

## COLLISION OF BUILT HERITAGE REVITALISATION PRINCIPLES AND “DESIGN FOR ALL”

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**Abstract** *Nine briefly examined examples of built heritage in this paper reveal various cases of collision of conservation principles with demands of barrier-free architecture. The importance of this issue has been raised in the light of increasing world-wide efforts to preserve cultural heritage buildings for future generations by revitalization and strong efforts, in particularly in the EU, to reach higher standards in inclusion of all social groups.*

**Key words:** *built heritage, revitalization, accessibility*

### 1. INTRODUCTION

Revitalization of architectural objects may get in collision with the rules set to assure the accessibility needs for all social groups. In broadest sense, the “accessibility” is defined as the ability of all people to have access to physical environment, transportation, information and ICT, other infrastructure and services, on equal basis with others [7]. The term “barrier-free” is more commonly used outside the English-speaking world, e.g. Japan, Germany, Finland, while “accessibility” or “access for disabled” is more common in English-speaking countries. Other terms which are related to the topic and used frequently include “universal design”, “access for all”, “building for everyone” and “universal accessibility right” [29].

Nowadays, it is generally accepted that respect of accessibility right for all, *de facto* every group with limited mobility, is in accordance with the European policies regarding human rights. It is common knowledge that, roughly, ¼ of the population has special needs while moving and not less than 10% of European citizens have some kind of disability. More detailed research in Greece revealed that “design for all” is of existential importance for 27% of the population, and considered very important for quality of life

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for additional 22% [13]. In Serbia, children under age of seven and elderly above age of 70, make 20% of population [15, 23]. On the other hand, it is expected that the majority of museum visitors will be elderly people, by 2025 [28]. Therefore, the inclusion of persons with reduced mobility appears to be timely response to coming economic and social problems, aiming at achieving benefit for society as a whole, through successful and humane living of every individual. Providing access to heritage sites and building is one aspect of the issue. Recent trend in the accessibility regulations is based on understanding of the real needs of specific social groups and the difficulties they face due to particular handicap or weakness. The efforts are made to correlate defect/weakness of an individual and the spatial solution that facilitates it [11, 14]. The papers in this field deal with the general principles of "design for all" methodology, the spatial problems of design (for example, those of archaeological parks and other open spaces, museum buildings and exhibition areas, residential facilities etc.), legislation and opportunities for improvement, difficulties in applying the regulations, and more [20].

Solution to the problem of accessibility in the revitalization of architectural structures is usually more complex than in the case of new buildings. Conservation principles (the principle of preserving the authenticity of the monument and its universal value, and the principle to respect all values of the monument) may turn into constraints for the application of the principles of accessibility. Difficulties may arise both when applying general principles, as well as technical measures for preservation. In each case of harmonizing revitalization of the building with the rules of accessibility, there are numerous and diverse solutions, including those non-architectural. The focus in this paper is on examining spatial issues covered by regulations and exploring examples of (not) ignoring certain accessibility problems, in practice.

## 2. HISTORY OF THE CONCEPT "DESIGN FOR ALL"

The term "design for all" is said to be coined by the architect Ronald Mace, while the concept was developed by Selwyn Goldsmith, author of the first manual about design for disabled, published in 1963 in the USA [29]. The principles of "design for all", under that name, are said to be presented for the first time in Barcelona in 1995, at General Assembly of the European Institute for Design and Disabilities - EIDD [29]. In the second half of the twentieth century, awareness of the needs of people with mobility limitations increased, as well as the importance of their inclusion into society.

It is generally accepted that consideration of this issue at national levels was initiated by the adoption of UN Universal Declaration of Human Rights, 1948 [29]. In most European countries, the regulations were adopted in 1990s, and some of them have been even revised by the end of the twentieth century. The first regulations in Italy were developed in 1971, following the initiative of the Ministry of Public Works in 1968. [26]. In China, Japan and South Korea regulations were adopted in the first decade of the XXI century [29]. In many countries, the accessibility rights were regulated under set of rules regarding protection of the rights of persons with disabilities, as the most vulnerable social group, in terms of accessibility. The U.S. Disability Act was adopted in 1990 and similar act was adopted in 1992 in Australia. In Great Britain and the UK Act of discrimination against persons with disabilities has been revised in 2005 [29]. All

countries in the region of Serbia have regulated this issue to some extent during the last two decades. Serbia and Montenegro, single state at the time, adopted The Ordinance on conditions for planning and design of facilities referring to barrier-free mobility of children, the elderly, handicapped and disabled in 1997 [17]. Later, the Ordinance was replaced in Serbia, by The Regulations on Technical Standards of accessibility in 2012 [21]. The regulations provide legally binding measures to protect the rights to access for all in public and some residential buildings. The legal obligation refers to the novel and existing buildings, according to type and purpose.

The concept of universal accessibility, aiming to significantly contribute the quality of life for all, is promoted by many governmental and non-governmental organizations. CSIs and private-public partnership play important role in achieving those goals. Non-governmental organizations often initiate novelties in legal actions.

### 3. ACCESSIBILITY AND EXAMPLES OF BUILT HERITAGE REVITALIZATION

#### 3.1. Accessibility requirements

Architectural measures to protect the rights of people with limited mobility, provided by Serbian legislation [21], include the following:

1. Elements for overcoming difference in elevation (ramps, staircases, elevators and elevating platforms, horizontal or sloped)
2. Elements of entry zone, vertical and horizontal communication in interior space in public and apartment buildings; Features of openings, walls and ceilings, counters, other architectural details and design of the furniture, design of sanitary rooms; interior equipment for audio-visual information and orientation.
3. Elements of public traffic - pavement and pedestrian paths, crosswalks and crossroads, parking/garaging places, bus stops in city transportations, lighting and signs for orientation in public space and.

Architectural objects, which must meet the accessibility requirements, typically include some residential buildings and all public buildings and facilities: office buildings, workplaces, showrooms, museums and galleries, etc. hotels and restaurants, buildings for cultural events, those with auditorium, for sports facilities, and residential buildings. Legal demands vary from one to the other country, even within EU, but in most cases, the same or similar issues are addressed. Some of typical requirements regarding accessibility are as follows:

- Entrance must be at ground level or slightly elevated above to the surroundings; Parking places should be near the entrance of the facilities and those for parking vehicles of persons with special needs, must be designated, and designed to meet at least minimal dimensions;
- For overcoming differences in the elevation, the ramps, stairs, elevators or lifting platforms of particular dimensions, must be used depending on the height; maximum slope and dimensions are prescribed for the pedestrian and wheelchair ramps; it must have a railing, curbs and handrails of adequate size and shape; surface of the ramp must be firm, smooth and slip-resistant, and for the needs of

people with visual impairments, size and rod fence must have a color contrasting with the background; Stairs and stairways must also have at least specified dimensions; the forehead should be slightly angled with respect to the tread, with no protrusions and closed; area of the forehead are to be contrast-colored relative to the surrounding surfaces; the protective fencing with handrails and stair surface treatment rules apply as for the ramp; floor area at beginning of the downward branch of the staircase must have a different tactile and visual processing than the landing, a bottom step must be pulled in from the area used by pedestrians;

- To overcome the elevation differences, lifting platforms and elevators can be used in addition to the foregoing; elevators for the disabled with reduced mobility must have folding elevator door (door with automatic or semi-automatic closure), and an infrared curtain initiation mechanism of opening and closing [17].

In addition to laws and regulations, there are a number of recommendations by non-governmental organizations, active in international, national and local level. Some of them are the following: if there is only one elevator, it should not be panoramic; marking important points inside and outside is a necessity; manipulative areas for pedestrians must be impeccably maintained etc [14].

### **3.2. Examples of built heritage revitalization**

The intention was to choose examples which reveal most frequent issues of everyday life, as traffic access, parking/garaging, features of the entrance zone, vertical and horizontal communication, as well as the architectural characteristics of the floors, both in exterior and in interior. The examples of built heritage below are widely known, however they are explored and valued in different context - from the point of view of accessibility for all.

Palazzo Arese Litta (example 3.2.1) is one of the most distinctive buildings in Milan, and one of the best preserved examples of Baroque in Lombardy. Its main facade is orientated towards Corso Magenta and garden to Foro Bonoparte (Fig. 1). The palace was built by Francesco Maria Richini for the Count Bartolomeo Aresei between 1642 and 1648. The architecture of the building was regularly updated and further decorated, and it took on its current appearance in the mid eighteenth century, while Milan was under Austrian rule. The building was the meeting place of many political and social events from XVII to XIX century. The facade was changed between 1752 and 1761. The grand staircase leading to the apartments, designed and built in 1740 by Francesco Merlot, was seriously damaged in bombing, in 1943. Facilities on the north side (in Foro Bonoparte) were built much later [20]. Next to the buildings, there is garden Arese, originated in seventeenth-century. It is an elegant space with Doric columns, architrave and cruciform pilasters at the corners [20]. The building was in 1873 sold to a railway company, and today its largest part of 8500m<sup>2</sup> in total is used for public purposes. A former theater space has been used as cinema, the oldest one in Milan [20].



**Fig. 1** Photography from the air of Milan-Arese Litta Palace with marked traffic frequency in the surrounding streets [18]

The spacious complex within the former medieval town is situated close to the major roads. Nowadays, there is no parking space in front of the main entrance on Via Magenta, basically due to changes in street regulation which were created to meet needs of traffic which increased in speed and frequency. Originally, the street was integrated with the square (Fig. 2). On the eastern side of the complex, there are about 25 parking places. The main entrance to the theater remains the one from the garden, with access from Foro Bonaparte (Fig. 3).

Example 3.2.1 demonstrates the difficulty in accessing cultural property which is in the nowadays found in densely built environment with heavy traffic, which made it impossible to provide parking in front of the main entrance. From the point of accessibility, it is important that the distance between the parking area and the entrance is as little as possible. In the case of Arese Litta Palace, the main entrance to the cinema (as an illustration of the content of public use) is set on the garden side, in order to, among other things, reduce the distance between the parking places, provided for vehicles accessing from direction of Foro Bonaparte, and entrance to the building. Replacing the functions of the main entrance violated the recommendation that facilities must be simple and easy to read. Without previous knowledge of the position of the entrance, it cannot be logically assumed based on the architecture.

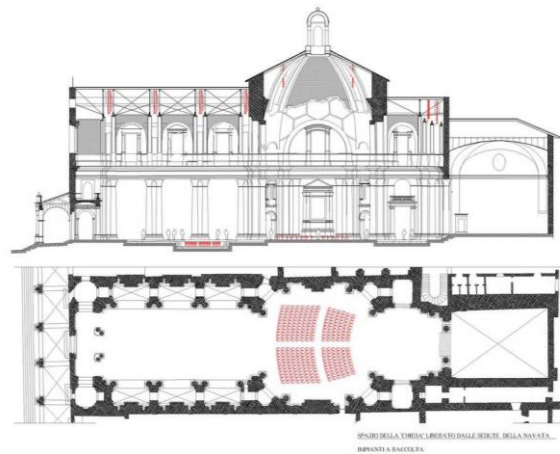


**Fig. 2** The main entrance to the palace Arese Litta in the XVII and XXI century, respectively [16]

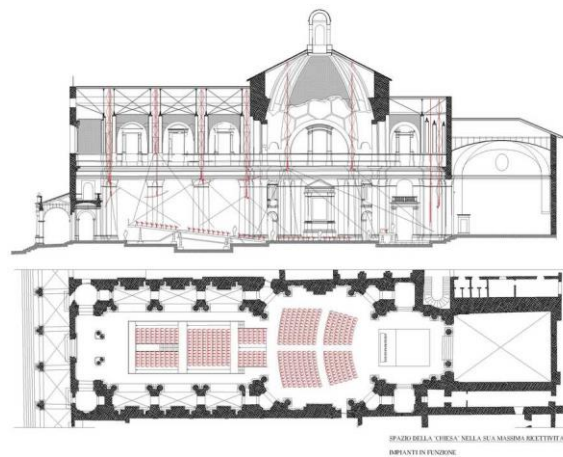


**Fig. 3** The entrance to the palace Arese Litta from the garden and driveway from Foro Bonaparte, respectively [16]

Another example, the former church of St. Maria (example 3.2.2) in Dominican monastery in Gradi also refers to the aspects of the entrance zone. The monastery, built in 1215, suffered extensive damage in 1527, during a war, when columns of the choir were burnt. Aristocratic families Viterbo helped the reconstruction which followed. Architect Nicholas Salvi made new interventions around 1730, during which he restored and integrated the chapel, originally out of the main corpus of the building. From 1874 to 1877, the church was no longer used for worship, but as a prison. In 1885 authorities decided to use the monastery to accommodate sculptures they wanted to protect from decay, but the monastery church continued to be used as a prison and be further devastated. Bombing during the Second World War has caused more damage, after which the facility had been considered a ruin [6].



**Fig. 4** Section and ground plan of the church St. Maria in Gradi [6]



**Fig. 5** Sections of church of St. Maria in Gradi reutilized as conference hall [6]

The monastery was restored in 1946, but not the church, despite estimations that its exceptional artistic value was considered worthy of the effort to be preserved. The remaining vaults were removed from the church in 1951, following decision of the Civil Engineering Department at Viterbo, guided by estimated danger of collapse. After that, the building was abandoned. Recent interventions, mainly the reconstruction of the walls, were made in the 1990s under the administration of the heritage protection [6]. Works of the most recent session of interventions started in 2001, under supervision of architect Stefanie Cancellieri [6].



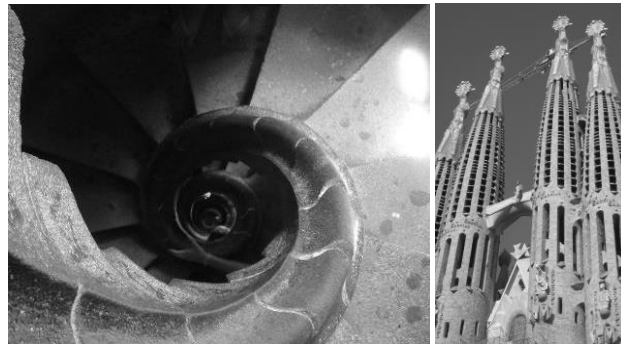
**Fig. 6** The front of the church of St. Mary in Gradi during reconstruction [6]

The interventions consist of consolidation, construction of a new roof and reinforcement of the structure, in order to allow reuse of inner space as multifunctional auditorium and conference hall for the University of Tuscia. The façade of the church has suffered significant changes, already during Renaissance renovation of architect Nicholas Salvi, and then several times in the modern era [6]. Evidently, the architect retained the main entrance staircase, which dominates the appearance of the front, in its original form (Fig. 4-6).

The ramp in Fig. 6 was only temporally, therefore there is not a permanent access for people with reduced mobility, at front. The main entrance does not meet the criteria of "accessibility for all", since it is not at the level of the street, neither the staircase itself, without armrests, fences, entrance ramps, auxiliary lifting platforms, and without contrast between the stairs and walkways, nor highlights at the beginning of the stairs, in color or by tactile or visual processing. When it is not possible to ensure that all horizontal and vertical communication paths fulfill the principles of design for all, it is considered acceptable to provide at least one. Such is the case with St. Maria in Gradi, with the more convenient access, at the other side of the building.

Figure 7 (on the left) presents well-known view to the stairs (example 3.2.3) in one of the towers of the church Sagrada Familia, in Barcelona, which reveals serious issue of people with impaired mobility. Neither of narrow spiral staircases, within each of the towers (with distinctive perforated outer wall, shown on Fig. 7 on the right), have railings nor handrails, and basic safety is evidently not ensured.





**Fig. 7** Staircase and the tower of the church Sagrada familia in Barcelona [22]

Another example demonstrates an attitude in heritage presentation, different from the above mentioned master piece of Antonio Gaudi.



**Fig. 8** The elevator the Capitoline Museum - Campidoglio in Rome: the situation, the location of the elevator, photo during construction, base and cross section, layers of the ground, layout drawings and outcome [2].

The construction of the elevator in the Capitoline Museum (Palazzo di Nuovo) in 2003 in Rome (example 3.2.4, Fig. 8) required cutting through several layers of brick, Roman concrete, stone and earth [6]. The principle of one route for disabled was consistently applied in the Capitoline Museum, in which modernization of vertical communication was considered a necessity. In this case, an elevator with folding doors, and automatic initiation mechanism of opening was built in. Using panoramic elevator is an interesting choice, because it made visible all the archaeological layers, which were cut through during the construction.



**Fig. 9** (on the left) The corridor in the Municipal museum of Villajoyosa [29];  
(on the right) Ground plans of Roman bath in Cross-Bath, through history [5].

Example 3.2.5 displays the setting of the exhibition about St. Marta in Villajoyosa, near Alicante, at the Municipal Museum building (2003) (Fig. 9). The building was converted into an archaeological museum in 1995. Difference in height, which appears frequently in buildings reused for another purposes, has been resolved by a ramp [26]. However, the ramp is not as wide as the corridor. This example also illustrates the use of audio-visual information for cultural purposes, in a manner that suits wide audience, including people with disabilities of various kinds.

Example 3.2.6 shows the atrium of a Roman bath in Cross-Bath (UK), reconstructed for the sixth time in 2003 (the previous reconstructions took place in 1687, 1783, 1798, 1854/5 and 1885, see Fig. 9 on the right). The wall between the corridor and atrium has been built of transparent glass. The outline of the building, as well the material and the form of outer walls have been preserved (Fig. 9 on the right and Fig. 10, on the right) as reconstructed in 1798, with the exception of the entrance [5].



**Fig. 10** The main entrance of the bath, (on the left) and atrium pool (on the right) in Cross-Bath [5]

Due to lack of authenticity of interior, lost in frequent reconstructions, continuity with the past is provided in an unchanged purpose of the building. Such circumstances widely opened an opportunity for substantial use of modern materials and technologies in the interior. However, glass walls are not considered appropriate choice for many groups of disabled, and in particularly those with impaired vision. Also, vehicular access and parking area were not and could not be provided near the main entrance. Finally, the modernization of the interior in this example is believed to prolong life of the building and limit accessibility for many.



**Fig. 11** External stairs, ramp and exhibition hall, fortress of St. Barbara, Alicante [1]

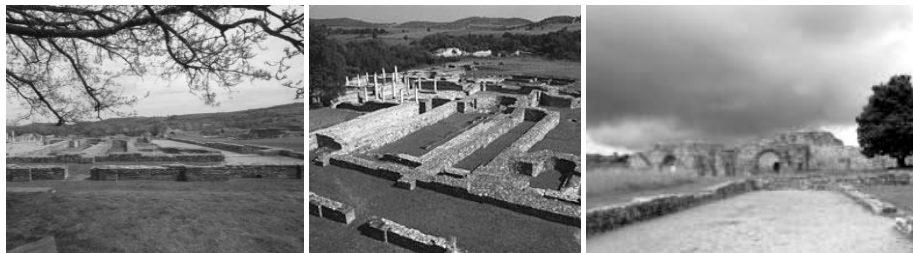
Next example (3.2.7) presents several issues regarding accessibility in fortification of St. Barbara, in Alicante. It was built of rock from the site, which was considered very practical, *inter alia*, for the reasons of defense and frequently applied in the Middle Ages, for strategic reason. Therefore, original colors and materials of walls, pavement, exterior stairways, railings, ramps, etc. match the natural environment (Fig. 11). For the same reason, the color of the floor and the walls in the interior are identical. However, nowadays, rooms are reutilized as exhibition halls [1], and criteria of desired processing changed, questioning if it meets needs of design for all. In this example, the ramp does not meet safety requirements (Fig.11), neither in the exterior nor the interior; contrasting colors in order to facilitate the access of persons with visual impairments were not applied. On the other hand, using the same material for the walls and floors is authentic and important for understanding the characteristics of the original concept of the fortification. However, one route for all is provided - there is a back entrance and an elevator that leads from the base to the top of the fortress.

Example 3.2.8 refers to Kosančić wreath in Belgrade. The photo shows characteristic of street surface and inadequate parking space within the street regulation (Fig. 12, left). The street surface at Kosančić wreath, which belongs to the spatial cultural and historical entity of great importance, is considered very important and that it contributes immensely to preservation of authenticity of the nineteenth century Belgrade.



**Fig. 12** (on the left) Kosančić wreath in Belgrade [12] (on the right) Staircase in Felix Romuliana, the archeological site [8]

Example 3.2.9 shows Felix Romuliana remains of fortified settlement built by Roman Emperor Galerius (fig. 13). The access paths of this archaeological site near Gamzigrad, Serbia mostly have grass, gravel or earth surface. For accessibility, it is essential that the surface is flat, firm and slip-resistant. This is not the case in this example, or in the previous one.



**Fig. 13** Archeological site Felix Romuliana, near Gamzigrad [8, 9 et 10]

The stairs (Fig. 12 on the right) have been made entirely of brick. Foreheads of the steps are flat and there are not tread moldings. The staircase is not equipped with handles or railings. Although the staircase is a reconstruction, they were made according to assumptions without any concern for requirements of access for all. The concept of brick stairs would be changed if handrails, step molding, contrast etc. would have been added. Possibly, original walls will suffer certain damage.

#### 4. RULES AND EXCEPTIONS TO PROTECT THE RIGHTS OF PERSONS WITH REDUCED MOBILITY ARCHITECTURAL RESOURCES IN THE REVITALIZATION OF ARCHITECTURAL STRUCTURES

In recent years, every intervention on historical buildings raised questions about accessibility issues [4]. On the one hand, questions of respect for legal obligations and standards, and on the other, question of presentation and interpretation. Safety and independence are two basic features of accessibility that should be provided [3]. Examples 3.2.3, 3.2.7 and 3.2.8 confirm that the first of these two criteria cannot always be provided without losing the authenticity, historical and aesthetic value. The accessibility issue comes down to evaluation approach of the particular facility. Examples used in this paper mostly imply that nature of the architectural object impose rules or exceptions, to significant extent. In this context, archeological sites set a category of its own. Most archeological sites have non-standard problems in terms of accessibility, due to high requirements regarding visitor paths. Most frequently, respect for the demands such as flat clean slip-resistant surface and contrast, can substantially alter the environment and degrade built heritage itself. Choice of materials and the method of processing the floor surface are frequent problems. Objective aspect of this issue relates to the quality, keeping in mind the purpose, frequency of traffic, moisture, and other operating conditions (ice, dirt and ease of cleaning), as well as aesthetic requirements. Subjective aspect of the issue refers to the user and user's physical abilities [19]. Users could have from exceptional motor abilities to disabilities, and the choice of floor finish should meet the needs of as many as possible.

One approach, "taking side of Croce, accepts architecture as an aesthetic quality, value *a sé*, absolute, eternal, and unchanging in time, as something perfect, surrounded by an aura of sacred and inviolable" [20]. This view breaks the bond between art and life [20]. Another, more modern approach negates that art exists independently of person who enjoys it, and promote the building as an "open work" that lives in time, and continually changes, which should enter into life cycle in which it dynamically changes according with social needs[20]. In this context, it is hard to believe that two fundamental values for protection - the protection of artistic and historical value and usability of the facility are incompatible. The same author states that this approach does not imply that in some cases interventions are unacceptable. For example, it would be hard to install elevator in the leaning tower of Pisa without having the tower destroyed; also, one could not build a highway to the summit of Mont Blanc, and at the same not have "Mont Blanc become something else"[20]. Decision making in this matter seems to become a complex problem which should be resolved by setting rules, as well as setting exceptions.

Since the first regulation adopted in Italy, legislation framework has been constantly improved, e.g. in 1978 and 1989 [25]. Similarly, in the United Kingdom [24], regulations adopted the 1990's, has since been revised and replaced. Also, regulations in Serbia adopted in 1997 were replaced in 2012. Unlike in Italy, rules of accessibility, according to Serbian legislation in force, do not allow exceptions. However, in practice, not only that the rules are not implemented, in some cases, but often, like in other countries, they cannot be implemented without compromising the values for which the architectural object has been protected, in the first place, as several examples used in this paper indicate. However, in countries where the legislation provides for exception, they are often a subject of debate. Italian Act that allows it (DPR 503/96.19., Paragraph 3, after

[3]), also allows the deliberate misinterpretation of genuine intention. The exemption is allowed if the adaptation can hurt the beauty of the historical value of the protected building, and in such cases, requirements of accessibility should be provided with temporary structures or, alternatively, using equipments not permanently fixed to the buildings. The legislature requires that the reasons for the application of this paragraph should be justified, but it does not define the criteria of objectivity. Special structure and equipment are expected to be used "temporarily", although they can become an integral part of the building "and "occasionally", which casts doubt on continuous realization of the rights of persons with reduced mobility. Example of the main entrance of the former church St. Maria in Gradi is representative case of giving priority to aesthetic. Consequently, autonomy of people with limited mobility is threatened, which means one of two basic features of accessibility, as previously mentioned. In contrast to that, example of Capitoline Museum, confirms commitment to access for all, in very difficult circumstances.

As the number of people with mobility difficulties increases, the number of facilities adjusted to the needs of such people gets more frequent [26]. Also, understanding of this issues increases and it expands to new aspects of accessibility. Research for this paper revealed that, for many technical problems although they appear frequently in practice, standards that comply with requirements for accessibility do not exist.

Finally, examples used in this paper referred to accessibility requirements limited to the first two point specified in section 2.1. Examples did not include intervention regarding walls decoration, ceilings, and sanitary rooms and remodeling of architectural details, equipment in order to preserve environmental values and spatial capacity of floor and wall surfaces.

#### 5.0. CONCLUDING REMARKS - GUIDELINES FOR IMPROVING LEGISLATION

The commitment to integrate accessibility requirements with rules of buildings revitalization may have wide and comprehensive consequences. The examples in this paper illuminate a narrow range of issues regarding principles of accessibility in heritage buildings under revitalization process. However, there is sufficient evidence to prove that revitalization may be in conflict with the accessibility and that it can be a limitation of the rights of certain social groups, in order to preserve other values of the building.

According to examples used in this paper, some accessibility problems appear more frequently at heritage buildings than other, those which arise from: (1) location (historic buildings are often located in densely built environment, which do not have enough space for approach and stationary traffic) (2) demand of modernization according to current needs of society.

Within the problems of accessibility and revitalization of the building, many aspects are partly viewed in this paper, which leaves possibilities for future research wide open. Permanent revision of existing national legislative framework seems necessary. From all the above, it follows that the activities should be directed to (1) reviewing of the applied standards and regulations, taking into account the rights of the accessibility of all (2) ensuring consistent implementation of regulations in practice, which includes legalizing, categorizing and defining objectivity criteria of exceptions, that cannot be avoided in practice.

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## **KOLIZIJA IZMEĐU REVITALIZACIJE GRADITELJSKOG NASLEĐA I PROJEKTOVANJA ZA SVE**

*U ovom radu, devet ukratko razmotrenih primera graditeljskog nasleđa otkrivaju raznovrsne slučajeve kolizije principa konzervacije sa zahtevima arhitekture bez prepreka. Značaj ovog problema se ističe u svetlu napora širom sveta da se objekti kulturne baštine sačuvaju za buduće generacije kroz revitalizaciju, kao i intenzivnih napora, posebno u EU, da se dostignu viši standardi u inkluziji svih društvenih grupa.*

Ključne reči: *graditeljsko nasleđe, revitalizacija, pristupačnost*