to illustrate how historic monuments are integrated into their environment. Sitte insisted on the importance of the use value of heritage, above all with respect to classic and medieval architecture.

An important contribution of Ruskin and Morris was that they were the first to conceive of an international organization to protect historic monuments. In 1854, Ruskin proposed the creation of such an organization for Europe which its member nations would provide with technical and financial support and promoted the notion of European cultural assets (Choay, 2007, pp. 123-125). However, from a romantic position contrary to that of le Duc, Ruskin rejected restoration of historic monuments, possibly because restoration prioritized symbolic value over use value.

> The work of art, and therefore the monument, is a creation that belongs only to its creator; we may enjoy it, experience its decadence, admire its ruin, but we do not have the right to touch it because it does not belong to us. (Ruskin, in Ceschi, 1970, p. 88)

Thus, Ruskin saw restoration as absolute destruction of a building; he stated, "it is no more than a lie from beginning to end". He considered restoration to be not only absurd, but also impossible, akin to reviving the dead (Ruskin, in Choay, 2007, p. 133). In short, the concept of conservation of historic buildings ranged from "destructive" restoration, as perceived in France, to doing nothing, as was the vision in England (Figure 5).

In 1879, Italian architect Camillo Boito expressed an intermediate position between Ruskin's fatalist perspective that was coming fashionable and le Duc's position that was becoming outdated. Reacting against Ruskin, he refused to

accept the death of a monument, as one does not accept a human death without first having attempted all measures to save the person. He condemned le Duc for having led restorers down the path of falsification and lies by presuming to know how the original architect would have restored it (Ceschi, 1970, p. 108). Boito proposed the following eight basic principles of restoration, that in 1883 became an internationally recognized restoration charter (Ceschi, 1970, p. 109):

1. Differentiation in style between new and old parts of a building
2. Distinction between original and new architectural materials
3. Suppression of moldings and decorative elements on new materials placed in a historic building
4. Nearby exhibition of parts of a historical building removed during restoration
5. Inscription of restoration date on new material in a historical building
6. Descriptive epigraph of restoration work done attached to the monument
7. Description and photographs of the restoration phases at or near the monument, and/or publication of this material
8. Publicity of the restoration work carried out.

In 1909, these guidelines were integrated into Italian legislation, which conceived conservation of historic monuments —under the influence of Ruskin and Morris— as being based on the notion of authenticity —that is, fidelity to the original work. This charter establishes that even the patina of old buildings should be preserved, as well as successive modifications, which le Duc condemned. Supporting le Duc against Ruskin and Morris, Boito prioritized the present over the past, and defended the legitimacy of restoration (Choay, 2007, pp. 140-141). Based on Boito's proposal, restoration became the main trend in conservation of historic monuments.

Boito's most outstanding student, Gustavo Giovannoni, devoted his attention to the site or surrounding context of the monument. Both Giovannoni and Boito made efforts to share their experience regarding heritage outside Italy, and eventual criteria for the conservation of historic monuments began to develop in other European countries aside from France, England, and Italy. Giovannoni was the first to be concerned with the environment surrounding monuments, and with him, restoration architects began to pay attention to the historic city (Figure 5).

The Modern Architectural Movement and Symbolic Value

As Di Battista (1995, p. 91) states, the Modern Movement "selects the remains of the past exclusively based on their symbolic value." As a result of

Figure 6: The importance of the legacy of Gustavo Giovannoni 1.

Source: Cedeño (2008). CC BY-NC

1 In the mid-20th century, G. Giovannoni promoted concern for the sites surrounding monuments, as well as conservation of the environment surrounding historic cities. Photograph of the church of Santo Domingo in Mexico City

the works of the architects of the Modern Movement, including Le Corbusier in Paris, the city and historic buildings were no longer considered resources; rather, their use value was devalued. Di Battista stated, "This long, distant familiarity with the practice of reuse of buildings and urban reuse vanishes with the expansion of the industrial city and is interrupted with the Modern Movement", referring to the urban architectural movement, or modern architecture, also known as Rationalism, which predominated in the 1920s-60s. It is no coincidence that with increased capitalist development in the XIX century, urban real estate investment skyrocketed, and with it the urban ground rent, promoting urban transformation through construction of broad avenues to promote circulation of armies, demolition of medieval walls surrounding cities (in the case of Europe), and "urban renewal" through demolition of poor neighborhoods (Di Battista, 1995, p. 91).

Thus, in the XIX and early XX centuries the vision of symbols was separated from that of resources or property handed down by history. A historic structure's symbolic value was considered to be more significant than its use value, and mainly the symbolic value of historic architecture was protected. This was a consequence of the fact that in the XIX century little architecture was built that was considered to be of significant artistic value; construction rather became an economic asset, separated from both ancient and modern architecture. This was accompanied by the historicist aestheticist paradigm which characterized restoration; meanwhile, reuse - previously vital and intrinsic throughout the life of a building, was practically done away with. For old buildings, certain noble uses were sought - for example to house public institutions or museums, but they were not reused for housing. Only religious buildings maintained their original use (Di Battista, 1995).

Modern architecture revindicates complete autonomy of architecture from history, proposing new symbols for the city and for the surroundings of industrial civilization, denying the value of a building as a resource and living symbol of its city, its surroundings, and the architecture of the past. Thus, for modern architecture, historic buildings are only memories - places of contemplation which are

Figure 7. The "timeless detail" brought modern architecture closer to reuse[1]

Source: Cedeño (1982). CC BY-NC

1 Sculpture of the great Veronese character Cangrande, which Carlo Scarpa incorporated as the main motif in his restoration of Castelvecchio in Verona, Italy.

Figure 8. Reuse arises during the restoration of the historic center of Bologna[1]

Source: Cedeño (1982). CC BY-NC

1 Intervention in the Historic Center of Bologna is considered to be the paradigm of protection of historic centers, despite the fact that its initial objectives were not achieved

foreign to contemporary daily life. Modern architecture assigned new economic and use values to new buildings, with the understanding that their life cycle would be brief (Di Battista, 1995).

Much time would pass before this cultural position would be modified by a new relationship between history and the value of already existing architecture. Nevertheless, within modern architecture a tendency or style arose that Jan Cejka (1995) in his text *Tendencias de la arquitectura contemporánea* refers to as "the timeless detail". In this category, Cejka places the work of the architects from the 1970s to the beginning of the current century —Carlo Scarpa (Figure 7), Karijosef Schattner, Gottfried Böhm, Heinz Bienefeld, José Rafael Moneo, and Guido Canali, who sought to reuse historical heritage, for example as museums, favoring contemporary design, but failing to consider environmental concerns.

A Growing Interest in Historic Centers

In the 1960s and 70s, a social struggle arose between the well-to-do who became interested in relocating themselves in historic centers for both residential and commercial purposes and leftist parties that insisted upon conserving historic centers for the marginalized classes, whom they considered to be the original residents. With this, in the 1960s the architectural debate over old vs. new went from focusing on the building to focusing on the city, addressing unresolved social problems due to gentrification of historic centers. Existing built heritage was shown to be not just a memory or a symbol of human communities, but also a resource that provides the possibility of responding to social problems –mainly that of housing if it is adequately reused. Thus, in the early 70s, throughout the world, the proposal of "virtuous" reuse began to oppose the vision that considered the built heritage as "constructive waste" to be replaced, attributing instead a value of use to the interior of the existing heritage, ennobling it regardless of its degradation, technical requirements of construction, and environmental conditions.

Thus, collective use values and symbolic values of existing structures which had been long denied were now acknowledged by society and the State. This position was supported by the left in many European nations through new housing policies (Di Battista, 1995), and is evident in the postulates of Marco Dezzi Bardeschi (1981) regarding reuse, which we presented at the beginning of this work. The Italian left was able to introduce significant modifications in legislation with respect to intervention in the historic center of Bologna in the 1960s and 70s (Figure 8), when the architect Pier Luigi Cervellati carried out one of the first projects under a municipal administration of the Communist Party in Italy, which was received by the middle class as a threat to their interests (Cedeño, 1998).

From this paradigmatic intervention arose the concept of integrated conservation - reusing heritage architecture as a "container", for example for low-income housing or public services such as health and education. Furthermore, the legislation resulting from this intervention, such as Law 457 of 1978 which led to a policy of architectural reuse and recovery, acknowledged lack of housing, gentrification and urban decay, and considered that recovery of urban heritage —especially in historic centers— should be prioritized to rectify these problems (Cedeño, 1989). According to this policy, reuse allowed the possibility of satisfying the housing deficit through the reconstruction of the residential fabric; the renovation of urban structures through provision of services; and through the reappropriation of the social and collective use of urban spaces by the historically marginalized classes (Dezzi Bardeschi, 1981, p. 306).

Since the onset of neoliberalism, cities have undergone substantial social changes, including privatization of public spaces, promotion of a purely economic vision of social relations between classes, and elimination of the term social inclusion from the vocabulary of government agencies. New laws turning back social and economic justice have suppressed many rights and the protection of those most in need (Gissara et al., 2018, p. 10).

One approach to making cities more inclusive is to reuse abandoned and under-utilized public heritage property, including barracks and schools, as well as some factories, commercial establishments, and empty lots to materialize a new "imagined city" (Gissara et al., 2018, p. 11). In this framework, adaptive reuse originated, including both social initiatives and speculation.

The concern for urban heritage led to the discipline known as urban rehabilitation, which seeks integration of urban-territorial planning into conservation policies, as well as integration of physical environmental factors into the study of heritage zones. Rehabilitation, unlike restoration, focuses on urban heritage —or "lesser" architecture, and therefore is not as orthodox as restoration with respect to materials and procedures (Cedeño, 2015). Furthermore, rehabilitation is associated with a concern for housing and other social func-

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tions, rehabilitating urban heritage with the objective of reuse.

The Sustainable City

In response to global environmental problems, at the margin of the longstanding concern for preserving architecture and historic cities there is increasing interest in turning current cities into ecological cities. Others speak of sustainable cities, which would address not only the ecological aspect —including resilience to climate change and disaster risk mitigation— but also assuring the rights of the population, identifying and reducing their vulnerabilities, increasing their adaptive capacity, and promoting social inclusion (Argentina.gob.ar). Imagining the necessary elements for such sustainable cities involves determining whether adaptive reuse may become a means for sustainably revitalizing older areas. Some have pointed to Freiburg, considered the most ecological city of the world, as a sustainable city given its collective transportation, pedestrian spaces, separation of waste, and the existence of eco-neighborhoods such as Vauban.

Current trends such as eco-urbanism, green planning, environmental planning, bioclimatic urbanism, and eco-neighborhoods indicate and respond to the need to radically modify urban living in accordance with the sustainable city model. To this end, Ester Higueras (2008), in her text *El reto de la ciudad habitable y sostenible* [*The challenge of the inhabitable and sustainable city*], establishes five mechanisms for making a city inhabitable and environmentally sustainable: territorial environmental planning, bioclimatic urbanism, environmental ordinances, ecological and bioclimatic urban rehabilitation, and Local Agendas 21 (Higueras, 2008). In the chapter of her book entitled *Ecological and bioclimatic rehabilitation of consolidated cities,* Higueras comments that rehabilitating a building represents 60% energy savings compared to tearing it down and rebuilding it and avoids numerous other environmental impacts. The author divides rehabilitation into three approaches:

1. *Sustainable rehabilitation*, involving intervention in a global, ecosystemic manner, promoting concrete social, economic, and environmental actions.
2. *Ecological rehabilitation*, prioritizing closing ecological cycles, such as those involving urban water, organic matter, energy, and waste.
3. *Bioclimatic rehabilitation*, by which energy consumption is reduced through passive conditioning of buildings and of the city as a whole (Higueras, 2008, pp. 131-132).

Higueras adds that rehabilitation of urban neighborhoods is the most effective form of urban sustainability (Figure 9). As urban land is a scarce resource, "recycling" is of crucial importance

Figure 9. The importance of adaptive reuse in the development of eco neighborhoods[1]

Source: Cedeño (2019).CC

1 Eco-neighborhoods are an excellent model of sustainable cities. Photograph of a reused building in the Vauban eco-neighborhood in Freiburg, Germany

(Higueras, 2008). Interestingly, this author —one of the main specialists on sustainable cities— uses the term rehabilitation with respect to both the urban scale and the architectural scale, without specifically mentioning adaptive reuse, indicating that adaptive reuse is not unanimously accepted.

A tendency exists in Europe with regard to recovery of public housing that may be equated with adaptive reuse. Due to increases in population growth rates, modification of human migration patterns, and durability of residential heritage built following WWII, considerable renovation of existing housing is likely in the future.

Large European cities currently face the problem of providing housing to new inhabitants as a result of population growth and modification of migratory flows. Thus, there is a need to extensively rehabilitate, and reuse housing developments built during the 1960s and 70s but later abandoned due to lack of infrastructure and services or the predominant residential monofunctionality in these neighborhoods, many of which have also decayed in general (Malighetti, 2004). The result of this significant challenge for adaptive reuse remains to be seen. It is not enough to fix technical and functional aspects of buildings or beautify facades; there is also a need for broad urban renovation programs in these peripheral neighborhoods to break with their monofunctionality and marginalization, as well as holistic policies that increase schooling and promote employment.

One important initiative consists of eco-neighborhoods that have been developed in Germany, France, Finland, and other European nations in order to renovate decaying neighborhoods considering social and environmental criteria. Environmentally concerned citizen groups have occupied, rehabilitated, and reused abandoned buildings, some of which have been unoccupied since the end of WWII. Vauban in Freiburg, Germany; Viikki in Helsinki, Finland; and BedZED in England are some cases which indicate the possibility of sustainable cities for the future.

Another aspect of cities that must be taken into account is their rich industrial heritage, much of which has been abandoned due to its obsoles-

cence and/or high level of contamination. Sometimes efforts to preserve other types of heritage, such as historic, lead to re-location of industrial sites that were polluting or otherwise destroying the site. Thus, the abandoned industrial complexes become available for reuse. This was the case of Porto Marghera in Venice, where large passing ships were destroying the bottom of the lake, a unique ecosystem formed by a confluence of freshwater and sea water, causing an increase in tides, and as a result, sinking of the historic city. This raises the question as to what can be done with such abandoned heritage that cannot be easily reused due to characteristics related to its shape, as well as the materials with which it was built (Cedeño, 2007).

As Ronchetta and Trisciuoglio (2008) point out, industrialization is a complex pervasive process involving physical, environmental, technical, economic, cultural, and institutional factors. As industrial heritage usually consists of private property, it is typically not subject to the rigid rules of protection generally applied to public property. These authors hold that the correct approach to initiating recovery of industrial heritage is industrial archeology, which studies a territory's industrial development.

Taking into consideration industrial archeology, adaptive reuse allows for repairing and reusing such heritage without having to abide by the rigid regulations applied to traditional historic heritage, thus allowing for greater constructive freedom. There is a need for additional research regarding the relationship between industrial archeology and adaptive reuse to provide a more complete panorama of the potential consequences of adaptive reuse for conserving this type of heritage.

In the effort to develop sustainable cities, it is important to review the UN 2030 Sustainable Development Goals (SDG), published on September 25, 2015. Goal 11 seeks that cities be inclusive, safe, resilient, and sustainable. This UN document points out that, as a result of increasing urbanization, cities now generate 70% of global carbon emissions and are responsible for over 60% of resource use; furthermore, a large number of residents live in poor neighborhoods, 90% of which breathe air that does not comply with the World Health Organization safety standards.

These environmental problems have been further aggravated by the COVID 19 pandemic. The document suggests reinforcing urban resilience in the face of climate change, assuring a high urban quality of life without harming the environment, developing functional public transportation networks, and promoting urban governance by the local population (AG-ONU. 2015). Unfortunately, the UN 2030 document does not offer concrete proposals for achieving these goals.

The other SDG are achieving an end to poverty, zero hunger, health and well-being, quality education, clean water and sanitation, clean affordable energy, decent jobs and economic growth, reducing inequality, peace, justice, strong institutions, and alliances to achieve these goals. All of these goals should be incorporated into sustainable cities of the future (www.un.org, 2015).

Recent publications speak of ReUrbanism, which follows ten guiding principles for the reuse of historic buildings to provide social and economic benefits to cities. According to the private American organization National Trust for Historic Preservation (2016), ReUrbanism is not only about preserving buildings, but also about encouraging citizen participation in architectural projects to promote people's identity, connection to their city and sustainability; improving walkability, and generating a "social creativity network", involving increasingly more citizens in actions such as recycling and reuse.

Thus, cities are enjoying a renaissance by investing in public and private spaces in order to reuse existing structures, and restoration architects are invited to modify the concept of heritage conservation to transform cities to improve their residents' living standards, making reuse the "default option" according to the following slogan: "Reinvesting, reusing, reinventing, recycling, and strengthening our existing communities is livable and sustainable" (National Trust for Historic Preservation, 2016).

With this objective, the National Trust for Historic Preservation (2016) proposes the following ten principles:

1. Cities are only successful when they work for everyone.
2. Older places provide the distinctiveness and character that engender success.
3. Older neighborhoods are economic engines.
4. New ideas, and the New Economy, thrive in older buildings**.**
5. Preservation is adaptive reuse. Adaptive reuse is preservation.
6. Preservation is about managing change.
7. Cities are for people, not vehicles.
8. The greenest building is the one that's already built.
9. There are many ways to achieve density.
10. Every community has stories and places that matter (National Trust for Historic Preservation, 2016).

While these principles regarding urbanism of the future —which include adaptive reuse— might be well intentioned, they are not accompanied by methodologies or concrete proposals. Furthermore, there is a need to compare them with the SDG and determine their sociopolitical consequences for the global population.

The French architects Lacaton and Vassal — winners of the 2021 Pritzker Prize— promote social architecture with the aim to "never demolish, always transform". For the first time in its history,

this prize did not select the most luxurious or costly project, but rather one with a social and environmental vision (Domínguez, 2021), demonstrating that architectural priorities are changing to address environmental issues —partly as a result of the influence of the UN SDG, which favor development of the discipline of adaptive reuse.

The Circular Economy and Adaptive Reuse

Although circular economy still lacks an agreed upon scientific definition, it incorporates the concepts of environmental management, eco-efficiency, eco-innovation, biomimicry, and industrial ecology in order to achieve circularity of energy and materials (Jiménez et al., 2019). The current linear economic model of extract-manufacture-consume-discard is pushing the limits of the planet's biophysical capacity; based on supposed availability of large quantities of cheap, easily accessible energy and natural resources, it is inefficient and wasteful (Jiménez, 2019). While the current economic model, aimed at maximizing the gross domestic product, is based on limitless production, the circular economy views materials as assets to preserve instead of continually consuming them, thereby creating wealth by making things last (Stahel, 2016, in Jiménez et al., 2019).

As an alternative to this linear economy, the circular economy presents a development strategy toward sustainable growth that is based on reduction in resource consumption, an increase in the useful life of products, and use over consumption. (Arnedo et al., 2020, p. 15)

The concept of circular economy challenges conventional theorizations regarding the economic cycle of resources-waste with respect to product durability. Such alternatives to conventional economic goals are posed by Walter Sthahel's "cradle to cradle" approach as well as theoretical approaches inspired by the functioning of natural cycles and ecosystems, such as Bill Mollison and David Holmgren's permaculture (Figure 10).

David Holmgren establishes twelve principles of design, several of which may be applied to architecture. Principle two is to "capture and store energy". Principle three —"obtain a yield"— may appear to support unleashed market capitalism but makes permaculture design realistic as people of all types of societies plant (or build) to obtain a yield or product. Principle five is to "use and value renewable resources" and six, to "not produce waste", which may be applied to maintenance of buildings through adaptive reuse. Thus, although the circular economy was not conceived in reference to architecture, permaculture —which is based on the circular economy— it may be applied to architecture (Holmgren, 2013).

The SDG are also aimed at circularity, especially SDG 8 —specifically goal 8.4— which states, "Improve progressively, through 2030, global resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation", as well as SDG 12 —specifically goal 12.2— which states, "By 2030, achieve sustainable management and efficient use of natural resources" and goal 12.5: "By 2030, substantially reduce waste generation through prevention, recycling and reuse" (www.un.org, 2015).

In 2020, the European Union published a Circular Economy Action Plan, which proposed requisites regarding content of recycled waste in certain construction projects. This represented a significant paradigm shift for construction codes (Cutieru, 2022). Currently, efforts to incorporate recycled construction materials are being carried out in Prague, where the municipal government, together with the organization Circle Economy of Amsterdam, analyzed the flow of local materials and carbon emissions in relation to the local economy, in order to identify key industries for introducing circular economy practices. The city has installed "Reuse Centers" to collect and process old furniture and appliances as well as domestic food waste to be converted into biogas. Furthermore, principles of circular agriculture were put into practice in the city's agrarian district (Cutieru, 2022).

Involving citizens in designing and governing their communities is key to developing a circular economy. Thus, architects, urban designers, and community members should take the initiative to incorporate circular economy principles into urban development and promote such a vision in society (Cutieru, 2022).

One recent application of the circular economy to construction is sustainable construction, involving use of *eco*-compatible construction materials. A product is eco-compatible if at the end of its useful life it may be recycled (Giordano, 2010). For example, once the life cycle of heritage buildings is finished, their materials may be reused or recycled.

Giordano (2010) points out that buildings are complex systems consisting of materials and resources that require energy for heating and cooling, as well as water for hygiene and consumption of those who inhabit them. Furthermore, buildings produce waste during several phases of their life cycle. Given environmental concerns, this suggests a profound need to modify the role of builders, who in addition to dealing with construction issues must be responsible for meeting environmental and sustainability objectives, and therefore should apply the concept of eco-compatibility to the construction process. Eco-compatibility of architecture requires evaluation of buildings so that their construction and use involve fewer environmental impacts, particularly with respect to energy consumption.

Each new construction should be considered "an organism endowed with its life cycle, which sooner or later will exhaust its functions". During

Figure 10. Permaculture, an important tool of the circular economy[1]

Source: Greenberg & Cedeño (2022). CC BY-NC

1 Permaculture provides the theoretical foundations for a circular economy and is presented as a lifestyle oriented toward evolution of the relationship of humans with the rest of the planet. Photographs of a homegarden in Chiapas (Mexico) incorporating some principles of permaculture

the design phase of the building, maintenance scenarios should be evaluated, certain technical elements may be replaced, and the building may even be demolished (Giordano, 2010). How may this be applied to a historic building that in theory has reached its demolition stage? This aspect of heritage architecture needs further development.

Another fundamental aspect of the recovery of heritage architecture is use of materials with a low primary energy content which do not pollute and can be reused in the future or disintegrate and be re-incorporated into the environment. Thus, the designer should identify the primary energy resources consumed during production of construction materials. According to Giordano (2010), it is important to identify energy consumption during each stage of the construction process. However, the use phase is the most significant in terms of energy consumption.

In order to identify the environmental impacts involved in all stages of construction and demolition of a building, a life cycle analysis (LCA) (Giordano, 2010) should be carried out according to the following phases:

1. Pre-production (extraction of raw materials).
2. Production and distribution (off the construction site).
3. Construction (including site selection).
4. Use and maintenance (administration of facilities, cleaning, and repair or substitution of worn-out or obsolete parts).
5. Final disposition (demolition, recovery, treatment, and recycling).

LCA of historic buildings is fundamental to a circular economy, and within LCA the maintenance phase is particularly significant. This involves cautious response to accelerated depreciation of buildings. Continual maintenance, although often neglected, is essential in built environments, as they lack the capacity for self-maintenance that biological systems possess. While lack of durability of contemporary constructions is normally attributed to modern construction standards, it is also due to lack of maintenance (Holmgren, 2013). Thus, maintenance engineering of built environments will be essential for future sustainability.

LCA allows for selecting materials that would be easily separable at the end of a building's useful life, such that waste may be adequately managed, particularly through recycling. Unlike more recent buildings assembled using the dry construction technique which makes it relatively easy to reuse their parts, those constructed during previous centuries used glues and mortars to join materials, making their subsequent separation extremely difficult. One exception —in which humid assembly techniques may allow for a high level of recyclability— is when part of a building has been constructed using a single material and thus is relatively easy to disassemble. For example, insolated thermal porous clay blocks, which provide insulation and thermal inertia and are therefore very valuable, are characterized by a certain level of homogeneity with respect to their thermal composition (Giordano, 2010, p. 233). However, recycling most of the materials in heritage buildings may prove difficult.

Technological advances in recent years have been fundamental for properly reusing heritage architecture. In recent decades, those inhabiting or otherwise using these monuments have experienced an improvement in their level of well-being, for example, through reduction of humidity in heritage architecture, which was previously a great obstacle to achieving comfortable spaces. This has been overcome thanks to advances in techniques such as waterproofing of foundations and walls, industrially manufactured bathrooms, and improvement of artificial heating and cooling systems in historic buildings. These construction techniques make it possible to achieve historic architecture with a level of comfort equivalent to that of modern architecture.

As heritage architecture was generally made to last for centuries, it is sustainable architecture *sine qua non*. The challenge is to achieve adequate comfort conditions and reduced energy consumption in historic buildings.

Discussion

Adaptive reuse, as well as urbanism, appear trapped between two opposing tendencies: on the one hand, as an accomplice of neoliberalism, and on the other, in support of reterritorialization and ecological reconversion, safeguarding the commons and promoting forms of development derived from the specific territory, as well as local practices of self-governance (Gissara et al., 2018).

One limitation of adaptive reuse so far is that there are no clear international regulations governing this discipline and providing it with a theoretical basis. Thus, it may appear to be a

trend justified by the postulates of the circular economy, and it is also not clearly in line with the postulates of the UN SDG.

Proposal of guidelines for adaptive reuse

Pietro Carlo Pellegrini (2018) in his text *Manuale del Riuso Architettonico* proposes criteria to be followed upon restoring or reusing a building. He affirms that "it is necessary to correctly interpret the typology, function, structure, materials, and constructive modalities", and that "knowledge of each of the components of [a construction] is fundamental to correctly attributing new uses to existing structures," taking into account functional and aesthetic characteristics, and using physically and chemically compatible materials" (p. 137). He recommends carrying out an architectural survey in order to graphically illustrate the details of the construction and to critically analyze its spatial characteristics and historic evolution so that the restoration architect may preserve the original elements of the building as faithfully as possible (Pellegrini, 2018). This author states that such an intervention should be carried out by a restorer, and that not just any architect —despite being a good designer— is qualified for such work. However, in the event that an architect who lacks restoration experience assumes responsibility for restoration or adaptive reuse, he or she should follow Pellegrini's proposal in order to avoid the risk of irreversibly damaging heritage architecture.

However, the question arises as to whether restorers or others who undertake restoration are prepared to take on the challenge of incorporating environmentally friendly materials and techniques. Presenting the successful example of the Roman Theater of Sagunto in Spain under the direction of Giorgio Grassi, Pellegrini states, "Considered to be the maximum respect for that which exists, conservation should go hand in hand with innovation […]. The project of recovery should not be an operation of crystallization, but rather [the restorer] should know how to positively respect transformation conserving the structure's essence" (Pellegrini, 2018).

A variety of strategies and techniques have been proposed in the search for sustainable cities. It is necessary to evaluate the extent to which each of these proposals can contribute to transforming existing cities into sustainable cities. Adaptive reuse may be one such solution. However, upon carrying out adaptive reuse of heritage buildings it would be important to follow Pellegrini's recommendations described above. There is also an urgent need to draw up an international charter specifying the guidelines – as well as the limitations – of adaptive reuse. Finally, as the search for sustainable cities should not lead to solutions without solid theoretical backing, it is essential to consider the fundamental role of restoration architects in this transformation.

Finally, regarding the possibility of achieving a cultural heritage that promotes ecologically and socially sustainable architecture over time, Gil Manuel Hernández (2008), argues that since the 1970s, UNESCO —supported by the media— has promoted the globalization of cultural heritage as a good to be enhanced by international tourism, stripping it of its local essence, thus turning it into a "zombie of modernity" (Hernández, 2008). In this context, it appears that these actors —at the service of capitalism— do not seek to promote ecological cultural heritage, but rather increase its economic advantage.

Conclusions

This text has reviewed the close historical relationship between architectural restoration and reuse, where the latter gained notoriety with the case of Bologna, whose reuse policy was promoted by the Italian Communist Party to benefit the underprivileged population, to some extent in line with the current UN SDG. Nevertheless, this tendency towards reuse with social objectives has been diluted with the years of neoliberal economics, which has resulted in the privatization of public space and the reduction of support for the neediest populations.

Adaptive reuse has been justified on the basis of the need to overcome the planetary environmental crisis. Although this might appear to be a noble purpose, the results of the actions carried out to achieve this aim are quite ambiguous given that the objectives defined according to neoliberal economics are contrary to social objectives as well as those of the circular economy (Gissara et al., 2018). What is the future of adaptive reuse? It is believed to depend on the future trajectory of the global economy.

Following the suggestions of permaculture, as well as the principle of *eco-compatibility*, new constructions should be built in such a manner that when they are no longer useful, they can be disassembled and reused to avoid waste. Although historic buildings were built according to construction procedures that do not facilitate the subsequent separation and reuse of their materials, such buildings were made to last for many years, even centuries; therefore, their extended lifespan makes them more compatible with a sustainable vision, which should be a global priority today. However, achieving architectural sustainability in practice still presents challenges, and architects and others involved in restoration must aim to balance historic authenticity with environmentally sustainable building practices and socially just housing practices.

Given current sustainable construction techniques, eco-compatible theories and methodologies are capable of catalyzing a major transformation in the construction industry. However, there is still a need to develop methodologies to apply reuse techniques to heritage buildings in order to

optimize their use. Due to the lack of trained professionals to carry out these tasks, universities must play a crucial role in this transition.

True ecological architecture requires the use of building materials that consume minimal energy and do not pollute, such as bamboo, raw earth, stone and wood in regions without deforestation. Given the state of the global environment, today's architects should reject building materials such as metals and concrete, as well as large windows in cold climates, while incorporating eco-technologies and weather-sensitive design adapted to the local climate. Due to the urgent need to transform our capitalist cities into sustainable cities, initiatives such as eco-neighborhoods, urban agriculture and permaculture are essential to the way of life of the future.

For adaptive reuse to become not just a trend, but rather an essential procedure in architecture to recycle and conserve heritage structures and at the same time benefit the most in need, it will be necessary to develop an international charter to regulate it and promote methodologies for intervention in cultural heritage. In this way, adaptive reuse may become a fundamental tool for transforming today's cities into sustainable cities of the future.

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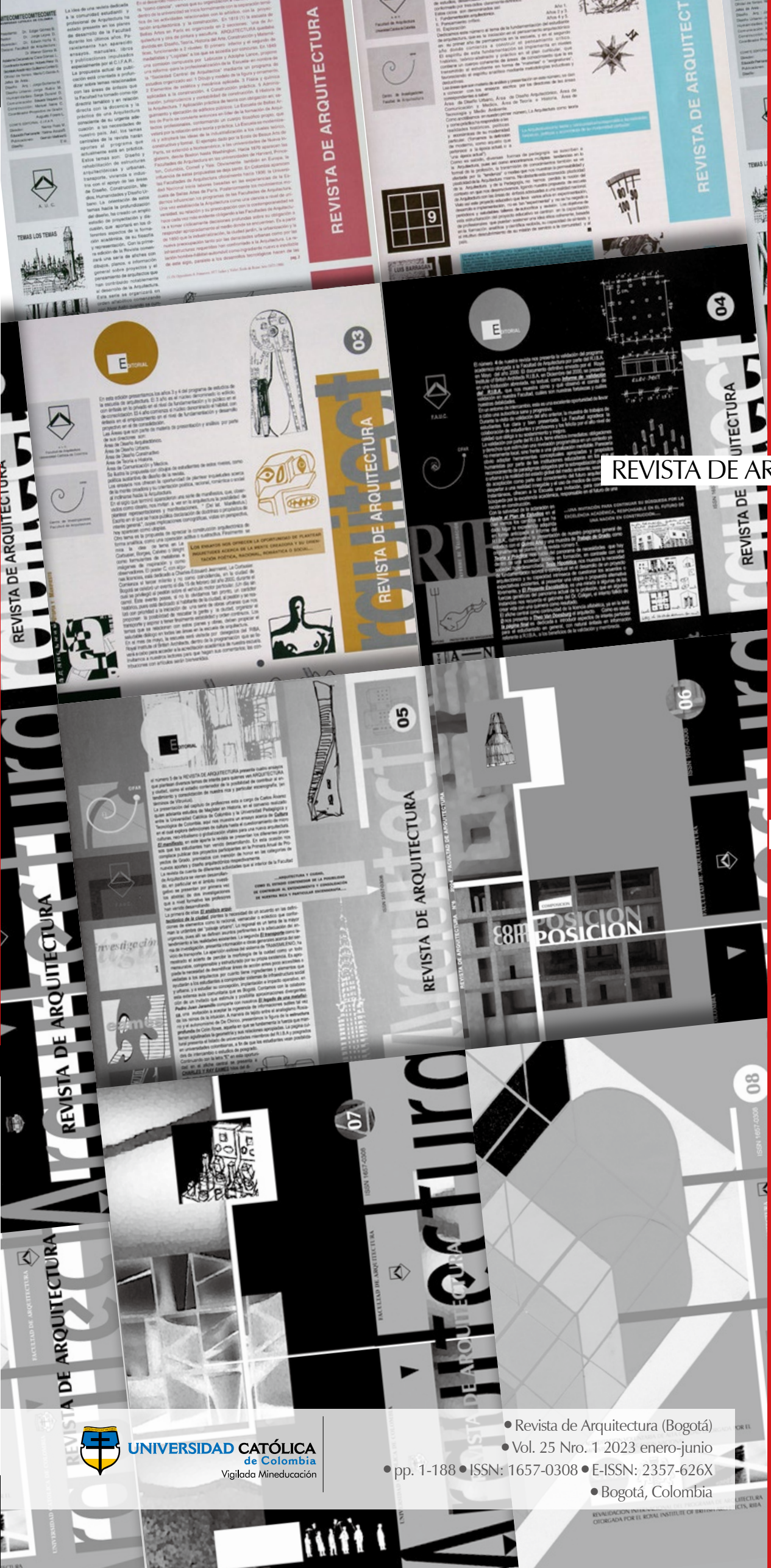

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3. Potenciar la discusión de experiencias e intercambios científicos entre investigadores y profesionales de las diferentes comunidades académicas.
4. Contribuir a la visión integral de la arquitectura, mediante la publicación de artículos de calidad.
5. Publicar artículos originales e inéditos que han pasado por revisión de pares doble ciego, para asegurar que se cumplan las normas éticas, de calidad, validez científica, editorial e investigativa.

Palabras clave de la Revista de Arquitectura (Bogotá): arquitectura; diseño; proyecto; educación arquitectónica; urbanismo; paisajismo; sostenibilidad; tecnología.

- Idiomas de publicación: español, inglés y portugués.
- Título abreviado: Rev. Arquit.
- Titulo corto: RevArq

Políticas de sección

La Revista de Arquitectura (Bogotá) se estructura en tres secciones: *Contextos*, *artículos de investigación* y *textos*

Contextos

Artículos que presentan una visión de temas disciplinares y editoriales que impactan el ejercicio académico y profesional del arquitecto y los profesionales afines. Extensión entre 3000 y 5000 palabras.

Editores/as: Editor Asignado

Abrir envíos Indizado Evaluado por pares

Artículos

Artículos derivados de investigaciones finalizadas sobre temas del quehacer del arquitecto y afines. Extensión de 5000 a 8000 palabras.

Áreas de interés prioritarias:

- Diseño arquitectónico
  - Teoría y metodologías en la arquitectura
  - Transformación de la obra construida
  - Medios de representación
  - Tipologías en la arquitectura
- Pedagogía y didáctica del Diseño
- Diseño participativo
- Espacio urbano
  - Historia (patrimonio cultural y físico)
  - Estructura formal de las ciudades y el territorio.
  - Diseño urbano
- Gestión del hábitat
- Planeación urbano y regional
- Arte urbano
- Paisajismo y diseño del paisaje
- Construcción sostenible
  - Diseño sostenible (territorial, social, económico, cultural)
  - Ecodiseño
  - Diseño bioclimático
- Diseño de sistemas estructurales
  - Procesos constructivos y de fabricación innovadora
  - Transformación digital en arquitectura y construcción
  - Procesos constructivos para la reducción de riesgos bióticos y antrópicos

Editores/as: Editor Asignado

Abrir envíos Indizado Evaluado por pares

Textos

Artículos generados desde las dinámicas propias de la Facultad de Diseño, en las actividades de docencia, extensión, formación en investigación o internacionalización, realizadas por docentes, estudiantes y egresados, (tesis de pregrado con la alianza de estudiante-profesor). Los artículos postulados a esta sección no deben superar el 20% de similitud con el contenido publicado del respectivo trabajo de grado. Extensión de 3000 a 4000 palabras. En esta sección se publican reseñas, traducciones y memorias de eventos relacionados con las publicaciones en Arquitectura y Urbanismo.

Editores/as: Editor Asignado

Abrir envíos Indizado Evaluado por pares

Portada: Portadas de *Revista de Arquitectura (Bogotá)*. Volúmenes 1 al 8.

Frecuencia de publicación

Desde 1999 y hasta el 2015, la *Revista de Arquitectura (Bogotá)* publicó un volumen al año, a partir del 2016 se publican dos números por año en periodo anticipado, enero-junio y julio-diciembre, pero también maneja la publicación anticipada en línea de los artículos aceptados (versión Post-print del autor).

La *Revista de Arquitectura (Bogotá)* se divulga mediante versiones digitales (PDF, HTML, EPUB, XML) e impresas con un tiraje de 700 ejemplares, los tiempos de producción de estas versiones dependerán de los cronogramas establecidos por la editorial.

Los tiempos de recepción-revisión-aceptación pueden tardar entre seis y doce meses dependiendo del flujo editorial de cada sección y del proceso de revisión y edición adelantado.

Con el usuario y contraseña asignados, los autores pueden ingresar a la plataforma de gestión editorial y verificar el estado de revisión, edición o publicación del artículo.

Canje

La Revista de Arquitectura (Bogotá) está interesada en establecer canje con publicaciones académicas, profesionales o científicas del área de Arquitectura y Urbanismo, como medio de reconocimiento y discusión de la producción científica en el campo de acción de la publicación.

Mecanismo

Para establecer canje por favor descargar, diligenciar y enviar el formato: RevArq FP20 Canjes

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Facultad de Diseño
Centro de Investigaciones - CIFAR

REVISTA DE ARQUITECTURA (Bogotá) Arquitectura

Revista de acceso abierto, arbitrada e indexada

Publindex: Categoría B. Índice Bibliográfico Nacional IBN.

Esci: Emerging Source Citation Index.

Doaj: Directory of Open Access Journals.

Redalyc: Red de Revistas Científicas de América Latina y el Caribe, España y Portugal.

SciELO: Scientific Electronic Library Online - Colombia

Redib: Red Iberoamericana de Innovación y Conocimiento Científico.

Ebsco: EBSCOhost Research Databases.

Clase: Base de datos bibliográfica de revistas de ciencias sociales y humanidades.

Latindex: Sistema Regional de Información en Línea para Revistas Científicas de América Latina, el Caribe, España y Portugal (Directorio y catálogo).

Dialnet: Fundación Dialnet - Biblioteca de la Universidad de La Rioja.

LatinRev: Red Latinoamericana de Revistas Académicas en Ciencias Sociales y Humanidades.

Proquest: ProQuest Research Library.

Miar: Matrix for the Analysis of Journals.

Sapiens Research: *Ranking* de las mejores revistas colombianas según visibilidad internacional.

Actualidad Iberoamericana: (Índice de Revistas) Centro de Información Tecnológica (CIT).

Google Scholar

Arla: Asociación de Revistas latinoamericanas de Arquitectura.

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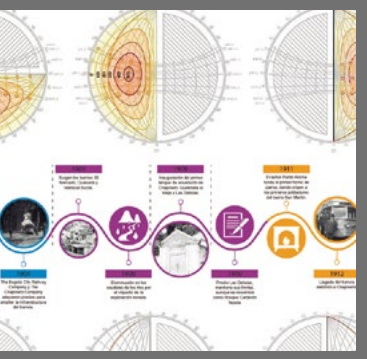

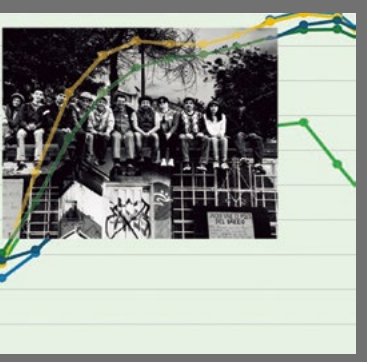

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POLÍTICA EDITORIAL

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La postulación de un artículo a la Revista de Arquitectura (Bogotá) indica que- el o los autores certifican que conocen y aceptan la política editorial, para lo cual firmarán en original y remitirán el formato RevArq FP00 Carta de originalidad.

La Revista de Arquitectura (Bogotá) maneja una política de Autoarchivo VERDE, según las directrices de SHERPA/RoMEO, por lo cual el autor puede:

- *Pre-print* del autor: Archivar la versión *pre-print* (la versión previa a la revisión por pares)
- *Post-print* del autor: Archivar la versión *post-print* (la versión final posterior a la revisión por pares)
- Versión de editor/PDF: Archivar la versión del editor – PDF/HTML/XLM en la maqueta de la Revista de Arquitectura (Bogotá).

El Autoarchivo se debe hacer respetando la licencia de acceso abierto, la integridad y la imagen de la Revista de Arquitectura (Bogotá), también se recomienda incluir la referencia, el vínculo electrónico y el DOI.

El autor o los autores son los titulares del Copyright © del texto publicado y la Editorial de la Revista de Arquitectura (Bogotá) solicita la firma de una autorización de reproducción del artículo (RevArq FP03 Autorización reproducción), la cual se acoge a la licencia CC, donde se expresa el derecho de primera publicación de la obra.

La Revista de Arquitectura (Bogotá) se guía por las normas internacionales sobre propiedad intelectual y derechos de autor, y de manera particular el artículo 58 de la Constitución Política de Colombia, la Ley 23 de 1982 y el Acuerdo 172 del 30 de septiembre de 2010 (Reglamento de propiedad intelectual de la Universidad Católica de Colombia).

Para efectos de autoría y coautoría de artículos se diferencian dos tipos: "obra en colaboración" y "obra colectiva". La primera es aquella cuya autoría corresponde a todos los participantes al ser fruto de su trabajo conjunto. En este caso, quien actúa como responsable y persona de contacto debe asegurar que quienes firman como autores han revisado y aprobado la versión final, y dan consentimiento para su divulgación. La obra colectiva es aquella en la que, aunque participan diversos colaboradores, hay un autor que toma la iniciativa, la coordinación y realización de dicha obra. En estos casos, la autoría corresponderá a dicha persona (salvo pacto en contrario) y será suficiente únicamente con su autorización de divulgación.

El número de autores por artículo debe estar justificado por el tema, la complejidad y la extensión, y no deberá ser superior a la media de la disciplina, por lo cual se recomienda que no sea mayor de cinco. El orden en que se enuncien corresponderá a los aportes de cada uno a la construcción del texto, se debe evitar la autoría ficticia o regalada. Si se incluyen más personas que trabajaron en la investigación se sugiere que sea en calidad de colaboradores o como parte de los agradecimientos. La Revista de Arquitectura (Bogotá) respetará el número y el orden en que figuren en el original remitido. Si los autores consideran necesario, al final del artículo pueden incluir una breve descripción de los aportes individuales de cada uno de firmantes.

La comunicación se establece con uno de los autores, quien a su vez será el responsable de informar a los demás autores de las notificaciones emitidas por la Revista de Arquitectura (Bogotá).

En virtud de mantener el equilibro de las secciones y las mismas oportunidades para todos los participantes, un mismo autor puede postular dos o más artículos de manera simultánea; si la decisión editorial es favorable y los artículos son aceptados, su publicación se realizará en números diferentes.

Acceso abierto

La Revista de Arquitectura (Bogotá), en su misión de divulgar la investigación y apoyar el conocimiento y la discusión en los campos de interés, proporciona acceso abierto, inmediato e irrestricto a su contenido de manera gratuita mediante la distribución de ejemplares impresos y digitales. Los interesados pueden leer, descargar, guardar, copiar y distribuir, imprimir, usar, buscar o referenciar el texto completo o parcial de los artículos o la totalidad de la Revista de Arquitectura (Bogotá).

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La Revista de Arquitectura es divulgada en centros y grupos de investigación, en bibliotecas y universidades, y en las principales facultades de Arquitectura, mediante acceso abierto a la versión digital y suscripción anual al ejemplar impreso o por medio de canje, este último se formaliza mediante el formato RevArq FP20 Canjes.

Para aumentar su visibilidad y el impacto de los artículos, se envían a bases de datos y sistemas de indexación y resumen (SIR) y, asimismo, pueden ser consultados y descargados en la página web de la revista.

La Revista de Arquitectura no maneja cobros, tarifas o tasas de publicación de artículo (Article Processing Charge-APC), o por el sometimiento de textos a la publicación.

Ética y buenas prácticas

La Revista de Arquitectura se compromete a cumplir y respetar las normas éticas en todas las etapas del proceso de publicación. Los autores de los artículos publicados darán cumplimiento a los principios éticos contenidos en las diferentes declaraciones y legislaciones sobre propiedad intelectual y derechos de autor específicos del país donde se realizó la investigación. En consecuencia, los autores de los artículos postulados y aceptados para publicar, que presentan resultados de investigación, deben firmar la declaración de originalidad (formato RevArq FP00 Carta de originalidad).

La Revista de Arquitectura reconoce y adopta los principios de transparencia y buenas prácticas descritos por COPE, "Principles of Transparency and Best Practice in Scholarly Publishing" (2015).

El equipo editorial tiene la obligación de guardar la confidencialidad acerca de los artículos recibidos, y abstenerse de usar en sus propias investigaciones datos, argumentos o interpretaciones hasta tanto el artículo no sea publicado. También debe ser imparcial y gestionar los artículos de manera adecuada y en los plazos establecidos. La selección de revisores se hará con objetividad y estos deberán responder a la temática del artículo.

El editor, los autores y los revisores deben seguir las normas éticas internacionales definidas por el Committee on Publication Ethics (COPE), con el fin de evitar casos de:

- Fabricación, falsificación u omisión de datos.
- Plagio y autoplagio.
- Publicación redundante, duplicada o fragmentada.
- Omisión de referencias a las fuentes consultadas.
- Utilización de contenidos sin permiso o sin justificación.
- Apropiación individual de autoría colectiva.
- Cambios de autoría.
- Conflicto de interés (CDI) no revelado o declarado.
- Otras que pudieran surgir en el proceso de investigación y publicación.

La fabricación de resultados se genera al mostrar datos inventados por los autores; la falsificación resulta cuando los datos son manipulados y cambiados a capricho de los autores; la omisión se origina cuando los autores ocultan deliberadamente un hecho o dato. El plagio se da cuando un autor presenta como ideas propias datos creados por otros. Los casos de plagio son los siguientes: copia directa de un texto sin entrecomillar o citar la fuente, modificación de algunas palabras del texto, paráfrasis y falta de agradecimientos; el autoplagio se da cuando el mismo autor reutiliza material propio que ya fue publicado, pero sin indicar la referencia al trabajo anterior. La revista se apoya en herramientas digitales que detectan cualquiera de estos casos en los artículos postulados, y es labor de los editores y revisores velar por la originalidad y fidelidad en la citación. La publicación redundante o duplicada se refiere a la copia total, parcial o alterada de un trabajo ya publicado por el mismo autor

En caso de sospechar de alguna mala conducta se recomienda seguir los diagramas de flujo elaborados por COPE (2008), con el fin de determinar las acciones correspondientes.

La Revista de Arquitectura se reserva el derecho de retractación de publicación de aquellos artículos que, posterior a su publicación, se demuestre que presentan errores de buena fe, o cometieron fraudes o malas prácticas científicas. Esta decisión se apoyará en "Retraction Guidelines" (COPE, 2009). Si el error es menor, este se podrá rectificar mediante una nota editorial de corrección o una fe de erratas. Los autores también tienen la posibilidad de solicitar la retractación de publicación cuando descubran que su trabajo presenta errores graves. En todos los casos se conservará la versión electrónica y se harán las advertencias de forma clara e inequívoca.

Privacidad y manejo de la información. Habeas Data

Para dar cumplimiento a lo previsto en el artículo 10 del Decreto 1377 de 2013, reglamentario de la Ley 1581 de 2012, y según el Acuerdo 002 del 4 de septiembre de 2013 de la Universidad Católica de Colombia, "por el cual se aprueba el manual de políticas de tratamiento de datos personales":

La *Universidad Católica de Colombia*, considerada como responsable o encargada del tratamiento de datos personales, manifiesta que los datos personales de los autores, integrantes de los comités y pares revisores, se encuentran incluidos en nuestras bases de datos; por lo anterior, y en cumplimiento de las disposiciones legales vigentes, la Universidad solicitará siempre su autorización, para que en desarrollo de sus funciones propias como Institución de Educación Superior, en especial las relacionadas con la docencia, la extensión y la investigación, la *Universidad Católica de Colombia* pueda recolectar, recaudar, almacenar, usar, circular, suprimir, procesar, intercambiar, compilar, dar tratamiento, actualizar, transmitir o transferir a terceros países y disponer de los datos que le han suministrado y que han sido incorporados en las bases de datos de todo tipo que reposan en la Universidad.

La *Universidad Católica de Colombia* queda autorizada, de manera expresa e inequívoca, en los términos señalados por el Decreto 1377 de 2013, para mantener y manejar la información de nuestros colaboradores (autores, integrantes de los diferentes comités y pares revisores); así mismo, los colaboradores podrán ejercer sus derechos a conocer, actualizar, rectificar y suprimir sus datos personales, para lo cual se han dispuesto las siguientes cuentas de correo electrónico:

contacto@ucatolica.edu.co y revistadearquitectura@ucatolica.edu.co

Directrices para autores

La Revista de Arquitectura (Bogotá) recibe artículos de manera permanente. Los artículos se procesan a medida que se postulan, dependiendo el flujo editorial de cada sección.

El idioma principal es el español, y como opcionales están definidos el inglés, el portugués y el francés; los textos pueden ser escritos y presentados en cualquiera de estos.

Los artículos postulados deben corresponder a las categorías universalmente aceptadas como producto de investigación, ser originales e inéditos y sus contenidos responder a criterios de precisión, claridad y brevedad.

Como punto de referencia se pueden tomar las tipologías y definiciones del Índice Bibliográfico Nacional, Publindex (2010) que se describen la continuación:

1. *Artículo de revisión:* documento resultado de una investigación terminada donde se analizan, sistematizan e integran los resultados de investigaciones publicadas o no publicadas, sobre un campo en ciencia o tecnología, con el fin de dar cuenta de los avances y las tendencias de desarrollo. Se caracteriza por presentar una cuidadosa revisión bibliográfica de por lo menos 50 referencias.
2. *Artículo de investigación científica y tecnológica:* documento que presenta, de manera detallada, los resultados originales de proyectos terminados de investigación. La estructura generalmente utilizada contiene cuatro apartes importantes: introducción, metodología, resultados y conclusiones.
3. *Artículo de reflexión:* documento que presenta resultados de investigación terminada desde una perspectiva analítica, interpretativa o crítica del autor, sobre un tema específico, recurriendo a fuentes originales.

Adicional a estas tipologías, se pueden presentar otro tipo de artículos asociados a procesos de investigación-creación y/o investigación proyectual. En todos los casos se debe presentar la información suficiente para que cualquier investigador pueda reproducir la investigación y confirmar o refutar las interpretaciones defendidas y sea evidente el aporte a la disciplina.

En todos los casos se debe presentar la información suficiente para que cualquier investigador pueda reproducir la investigación y confirmar o refutar las interpretaciones defendidas.

Instrucciones para postular artículos

Postular el artículo en la página web de la Revista de Arquitectura (Bogotá) y adjuntar comunicación escrita dirigida al editor RevArq_FP00 Carta de originalidad (debidamente firmada por todos los autores en original); de igual manera, se debe diligenciar el formato de hoja de vida RevArq FP01 Hoja de Vida (una por cada autor).

En la comunicación escrita el autor expresa que conoce y acepta la política editorial de la Revista de Arquitectura (Bogotá), que el artículo no está postulado para publicación simultáneamente en otras revistas u órganos editoriales y que no existe conflicto de intereses (ver modelo RevArq FP06 CDI) y que, de ser aceptado, concederá permiso de primera publicación, no exclusiva a nombre de la Universidad Católica de Colombia como editora de la revista.

Los artículos deben tener en cuenta las siguientes recomendaciones:

- En la primera página del documento se debe incluir:

Título: no exceder 15 palabras.

Subtítulo: opcional, complementa el título o indica las principales subdivisiones del texto.

Nombre del autor o autores: nombres y apellidos completos o según modelo de citación adoptado por el autor para la normalización de los nombres del investigador. Como nota al pie (máximo 100 palabras): formación académica, experiencia profesional e investigativa, código ORCID https://orcid.org/, e información de contacto, correo electrónico.

Filiación institucional: debajo del nombre se debe declarar la ins-titución en la cual se desarrolló el producto, de la cual recibió apoyo o aquella que respalda el trabajo investigativo.

Resumen: debe ser analítico, se redacta en un solo párrafo, da cuenta del tema, el objetivo, la metodología, los resultados y las conclusiones; no debe exceder las 150 palabras.

Palabras clave: cinco palabras o grupo de palabras, ordenadas alfabéticamente y que no se encuentren en el título o subtítulo; estas sirven para clasificar temáticamente al artículo. Se recomienda emplear principalmente palabras definidas en el tesauro de la Unesco (http://databases.unesco.org/thessp/), en el tesauro de Arte & Arquitectura © (www.aatespanol.cl), o Vitruvio (http://vocabularyserver.com/vitruvio/)

También se recomienda incluir título, resumen y palabras clave en segundo idioma.

- La segunda página y siguientes deben tener en cuenta:

El cuerpo del artículo se divide en: Introducción, Metodología, Resultados y Discusión de resultados; posteriormente se presentan las Conclusiones, y luego las Referencias bibliográficas y los Anexos (modelo IMRYD). Las tablas y figuras se deben incorporar en el texto.

Descripción del proyecto de investigación: en la introducción se debe describir el tipo de artículo y brevemente el marco investigativo del cual es resultado y diligenciar el formato (RevArq FP02 Info Proyectos de Investigación).

Texto: todas las páginas deben venir numeradas y con el título de artículo en la parte superior de la página. Márgenes de 3 cm por todos los lados, interlineado doble, fuente Arial o Times New Roman de 12 puntos, texto justificado (Ver plantilla para presentación de artículos). La extensión de los artículos debe ser de alrededor de 5.000 palabras (± 20 páginas, incluyendo gráficos, tablas, referencias, etc.); como mínimo 3.500 y máximo 8.000 palabras. Se debe seguir el estilo vigente y recomendado en el Manual para Publicación de la American Psychological Association (APA). (Para mayor información véase http://www.apastyle.org/)

Citas y notas al pie: las notas aclaratorias o notas al pie no deben exceder cinco líneas o 40 palabras, de lo contrario estas deben ser incorporadas al texto general.

Las citas pueden ser:

Corta: (con menos de 40 palabras) se incorporan al texto y pueden ser: textuales (se encierran entre dobles comillas), parafraseo o resumen (se escriben en palabras del autor dentro del texto).

Cita textual extensa: (mayor de 40 palabras) debe ser dispuesta en un renglón y un bloque independiente con sangrías y omitiendo las comillas, no olvidar en ningún caso la referencia del autor (Apellido, año, página).

Referencias: como modelo para la construcción de referencias se emplea el estilo recomendado en el Manual para Publicación de la American Psychological Association (APA) (http://www.apastyle.org/).

Siglas: en caso de emplear siglas en el texto, las figuras o las tablas, se debe proporcionar la equivalencia completa la primera vez que se empleen y encerrarlas entre paréntesis. En el caso de citar personajes reconocidos se deben colocar nombres o apellidos completos, nunca emplear abreviaturas.

Figuras y tablas: las figuras (gráficos, diagramas, ilustraciones, planos, mapas o fotografías) y las tablas deben ir numeradas y contener título o leyenda explicativa relacionada con el tema del artículo, que no exceda las 15 palabras (Figura 1. xxxxx, Tabla 1. xxxx, etc.) y la procedencia (fuente: autor o fuente, año, página). Estas se deben referenciar en el texto de forma directa o entre paréntesis; se recomienda hacerlo con referencias cruzadas.

También se deben entregar en medio digital, independiente del texto, en formatos editables o abiertos. La marcación de los archivos debe corresponder a la incluida en el texto. Según la extensión del artículo se deben incluir de 5 a 10 gráficos. Ver guía para la búsqueda de imágenes de dominio público o bajo licencias *Creative Commons* (CC).

El autor es el responsable de *adquirir los derechos o las autorizaciones* de reproducción a que haya lugar para imágenes o gráficos tomados de otras fuentes, así como de entrevistas o material generado por colaboradores diferentes a los autores; de igual manera, se debe garantizar la protección de datos e identidades para los casos que sea necesario.

Fotografía: pueden ser entregadas en original para ser digitalizadas, de lo contrario se deben digitalizar con una resolución igual o superior a 300 dpi para imágenes a color y 600 para escala de grises. Los formatos de las imágenes pueden ser TIFF, PSD o JPG, y deben cumplir con las características expresadas en el punto anterior (figuras).

Planimetría: se debe entregar la planimetría original en medio digital, en lo posible en formato CAD, y sus respectivos archivos de plumas o en PDF; de no ser posible, se deben hacer impresiones en tamaño carta con las referencias de los espacios mediante numeración y lista adjunta. Deben tener escala gráfica, escala numérica, norte, coordenadas y localización. En lo posible, no deben contener textos, achurados o tramas.

Para más detalles, consultar el documento *RevArq Parámetros para Autores Descripción* en el portal web de la Revista de Arquitectura (Bogotá)

Beneficios

Se podrá solicitar una constancia informativa en la que se relaciona la publicación del artículo y, de manera opcional, se pueden detallar las fechas del proceso editorial y el arbitraje realizado.

* Todos los formatos, las ayudas e instrucciones detalladas se encuentran disponibles en la página web de la *Revista de Arquitectura (Bogotá)* http://editorial.ucatolica.edu.co/ojsucatolica/revistas_ucatolica/index.php/RevArq.
** Para consultar estas instrucciones en otro idioma por favor acceder a la página web de la ***Revista de Arquitectura (Bogotá)***.

La selección de revisores se realiza de acuerdo con los siguientes criterios:

- Afinidad temática.
- Formación académica.
- Experiencia investigativa y profesional.
- Producción editorial en revistas similares o en libros resultado de investigación.

El proceso de arbitraje se basa en los principios de equidad e imparcialidad, y en los criterios de calidad y pertinencia.

El desarrollo de la revisión se realiza según el formato (RevArq FP10 Evaluación de artículos) y las observaciones que el revisor considere necesarias en el cuerpo del artículo. En cualquiera de los conceptos que emita el revisor (Aceptar, Publicable con modificaciones, Reevaluable o No publicable), y como parte de la labor formativa y de comunidad académica, el revisor hará sugerencias para mejorar el documento. El revisor podrá solicitar una nueva relectura del artículo después de los ajustes realizados por el autor.

El revisor también deberá diligenciar el formato RevArq FP01 Hoja de Vida, con el fin de certificar y soportar el proceso de revisión ante los SIR que así lo soliciten.

En el proceso de arbitraje se emplea el método **doble ciego**, los nombres del revisor no serán conocidos por el autor y viceversa. Con el fin de garantizar el anonimato del autor, al artículo postulado se le han podido suprimir nombres, instituciones o imágenes que puedan ser asociadas de manera directa al autor.

Aunque se procura el anonimato, una vez recibida la invitación como par revisor del artículo, el revisor debe cerciorarse de que no exista conflicto de intereses (CDI) o alguna limitante que afecte la revisión o que pueda ser vista como tal (lazos familiares, amistad o enemistad, vínculos contractuales o laborales, posiciones éticas, etc.), de presentarse esta situación se notificara al editor. (Ver modelo RevArq FP06 CDI).

Dada la confidencialidad del proceso de revisión, y considerando los derechos de autor y de propiedad intelectual que pueda haber sobre el material que se entrega, el revisor se compromete a mantener en absoluta reserva su labor, a limitar el uso de la obra entregada solo para el propósito designado y a devolver la documentación remitida una vez concluya la actividad.

El tiempo establecido para las revisiones de pares es de máximo un mes a partir de la confirmación de la recepción de la documentación. Ese plazo podrá ser modificado de mutuo acuerdo entre el editor y el revisor, siempre y cuando no afecte la periodicidad de la revista, la impresión o el tiempo para emitir una respuesta al autor.

Los revisores se acogerán a "COPE Ethical Guidelines for Peer Reviewers" de COPE.

Beneficios

Tendrá derecho a una constancia de la colaboración en la revisión de artículos, la cual solo contendrá el periodo en el cual se realizó la actividad. También tendrá la posibilidad de aceptar o no la publicación de su nombre, nacionalidad y nivel máximo de formación en la página web de la Revista de Arquitectura (Bogotá) en su calidad de colaborador.

Proceso de revisión por pares

Luego de la postulación del artículo, el editor de la Revista de Arquitectura (Bogotá) selecciona y clasifica los artículos que cumplen con los requisitos establecidos en las directrices para los autores. El editor podrá rechazar en primera instancia artículos, sin recurrir a un proceso de revisión, si los considera de baja calidad o por presentar evidencias de faltas éticas o documentación incompleta.

Los artículos se someterán a un primer dictamen del *editor, de los editores de sección y del Comité Editorial*, teniendo en cuenta:

- Afinidad temática, relevancia del tema y correspondencia con las secciones definidas.
- Respaldo investigativo.
- Coherencia en el desarrollo del artículo, así como una correcta redacción y ortografía.
- Relación entre las figuras y tablas con el texto del artículo.

En esta revisión se verificará el nivel de originalidad mediante el uso de software especializado (**Ithenticate o similar**) y recursos digitales existentes para tal fin, también se observará la coherencia y claridad en los apartados del documento (modelo IMRYD), la calidad de las fuentes y la adecuada citación, esto quedará consignado en el formato (RevArq FP09 Revisión de artículos); esta información será cargada a la plataforma de gestión editorial y estará a disposición del autor.

En caso de que el artículo requiera ajustes preliminares, será devuelto al autor antes de ser remitido a revisores. En este caso, el autor tendrá veinte días para remitir nuevamente el texto con los ajustes solicitados.

Después de la preselección se asignan mínimo dos revisores especializados, quienes emitirán su concepto utilizando el formato (RevArq FP10 Evaluación de artículos) y las anotaciones que consideren oportunas en el texto; en esta etapa se garantizará la confidencialidad y el anonimato de autores y revisores (modalidad **doble ciego**).

Del proceso de revisión se emite uno de los siguientes conceptos que será reportado al autor:

- *Aceptar el envío:* con o sin observaciones.
- *Publicable con modificaciones:* se podrá sugerir la forma más adecuada para una nueva presentación, el autor puede o no aceptar las observaciones según sus argumentos. Si las acepta, cuenta con quince días para realizar los ajustes pertinentes.
- *Reevaluable:* cumple con algunos criterios y debe ser corregido. Es necesario hacer modificaciones puntuales y estructurales al artículo. En este caso, el revisor puede aceptar o rechazar hacer una nueva lectura del artículo luego de ajustado.
- *No publicable:* el autor puede volver a postular el artículo e iniciar nuevamente el proceso de arbitraje, siempre y cuando se evidencien los ajustes correspondientes.

En el caso de presentarse diferencias sustanciales y contradictorias en los conceptos sobre la recomendación del revisor, el editor remitirá el artículo a un revisor más o a un miembro del Comité Editorial quien podrá actuar como tercer árbitro, con el fin de tomar una decisión editorial sobre la publicación del artículo.

Los autores deberán considerar las observaciones de los revisores o de los editores, y cada corrección incorporada u omitida debe quedar justificada en el texto o en una comunicación adjunta. En el caso que los autores omitan las indicaciones realizadas sin una argumentación adecuada, el artículo será devuelto y no se dará por recibido hasta que no exista claridad al respecto.

El editor respetará la independencia intelectual de los autores y a estos se les brindará el derecho de réplica en caso de que los artículos hayan sido evaluados negativamente y rechazados.

Los autores, con su **usuario y contraseña**, podrán ingresar a la plataforma de Gestión Editorial, donde encontrarán los conceptos emitidos y la decisión sobre el artículo.

El editor y el Comité Editorial se reservan el derecho de aceptar o no la publicación del material recibido. También se reservan el derecho de sugerir modificaciones de forma, ajustar las palabras clave o el resumen y de realizar la corrección de estilo. El autor conocerá la versión final del texto antes de la publicación oficial del mismo.

Cuando un artículo es aceptado para su publicación, el autor debe firmar la autorización de reproducción (RevArq FP03 Autorización reproducción). **Para más información ver: Política de derechos de autor**

Notas aclaratorias:

La Revista de Arquitectura (Bogotá) busca el equilibrio entre las secciones, motivo por el cual, aunque un artículo sea aceptado o continúe en proceso de revisión, podrá quedar aplazado para ser publicado en un próximo número; en este caso, el autor estará en la posibilidad de retirar la postulación del artículo o de incluirlo en el banco de artículos del próximo número.

El editor y los editores de sección de la Revista de Arquitectura (Bogotá) son los encargados de establecer contacto entre los autores y revisores, ya que estos procesos se realizan de manera anónima.