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## Article

# Theoretical and practical issues regarding relocation of monuments – The case of Arslanagić Bridge in Trebinje

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## ABSTRACT

The treatment of relocation is always questionable not only because of the theoretical background and methods used but also because it is a force majeure intervention. Considered inappropriate by heritage professionals since the primary task of monument conservation is *in situ* prevention, there is a need for a better understanding of what relocation means, when it is allowed, how it should be done, and the criteria to determine how and which monuments qualify to be preserved. This paper reviews the aspects of material and structural authenticity when relocating Arslanagić Bridge, the connection with the historical context, and existing charters and terminology. In addition, it aims to contribute to a broader theoretical understanding of relocation. Two types of damage are inflicted on the monument during the relocation; one is that the monument is extracted from the environment in which it originated, and the historical continuity is broken, and the other is from the method of relocation. In the case of the bridge, maintaining a physical appearance becomes more important than material authenticity. During reassembly, the internal cohesiveness was violently disturbed, damaging the integrity of the infill at the structural level by introducing concrete. At the new location, it is articulating as a new element, a new historical layer in a new environmental context.

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## INTRODUCTION

The salvage process of the Arslanagić Bridge<sup>1</sup> lasted from 1959 to 1972.<sup>2</sup> It was an important monument preservation event in the early days of integrated monument protection in the Socialist Federal Republic of Yugoslavia (SFRY).<sup>3</sup> The possibility of imminent damage to the Arslanagić Bridge due to the development of a large reservoir on the Trebišnjica River with the construction of the Gorica dam west of

Trebinje<sup>4</sup> was highlighted in 1958 (Defterdarević, 1969).

The Institute for Protection of Cultural Monuments of Bosnia and Herzegovina created a special commission<sup>5</sup> of the most eminent preservation professionals from the SFRY to form opinions on protective measures for the endangered built heritage elements<sup>6</sup> in this area. During prolonged debates from 1960 to 1964, several alternative schemes were proposed to save the Arslanagić Bridge, even considering leaving the bridge underwater. Overall,

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the Arslanagić Bridge is said to be of “exceptional cultural-historical and artistic value,” as such “one of the most important monuments of profane architecture,” that “its significance crosses the borders of our country,” and that its sinking would mean an “irreparable loss for the cultural history of our cities, the mutilation of our cultural heritage, and especially the cultural heritage of this region” (Defterdarević, 1969, p. 64).

Since the bridge could not be a physical or aesthetic continuation in the original environment with the newly imposed conditions – the construction of the hydroelectric power station at Trebišnjica River – technical and political mediation was needed to determine the salvage scheme and its relocation. The formal announcement for the relocation of the bridge was only made in mid-1964. The dismantling and transfer of the accumulated material (first phase) were carried out in the second half of 1966, while the entire reconstruction process (second phase) lasted from 1970 to 1972 (Gojković, 1978).

To contribute to a broader theoretical understanding of relocation as a monumental intervention, it is necessary to analyze the ethical and professional problems that arise during the process, share research findings, and provide data for future relocation.

This study aims to evaluate how the significance of Arslanagić Bridge was reinterpreted and presented in a new context through reconstruction, looking at the material and structural authenticity and the connection with the historical context. Within these criteria, we tried to answer important questions. Does the original form and appearance of the monument become more significant than material authenticity in the reassembly process? With its placement in a new environment, how is the relocated monument viewed as a new element and a new historical layer? In this context, the paper evaluates the concept of relocation and its place in conservation; the process of removing and rebuilding the Arslanagić Bridge and its results are then considered.

## KEY ASSUMPTIONS OF RELOCATION

Dismantling and rebuilding a historic building are “a practice which may be justified to safeguard a monument, particularly one of paramount importance if protection cannot be achieved by other means” (Bold, 2018, p. 21). In

the definition of relocation, the term “dismantling” refers to a vigorous or forceful disassembling of a structure, while monument interventions such as restoration or reconstruction refer to “destruction.” Although relocation and reconstruction both entail “rebuilding,” the way they are practiced should differ because they are not used in the same way. In general, the term “rebuilding” does not include the need to approximate the appearance of the lost original (Petzet, 1999). On the other hand, the term “rebuilding” in reconstruction is broader and refers to re-establishing a lost original building destroyed by accident or natural disaster based on pictorial, written or material evidence.<sup>7</sup> Both cases are about *in situ* rebuilding. The point is that relocation is usually marked as an “emergency solution” only. It deals with the “rebuilding” of the original visual exposure and appearance of the structure in a new environment, rebuilding based on technical drawings, photographs and photogrammetry, and a numbering scheme made before the dismantling. In relocation, “distance is at the heart of another strategy for heritage preservation” (Wong, 2017, p. 231) and by combining the prefix “re” with the word “location,” an aspect of a building’s new location is indicated and its reintroduction into a new setting (Table 1).

The manner of rebuilding in the relocation process is very close to reconstruction; therefore, we can say that “relocation is also reconstruction.” It is important to note that “although in the conservation of ruins, the professional side is evidently stronger than the social one, in the rebuilding of demolished monuments, the social or political side will become conspicuous” (Toshikj and Zsember, 2019, p.366); the same approach is also evident in the case of relocation. Professional criteria supported by research results have more objective verdicts than political or economic criteria, which attach subjective verdicts and are usually conclusive. Regardless of the professional’s decision or even resistance, political or economic criteria always intervene without compromise and directly toward the achievement primarily because of the economic benefits. Therefore, relocation and reconstruction have the same background because the same ethical and professional problems arise in the processes. Due to building typology and morphology when considering relocation, Petzet (2004) argues, “the crucial requirement for a relocation is that the historic building can in fact be moved, that is, that the original fabric (or at least the majority of the most essential components) can be relocated” (p. 22) and that should be the main guideline.

**Table 1.** Comparison of terminology

		Rebuilding	
REbuilding	(accidental) destruction and rebuilding	It does not include the need to approximate the appearance of the lost original	<i>in situ</i>
RElocation	(forceful) dismantling and rebuilding	Includes the necessity of the original appearance based on pictorial, written or material evidence	<i>ex situ</i>
REconstruction	(accidental) destruction and rebuilding		<i>in situ</i>

## RELOCATION IN CHARTERS AND OTHER GUIDING DOCUMENTS

During the 1960s, the Abu Simbel complex in southern Egypt was salvaged by cutting the temple into pieces and moving it higher up the Nile; for UNESCO's cultural offices, the project offered an opportunity to codify new international conservation criteria (Allais, 2013). The term "move" was supported by the primary document formulating recommendations, the Venice Charter (1964), Article 7 of which mandates, "A monument is inseparable from the history to which it bears witness and from the setting in which it occurs. The moving of all or part of a monument cannot be allowed." Article 7 further states, "except where the safeguarding of that monument demands it or where it is justified by the national or international interest of paramount importance" (International Charter For The Conservation And Restoration Of Monuments And Sites, 1964, art. 7) promoting an inclusive approach, although it does not focus on the actual process of relocating monuments. An important piece of evidence before the Venice Charter is The Athens Charter for the Restoration of Historic Monuments of 1931, which does not recognize the relocation of monuments, only the term "removal" in relation to the conservation of monumental sculpture, "the removal of the works of art from the surroundings for which they were design is, in principle, to be discouraged" (V. The Deterioration Of Ancient Monuments). This suggests that both of the recommendations mentioned above do not refer directly to "relocation," but rather by emphasizing the importance of the environment and placement of the monument or sculpture, and using the term "moving/removal" with questionable disapproval.

The terminology used for such an intervention is evidently different among Yugoslav protection professionals. For example, various authors refer to "rescue and reconstruction," "transfer," or "relocation" in their publications about the salvage of the Arslanagić Bridge. However, in the salvage of the Žepa River Bridge, which was carried out at approximately the same time and with the same methods as previously mentioned, Tahirović (1988) uses the term "removal." This suggests that professionals follow a different theoretical line regarding this type of intervention. This is a complex understanding of the Yugoslav expertise on the success of the salvage of Abu Simbel<sup>8</sup> in relation to the decision<sup>9</sup> to relocate the Arslanagić Bridge, which simultaneously initiates a suppression of the ethical/moral and scientific discourse. However, it should be emphasized that "The Abu Simbel temples were technically salvaged *in situ* (i.e., they were not, conceptually, relocated); they were fundamentally transformed by their movement" (Allais, 2013, pp. 13-14).

Later interpretations of conservations from around the

world reflect a similar approach to the Venice Charter. The UNESCO "Recommendations concerning the Preservation of Cultural Property Endangered by Public or Private Works" (1968) indicate the consequences of operations to salvage or protect cultural properties from social and economic development, among other things, "(e) the construction of dams for irrigation, hydroelectric power of flood control." Priority is given to "measures required for preservation *in situ* of cultural property" in order to preserve "historical associations and continuity," not excluding the transfer of cultural property, to save and protect it from damage and destruction in "site or in a setting which resembles their former position and natural, historical, or artistic associations" (II General principles).

UNESCO's 1972 recommendation is for cultural and natural heritage threatened by unusually serious dangers. It aims at "preserving its traditional appearance, and protecting it from any new construction or remodeling, which might impair the relations of mass or color between it and its surroundings or even dissociating from its environment." Furthermore, should it be taken as a "homogeneous whole [...] with a passage of time, acquired a cultural or natural value." As a protective measure, the harmony established by time and man between the monument and what surrounds it is emphasized, which is of the greatest importance, and consequently, its disturbance or destruction is prohibited. As a rule, "the isolation of a monument by demolishing its surroundings should not, [...] be authorized; nor should the moving of the monument be contemplated save as an exceptional means of dealing with a problem, justified by a pressing consideration" (Recommendation concerning the Protection, at National Level, of the Cultural and Natural Heritage, 1972, V Protective measures) is highlighted.

The removal of any protected heritage, in whole or in part, is prohibited by the Council of Europe's Convention for the Protection of the Architectural Heritage of Europe (1985) with an exception "where the material safeguarding of such a monument makes removal imperative," (Article 5, Statutory protection procedures) provided that the competent authority takes the necessary precautions for its dismantling, transfer and return to the appropriate location.

The Australia ICOMOS Burra Charter, 2013<sup>10</sup> clearly states the importance of the physical location of a place of cultural significance in Article 9.1, provided that the "building, work or other component of a place should remain in its historical location. Relocation is generally unacceptable unless this is the sole practical means of ensuring its survival" (Burra Charter, 2013). In addition, visual settings and other relationships, such as historical connection, may contribute to the interpretation, appreciation, enjoyment or experience of that place, so that "new construction,

demolition, intrusions, or other changes, which would adversely affect the setting or relationships are not appropriate” (Article 1.2).

A slightly different approach is noticeable in the ICOMOS “Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage” (2003), highlighting the aspect of integrity in the following: “The value of architectural heritage is not only in its appearance but also in the integrity of all its components as a unique product of the specific building technology of its time. In particular, the removal of the inner structures maintaining only the façades does not fit the conservation criteria” (Article 1.3).

In terms of relocation, the ICOMOS New Zealand Charter (2010)<sup>11</sup> provides that a structure of cultural heritage value should remain in its original location because “the ongoing association of a structure or feature of cultural heritage value with its location, site, curtilage and setting is essential to its authenticity and integrity.” Furthermore, the “relocation of a structure or feature of cultural heritage value, where its removal is required to clear its site for a different purpose or construction, or where its removal is required to enable its use on a different site, is not a desirable outcome and is not a conservation process.” In exceptional circumstances where its current location is an imminent danger and when all other means of retaining the structure in its current location have been exhausted, “a structure of cultural heritage value may be relocated” (Charter for the Conservation of Places of Cultural Heritage Value, 2010, Article 10).

From the discussions, the terminology of architectural relocation is varied and has evolved from “moving/removal/movement” to “relocation.” Compared to conservation and restoration, relocation and reconstruction are immature concepts because they are rare but still occurring procedures due to the problematic approach to authenticity and integrity. Table 2 summarizes the terms, definitions, and key concepts of international charters.<sup>12</sup> Significantly, most charters emphasize the importance of *in situ* preservation and the strong relationship between the monument and its environment.

### THE ARSLANAGIĆ BRIDGE

There is no absolute certainty about the architect of the Arslanagić Bridge, but it is assumed to be from the school of Mimar Sinan (1490–1588).<sup>13</sup> Although the exact date of construction is unknown, it is certain that the bridge was built between 1563 and 1575,<sup>14</sup> during the time of Suleyman the Magnificent and Selim II, and was built with the funds of the Vizier Mehmed-paša Sokolović.<sup>15</sup> The uniqueness of the Arslanagić Bridge is largely related to its shape – an asymmetric mass consisting of six arch openings,

two larger ones with a width of about four meters, which are in the middle, then four smaller ones, placed one on top of the other on each side. The bridge’s total length is 92.55 meters,<sup>16</sup> with an approximate width of 3.50 meters. Its esthetic values, stylistic, and specific characteristics are “a consequence of the architect’s effort to find the most functional solution in the existing conditions of the terrain and the course of the river” (Tihic, 1966, p. 112). Consequently, it is included in the group of large bridge structures in Bosnia and Herzegovina from the Ottoman period; as Lovrenović (1998) notes:

Functionally and esthetically, these structures are perfectly adapted to the water on which they stretch and to the banks with which they merge. Again, although they all belong to a recognizable common style, these bridges were not built according to a standard model but varied in a multitude of forms: From the dignified, monumental horizontal of the Višegrad Bridge with its 11 arches to the vertiginously daring, but perfectly calculated, fantastical arch of Mostar’s Old Bridge and the unusual asymmetry of the design of the Arslanagić bridge over Trebišnjica. (p. 86) (Figure 1)

The characteristics of those bridges lead to the conclusion that they are exceptional structures with outstanding merits from strategic, economic, esthetic, and sociological aspects. The first systematic study to examine and complete the records, verifying the measurements of bridges from the Ottoman rule in SFRY, was carried out in 1953 by the Federal Institute for the Protection of Cultural Monuments (Katanić, 1971). This trend of adopting a methodological approach to record-keeping and sustained research activity on buildings from the Ottoman period was also noticeable in Hungary during the 1930s and 1940s and intensified in the second half of the 20th century (Kovács and Rabb, 2020).



**Figure 1.** Arslanagić bridge in Trebinje, western facade (the photo was taken by the authors in 2022).

Table 2. List of terms, definitions, and key concepts of international charters

Materials	Integrity	Authenticity	Value	Setting	Location	Use and function
ICOMOS 1931 THE ATHENS CHARTER FOR THE RESTORATION OF HISTORIC MONUMENTS						
Modern techniques and materials may be used in restoration work.[5.]	With regard to the preservation of monumental sculpture, it is recommended to cautiously preserve the original models whenever they still exist and discourage the removal of works of art from the surroundings for which they were designed. [V.]	When restoration is necessary as a result of decay or destruction, respect for the historical and artistic work of the past is recommended, without excluding the style of any given period. [I.]	A critical review of the proposed restoration project is recommended to identify factors that would cause the structures to lose their character and historical value. [2.]	Historical sites are to be given strict custodial protection.[6.] Attention should be paid to the protection of areas around historical sites.[7.]	Recommendation to respect the character and external aspects of the cities during the construction of the buildings, especially the environment in the neighbourhood of ancient monuments. It is pointed towards the preservation of certain groupings and certain particularly picturesque perspective treatment. [III.]	It is recommended to retain the occupation of the buildings that ensure continuity of their life, but also to respect their historical and artistic character. [I.]
Due to the appearance of different approaches among experts regarding the use of modern materials for the consolidation of ancient monuments, reasonable use of all the resources available to modern technology and especially of reinforced concrete is approved. [IV.]	In the case of ruins, scrupulous conservation is recommended, and anastylosis is applied whenever possible. In all cases, the new materials should be recognizable. [VI.]					
ICOMOS 1964 INTERNATIONAL CHARTER FOR THE CONSERVATION AND RESTORATION OF MONUMENTS AND SITES (THE VENICE CHARTER 1964						
To use modern conservation and construction techniques in the consolidation of the monument, the effectiveness of which has been proven by scientific data and where by experience and traditional techniques prove inadequate. [Article 10.]	It is not recommended to move all or parts of the monument because it is inseparable from the history it bears witness to and from the environment in which it occurs. [Article 7.]	The restoration of the monuments is not carried out on assumptions, and any unnecessary additional work must differ from the architectural composition and bear a contemporary stamp. Any restoration must be preceded and followed by an archaeological-historical study of the monument and must preserve and reveal its aesthetic and historical value. It is based on respect for original material and authentic documents [Article 9.]	Conservation of the monument is recommended by preserving the setting which is not out of scale and the more modest and, wherever it exists, retaining the traditional have acquired cultural setting. It has to allow for new construction, demolition or modification that will change the mass and color ratio. [Article 6.]	It is recommended that the concept of a historical monument, the great works of art and the more modest works of the past that have acquired cultural significance over time, be understood as an architectural work together with the urban or rural environment in which there is evidence of a particular civilization, significant development or historical an event. [Article 1.]	It is recommended to use the monuments for some socially beneficial purpose, thereby facilitating their conservation. The layout or decoration of the building must not be changed; only modifications within limits with a change of function are allowed. [Article 5.]	

Table 2. CONT.

Materials	Integrity	Authenticity	Value	Setting	Location	Use and function
ICOMOS 1999 THE BURRA CHARTER: THE AUSTRALIA ICOMOS CHARTER FOR PLACES OF CULTURAL SIGNIFICANCE						
Traditional conservation techniques and materials are recommended, but modern techniques and materials that offer significant conservation benefits may be appropriate. [Article 4.]	The contents, devices and objects that contribute to the cultural significance of a place be kept <i>in situ</i> . Their removal is unacceptable unless it is for well-justified reasons (detailed in article 4.2) and should return where circumstances permit and it is culturally appropriate. [Article 10.]	To identify and take into account all aspects of cultural and natural significance in the conservation of a place without undue emphasis on one value at the expense of others. [Article 5.]	To retain an appropriate visual setting and other relationships that contribute to the cultural significance of the place. New construction, demolition, trespassing or other changes that adversely affect the setting or relationships are not recommended. [Article 8.]	To retain an appropriate visual setting and other relationships that contribute to the cultural significance of the place. New construction, demolition, trespassing or other changes that adversely affect the setting or relationships are not recommended. [Article 9.]	The building, work or other components of the site should remain in the historic location because the physical site is ultimately part of the cultural significance. Relocation is not recommended unless it is the only solution to ensure survival. [Article 9.]	Where the use of a place is of cultural significance, it should be retained. A place should have a compatible use. [Article 7.] If any building, work or other component is moved, it is recommended that it be moved to a suitable location and given a suitable use. [Article 9.]
ICOMOS 2003 ICOMOS CHARTER PRINCIPLES FOR THE ANALYSIS, CONSERVATION AND STRUCTURAL RESTORATION OF ARCHITECTURAL HERITAGE						
The choice between traditional and innovative techniques be taken on a case-by-case basis, and preference is given to those that are least invasive and most compatible with heritage values, taking into account safety and durability requirements. [3.7]	Removing the internal structures while maintaining only the facades does not meet the conservation criteria. The value of architectural heritage is not only in its appearance but also in the integrity of all its components as a unique product of the specific building technology of its time. [1.3]	The value and authenticity of architectural heritage should not be based on fixed criteria. Different cultures and its physical heritage is considered in the cultural context to which it belongs. [1.2]	Any intervention be kept to a minimum to guarantee safety and durability with the least damage to heritage values. [3.5]	It is recommended that they not be destroyed - the characteristic qualities of the structure and its surroundings in their original or previous state. [3.11]	It is recommended that all preservation and security requirements are carefully considered when proposing any change of use or function. [1.4]	
The removal or alteration of any historic material or distinctive architectural features be avoided wherever possible. [3.14]	Dismantling and reassembly should only be undertaken as an optional measure required by the very nature of the materials and structure when conservation by other means is impossible or harmful. [3.17]					

Table 2. CONT.

Materials	Integrity	Authenticity	Value	Setting	Location	Use and function
ICOMOS 2010 NEW ZEALAND CHARTER FOR THE CONSERVATION OF PLACES OF CULTURAL HERITAGE VALUE						
To give preference to the preservation of traditional methods and materials. Repairs of a technically higher standard can only be justified where the stability or life extension of the site or material is at stake, the new material is compatible with the old, and the value of the cultural heritage is not diminished. [18.]	It is recommended to respect all forms of knowledge and existing evidence, both material and non-material values, which are of essential importance for the authenticity and integrity of the place and during conservation, they should not be disturbed. [5.] A structure or feature of cultural heritage value should remain in its original location because the continued association of a structure or feature of cultural heritage value with its site, location, compartment, and placement is essential to its authenticity and integrity. [10.]	The conservation of a place identifies and respects all aspects of its cultural heritage value without unduly emphasizing one value at the expense of others. [5]	Preservation of the setting in situ is recommended as the setting is an integral part of its cultural heritage value. If the setting no longer contributes to the heritage value of the site and reconstruction of the setting can be justified, any reconstruction of the setting should be based on an understanding of all aspects of the heritage value. [9.] Relocation of a structure or feature of cultural heritage value, where its removal is required to clear its site for a different purpose or construction, or where its removal is required to enable its use on a different site, is not a desirable outcome and is not a conservation process. [10.]	It is recommended that where the use of a place is an integral part of its cultural heritage value, that use should be retained, while when a change of use is proposed, the new use should be compatible with the cultural heritage value of the place and have little or no negative effect on the value of cultural heritage. The use of place value facilitates its preservation. [8.]		

### THE MAIN OBJECTIVES, METHODS, AND TECHNOLOGY IN THE RELOCATION OF THE ARSLANAGIĆ BRIDGE

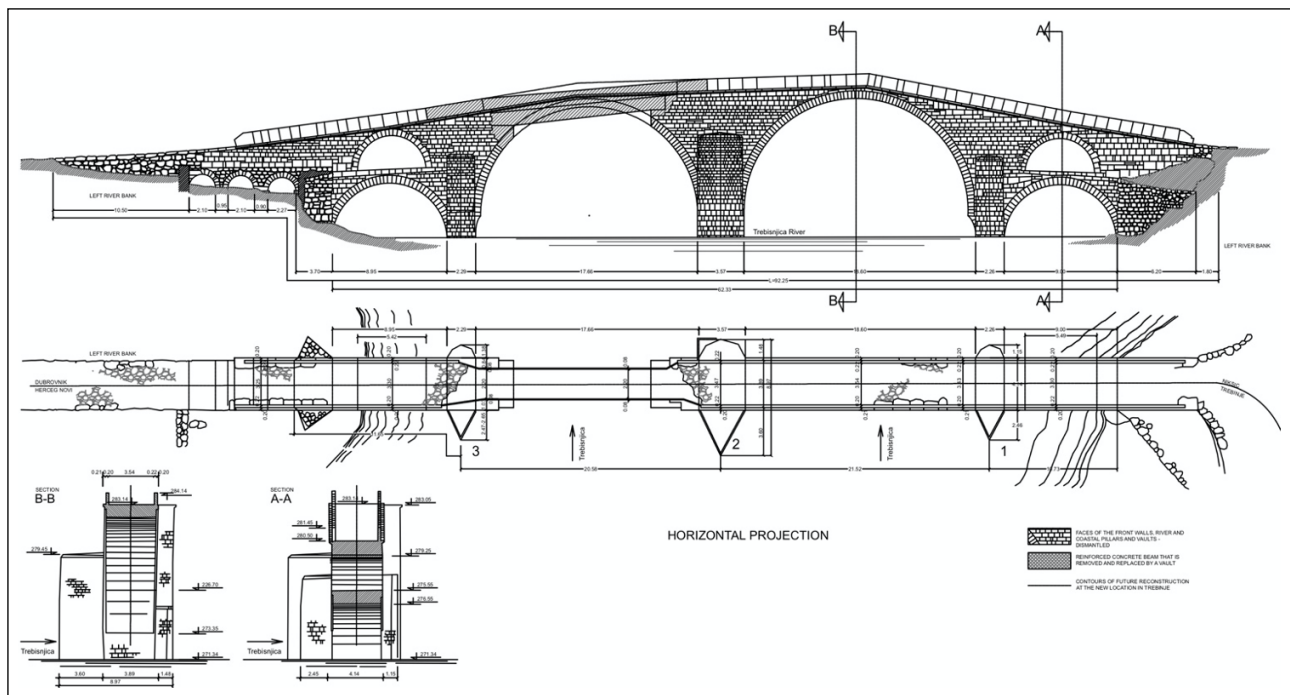
The adoption and adaptation of new technology and not preserving past architectural technologies, although controversial to many conservationists, created a range of alternative schemes and methods. We can distinguish between moving the monument, as a whole or in parts, to a higher place and keeping the same context of the monument’s historical location, and moving the monument, as a whole or in parts, to another location with the same attributes as the historic one. Monument typology, available technology, new permitted materials, and location are critical determinants of the “move decision.”

In the case of the Arslanagić Bridge, the relocation method involved dismantling the larger sections, such as the main pillars, followed by the larger bridge piers and stone blocks. From a conservation perspective, it was overseen as follows, “This work will be more difficult and responsible masonry, but it will be guaranteed better conservation and better final success” (Gojković, 1963, p. 32). This method required a major organizational operation and lengthy disassembly. Therefore, a method was adopted to dismantle all the stone blocks individually. The main objective was to retain the visual exposure and appearance, while concrete infill was used for the internal structure (Figure 2). This broke the strong bond between the historic crushed stone infill and the stone cladding of the same consistency; the Arslanagić Bridge was reformed by transforming the elements of the facade and the structure.

#### The Material Strategy

Before disassembly, photogrammetry was used,<sup>17</sup> and the numbering scheme and scaffolding were applied. When the numbering scheme during reconstruction was not legible for any reason, technical drawings,<sup>18</sup> photographs, and photogrammetry obtained before disassembly enabled a reenactment of the visual experience of the monument (Gojković, 1973). The numbering scheme of the bridge’s facades, noticeable even today, is no longer seen as a sign of deconstruction but as a reconstruction and represents a “visual codification” of the relocation. These instruments and methods, including the scaffold, were the main components aiding the reassembly and visual reconstruction of the bridge.

The operational technologies, especially mechanical drilling, which directly intervened in the masonry construction and violently disrupted the internal cohesiveness, were combined with the technologies that scanned the visual appearance, such as photogrammetry, numbering scheme, and scaffolding. This successive interconnection was systematically used to achieve a delicate balance between the authentic representation of



**Figure 2.** Horizontal projection of the upstream side façade of Arslanagić bridge before the relocation. A drawing made according to the technical data of the Institute for the Protection of Cultural Monuments in Mostar (redrawn by the authors after Милан Гојковић (1963)).

the bridge's architecture and giving it a new contemporary esthetic meaning, together forming a conservation narrative. The project's strategy for visualizing the formal qualities of the bridge was of particular importance and an integral part of the material salvage. This implied an opposite notion of integrity, similarly theorized by Cesare Brandi in his 1963 theory of restoration: "The degradation of the monument, dismantled, and rebuilt elsewhere, to a fake of itself, obtained using its own materials, so that it is even less than a mummified corpse would be compared to a living person" (Brandi and Basile, 2005, p. 95).

Reinforced concrete was used to form the foundations and construct the coastal piers. This abandoned the Ottoman-era bridge foundation technique, a multi-layered wooden grill placed on a stone base in the river bed. Furthermore, at the structural level, the concrete infill was combined with reassembled original stone blocks and cement mortar injected into the outer material layer, which became the bridge's facade.

The stone elements of the arches, like all similar constructions of the bridge, were made of hewn stone, while the inner part of the bridge was filled with crushed stone. In this way, the cohesive mass of the historic bridge was formed. Larger pieces of stone were regularly placed closer to the bridge's abutments and fastened with lime mortar from slaked lime, coarse alluvial sand, and metal elements filled with lead as a structural reinforcement. However, those metal elements were not applied during the reconstruction, as

concrete was used as infill for the bridge. This established a new connection between concrete and stone, especially the construction and stability of the arches, in turn creating a new perspective of the accepted principles in conservation (Gojković, 1973).

The disassembled visual material or "facade" was stored until its assembly. It consisted of blocks of processed and cut stone, especially "the railing and the cornice, the wall surfaces of the spandrel and river piers, the elements of the arch construction and some roughly refined stone elements of the small arches of the bridge" (Gojković, 1973, pp. 74-75).

The integrity of the reconstructed Arslanagić Bridge, in a structural sense, was achieved with concrete in combination with the disassembled pieces of stone. With that, the concept of material strategy was reformulated. Concrete became the most important element in the bridge's reconstruction due to its wide use as a construction and building material.

Local labor was engaged and directly connected with the reconstruction of the bridge, as masonry was the native construction method. Missing parts resulting from damage during World War II<sup>19</sup> were replaced using stone from a local quarry to give cultural authenticity to the architecture and keep the original appearance following the reconstruction. However, it was believed that the color of the new stones should be patinated to integrate with the old ones. This idea was rejected due to the view that where new stones were used, they would be patinated in a short time due to favorable meteorological conditions (Gojković, 1973). The



reassembled masonry structure retained its values and authenticity after the relocation, although the lost patina can be seen at the joints of the reassembled stone blocks as they were of cement mortar; this can be understood as material disintegration, architectural discontinuity, and digression. The aim was first to preserve the visual characteristics of the individual elements and to preserve the bridge visually as a whole (Figure 3). In a constructive and material sense, the bridge's structural authenticity has been neglected by extending it 7–8 m to the left bank of the river to adapt the bridge to the terrain and the traffic connection that was considered possible at that time (Gojković, 1978).

### Structural Strategy

The most significant damage to the Arslanagić Bridge was in 1943 during World War II when the smaller of the two main arches were destroyed by bombing. The damaged section was initially replaced with a wooden structure, and then in 1956, a reinforced concrete beam that rested on the remains of the arch was added; this remained until the bridge was relocated. The reinforced concrete beam can be understood as a modern crutch and temporary support for integrating old and new materials and the main outline of the bridge. This intervention is considered in relation to Article 12 of the Venice Charter: "Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historical evidence."

However, in the relocation project, this solution was questioned following the Mehmed paša Sokolović Bridge in Visegrad, whose arches were also destroyed in the War<sup>20</sup> and reconstructed with stone material from the old quarry, cement mortar, and concrete infill (Gojković, 1963). It is evident that for the reconstruction of the Arslanagić bridge,

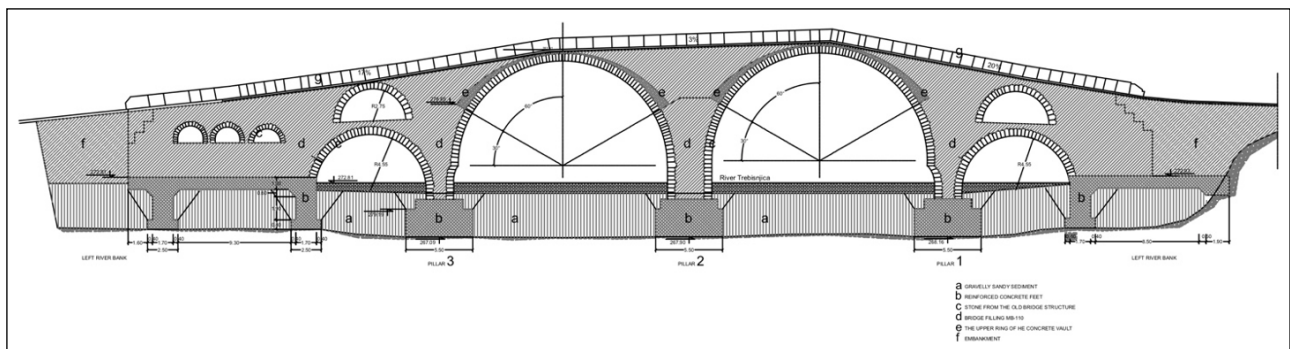
the same procedure as the destroyed vaults was applied in this case. This has led some professionals like Milan Gojković to consider the decision to restore the Arslanagić Bridge with a reinforced concrete beam as unacceptable; the cost of restoring the bridge with a concrete beam was not much less than the cost of restoration using stone blocks that could even be found in the river bed. In addition, if the bridge was restored to its original appearance, as implied by Gojković, later in the relocation project, how could this be approached as a relocation of the bridge to its original appearance?

In the relocation project, the concrete beam was discarded as the goal was to reconstruct the entire bridge to its original appearance. During the reconstruction of the bridge facades, special attention was paid to the structural and architectural aspects. Two concentric rings formed the main structure of the vault; the lower one consisted of dismantled stone pieces and joints in cement mortar, while the upper one consisted of crushed aggregate and cement. The rough and uneven stone surfaces of the lower ring allowed an intimate connection with the concrete, resulting in a massive, vaulted structure.<sup>21</sup> Concrete was also used as a substrate for the reconstructed surfaces and the new foundations<sup>22</sup> (Figure 4).

The new concrete infill, which replaced the existing aggregate stone infill, led to a change in the cohesiveness of the internal structure, changing the integrity of the infill at the structural and material level. The original structural approach of the bridge lies in its nature as a stone aggregate; consequently, interventions in monuments made of small stones, is as Nenadović (1974) suggests, an act of demolition "their dismantling is only a kind of systematic and controlled destruction." Referring to the method of retaining the historical facade and making the internal structure from concrete, he points out that "the



**Figure 3.** Arslanagić bridge in Trebinje after relocation, eastern upstream façade and paving (the photos were taken by the authors in 2022).



**Figure 4.** Structural integrity section of the reconstructed Arslanagić bridge (redrawn by the authors after Milan Gojković (1973)).

monument loses its monumental value at the very least and as a monument of culture has no more meaning [...] a new building, which has the old appearance/shapes, is totally lost to science and history. That monument is not preserved by moving it; it is destroyed” (p. 18).

A similar approach can be seen in the theoretical reflections of Bruno Zevi and, later by Stefano Gizzi, who concluded each monument has an internal history (besides the external one), which coincides with the history of its structural behavior and its static model, which should not be altered. (Zevi, 1959; Gizzi, 1988, as cited in Roca et al., 2019, p. 62)

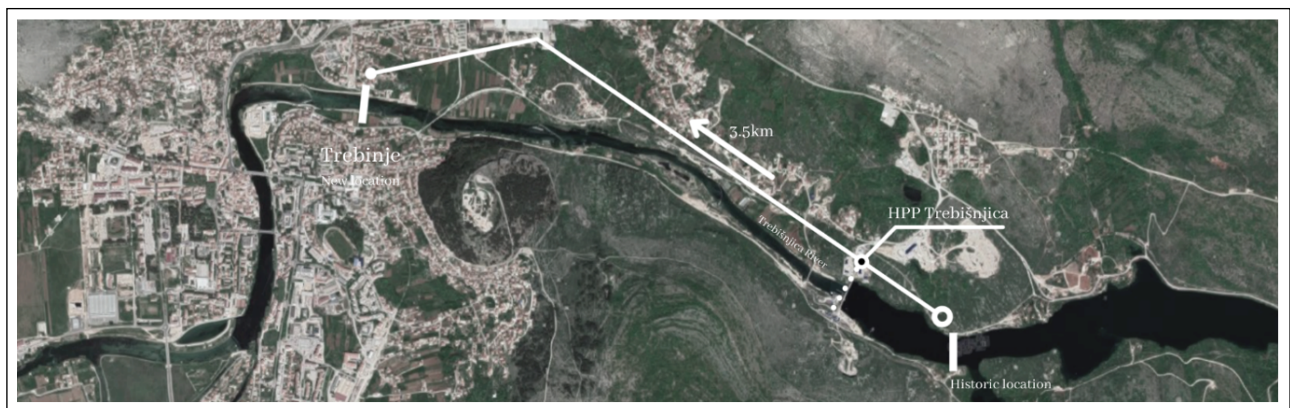
#### Site Planning Strategy

The bridge was relocated 3.5 km from its original site, along the Trebišnjica River, north-west of Trebinje (Figure 5). A favorable cross-river profile was identified, determined by the municipal authority’s requirements, Trebinje’s housing issues, urban and touristic needs, and the opinions of the professionals who worked on the relocation to find the optimal spatial integration of the structural elements of the bridge and their integrity. Gojković (1973) observed, “the newly chosen site has special qualities and benefits to accommodate the orthogonal projection of the bridge; it emphasizes the bridge’s construction and its aesthetic value

in an asymmetrical cross profile and open space – like the old site, providing ideal opportunities to create a unique urban motif in the further urbanization of this part of the city of Trebinje” (p. 77).

However, a whole series of circumstances, events, and needs preceded the appearance of the Arslanagić Bridge in its historical location that cannot be conveyed by relocation, let alone its historical progression. The patronage of transport architecture and infrastructure was vital to the success of undeveloped areas, even from Roman times: “The remains of the Roman road were on the right bank of the Trebisnica River, most likely in the place of, or near the Trebinje settlement of Mosaći” (Samardžić and Popović, 2020, p. 12). Based on archaeological findings, there is an evidence for a Roman bridge “over the Trebišnjica, somewhat upstream from the Arslanagić Bridge” although “in the Middle Ages and in the first decades of Turkish rule, there were no bridges on the Trebišnjica; there is no trace of them on the ground, nor are they mentioned in written sources” (Čelić and Mujezinović, 1969, p. 24).

Settlements connected to or located around this communication system of essential roads; examples include Ragusa Road or “Via di Ragusa,” one of the most strategically and economically significant land axes between the



**Figure 5.** Map of Trebinje and surroundings showing the relocation distance and position of the historic and new Arslanagić bridge locations (the drawing was prepared by the authors in 2022).

Ottoman capital and the Adriatic coast, and the Tsarigrad Road, which, passing through the Balkans, was the shortest connection to Vienna and Venice in the 16th century. The Arslanagić Bridge in Trebinje was built on the old road connecting the Adriatic coast<sup>23</sup> with the Tsarigrad Road. To meet the needs of caravan travellers, the bridge was built as part of a complex that included a caravansary and a public fountain (Howell, 2018). The area's history illustrates the convergence of the achievements and evolution of the road network, from Roman times to the Middle Ages, from the era of the Ottoman Turks and to the present day. It is the most convincing evidence of the compatibility of the bridges with their historical location, considering that they were purposely built to fulfill a role on these sites. Once a series of points on the map, the Arslanagić Bridge was part of the Ottoman road network, and where it gets its identity.

Before the relocation, the historic road on which the bridge was built was inactive. In addition, the bridge had an unfavorable slope and was narrow, with other negative characteristics such as sharp curves. Consequently, it was impossible to fit it into the modern road network (Gojković, 1973); over time, it fell out of use, and the road lost its meaning and became abandoned. The relocation of the bridge from a remote place to an urban settlement caused temporal and spatial discontinuities. The environment no longer corresponded to its natural features; as Brandi states, "Apart from being insolubly linked to the monument from the spatial point of view, the environment may be a monument in itself, in which the building becomes an element" (Brandi and Basile, 2005, p. 94).

In its new location, the bridge has become confusing in the urban infrastructure, creating historical inaccuracy and uncertainty on the map and with the observer. Furthermore, when the reservoir at the original site drains, the bridge foundations are revealed as a visual impression of the former existence of the bridge and simultaneously act as traces of the historic road.

## THE FACTORS AND RESPONSES RELATED TO THE RELOCATION OF THE ARSLANAGIĆ BRIDGE

Since the decision to relocate the Arslanagić Bridge resulted from the construction of the hydroelectric power station between 1959 and 1964, we can only estimate<sup>24</sup> that the entire relocation process was based on already existing conservation charters and the restoration of monuments at that time. Specifically, the Athens Charter of 1931 with additional arguments favoring the later proposed Venice Charter of 1964. There are difficulties in the professional interpretation of some points of the Venice Charter regarding terminology, environmental importance, the setting, and the relationship with the monument. Consequently, it results in different opinions and theoretical contradictions among conservation professionals.

An example given shortly after the bridge's relocation is Nenadović's (1974) criticism<sup>25</sup> of Article 7 of the Venice Charter, which does not recommend relocation, "except where the safeguarding of that monument demands it or where the national or international interest justifies it and is of paramount importance" (p. 17). He points to the limitation and suggests complete exclusion, or at least the rewording of this part of Article 7, because it creates conditions to justify the moving or relocation of a monument, even if there were no national or international interests. He considered it unconvincing and encouraged a proposal to adopt the opposite recommendation. Nenadović (1974) also states that monument protection professionals recognize the relocation of monuments only as a method of rescue. The Venice Charter recognizes and supports this, specifying that "A monument is inseparable from the history to which it bears witness and from the setting in which it occurs" (Article 7).

The question is whether the relocation of monuments can be accepted as a method of rescue (valid and applied continuously) or is it a "necessary evil" (invalid and prohibited, but necessary).

Nevertheless, it points to the awareness of Yugoslav conservation experts about the inadmissibility of relocation, even though monument protection regulations in the SFRY had not yet been standardized on this issue nor established a legal basis for taking such legal action.<sup>26</sup> This contributed to the difficulties arising from differences in the attitudes of the various parties to the relocation.

The financial resources for the Arslanagić Bridge's relocation were provided by the investor in cooperation with the Institute for the Protection of Cultural Monuments from Sarajevo. The conflict of social interests arose, on the one hand, from the negative attitude of the investors of the hydropower plant toward the endangered monument fund and, on the other hand, the passive attitude of other parties (Defterdarević, 1969). Due to the long process of financial and rescue decisions, the bridge flooded during the Gorica reservoir filling trial in 1965 and remained submerged until August 1966. This became the decisive turning point for the continuation of the relocation. The 2 months after the reservoir was emptied became the period for dismantling the bridge and saving it from complete disappearance.

In the latest published reports on the relocation of Arslanagić bridge (Čelić et al., 1972), the entire process of relocation was recognized as a complex and multifaceted collaboration between the municipality as a representative of the Bosnian people, the investor-HPP Trebišnjica, in the form of composite companies that financed and carried out the entire work,<sup>27</sup> and professionals from various disciplines such as consulting engineers, heritage professionals, and architects engaged in the planning and preparation of the entire project with auxiliary supervision.<sup>28</sup> Each contender

represents a thoughtfully coordinated system: From local labor to Yugoslav conservationists and engineers to local, state, and federal regulations. This cooperative effort can be understood as a project that majorly reconfigured the Trebišnjica valley to a new landscape that the report noted as a coexistence between “cultural heritage and [...] progressive movements of our time” (Čelić et al., 1972, p. 2).

## CONCLUSION

Examining the relocation of the Arslanagić Bridge covers both broader issues attached to the conservation approach and specific points related to the bridge;

**Authenticity or Credibility:** Authenticity is a primary measure of any monumental intervention and contains two crucial aspects: The authenticity of the restoration of tangible and intangible assets. In the case of relocation, since it is not an intervention *in situ*, only the original material “relocated” can carry credibility.

An important architectural tool for ensuring authenticity is distinguishing between original and newly installed materials and structures. It is a difficult task in the case of monuments with various and small building materials because, as we saw in the case of the bridge, the binding materials or the hidden auxiliary structures cannot be reused. When choosing new materials during reconstruction, it is necessary to consider that the original and new materials can differ only for a certain time, and over time the new will equalize the original.

**Eternity and contextuality – the relationship between the new environment and the monument:** The monument cannot be separated from its environment, so its integration into the new environment inherently devalues it. As seen in the example of the Arslanagić Bridge, even in the case of the most carefully prepared relocation, essential parts of the building remain in the historic location, such as the foundations, which cannot be moved in a technically feasible and economically viable way. Integration in the new environment is not easy because adopting the relocated monument requires adding new elements, which in turn enter into a new architectural relationship with the original. Whether visibly recognizable or integrated into the original, the old concept has changed; the monument’s original appearance cannot be fully conveyed. As pointed out in the question of authenticity, a monument placed in a new context over time acquires its original role, new materials acquire a patina similar to the old, and the former place is slowly erased from public consciousness. The aspect of social integration should be taken into account when preparing works for relocation, and the context should be noted in a permanent and public form, such as a plaque.

**The role and limits of scientific methods in relocation:** With careful technical preparation, the primary task of

research is to document in detail the original monument and the historical layers that have been added since its construction. Despite all efforts, these layers are lost forever, and after relocation, a new life begins for the building, where all errors are eliminated. Integration in a new urban context also implies a new functional demand, especially for a transport structure. Therefore, scientific methods can be of the greatest help in the design phase so that the monument can be rebuilt as close as possible to the original while meeting new, generally increased needs. However, rebuilding the monument at a new location cannot be seen as a new contemporary layer of the monument as it might be in the case of a monument rebuilt *in situ* from its ruins.

**The place of relocation in the context of the monumental environment:** Considering all aspects, it can be concluded that relocation, like other forms of architectural reconstruction, is challenging to consider as a *par excellence* monumental intervention. Unlike conservation and restoration, in the case of hypothesis-based reconstruction, ensuring authenticity is a complicated task. In the case of relocation, which can be considered an “*ex situ* intervention,” this is almost impossible. The only legitimate way to save a monument from being moved is to refrain from moving it; otherwise, heritage conservation can only seek to minimize losses.

<sup>1</sup>*English: Arslanagić Bridge, Serbo-Croatian: Arslanagića ćuprija, Serbian Cyrillic: Арсланагића ћуприја; Turkish: Arslanağa Köprüsü, also known as Perović Bridge (Serbo-Croatian: Perovića most).*

<sup>2</sup>*It refers to the entire rescue period, from the announcement to the completion of the reconstruction project.*

<sup>3</sup>*The Socialist Federal Republic of Yugoslavia (SFRY) refers to the territory of the federation consisting of six republics – Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia (including the regions of Kosovo and Vojvodina, as autonomous provinces in Serbia) and Slovenia, which lasted until the beginning of its dissolution in mid-1991, caused by the Yugoslav wars.*

<sup>4</sup>*It is located in the southern part of today’s Republika Srpska, Bosnia and Herzegovina.*

<sup>5</sup>*After the establishment of this commission, the second republican commission of experts was established by the investor of the hydropower plant, which dealt with the conditions of the memorial fund of the entire basin and fully adopted the opinions and conclusions of the Yugoslav commission.*

<sup>6</sup>*Including the Dobrićevo Monastery, see Kajmaković (1962) for more detail.*

<sup>7</sup>For more examples of bridge reconstruction from the Ottoman period in Bosnia and Herzegovina, see Uluengin and Uluengin (2015).

<sup>8</sup>For a detailed explanation of the relocation, see Marasović (1985).

<sup>9</sup>Before the project, UNESCO's Executive Committee launched its international campaign to save Nubia's monuments, appealing for help from its member states. Yugoslavia, as one of them, along with other UNESCO members, helped Egypt in excavation and conservation efforts, see Guichard (2015) for more detail). The involvement of Yugoslav experts resulted in a phase of promotion and progress of Yugoslav expertise in the relocation of monuments.

<sup>10</sup>The Burra Charter was first adopted in 1979. Minor revisions were made in 1981 and 1988, with more substantial changes in 1999. Lastly, in the 2003 revision.

<sup>11</sup>ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value revised 2010.

<sup>12</sup>More details on this topic can be found in Gregory (2008).

<sup>13</sup>Considered the greatest architect in the Ottoman Empire (see Čelić, 1969).

<sup>14</sup>Several authors indicate different data (Defterdarević, 1969; Gojković, 1963; Gojković, 1973; Gojković, 1978; Gojković, 1989; Tihic, 1966; Čelić & Mujzinović, 1969).

<sup>15</sup>A famous historical figure held the position of the grand vizier. The archival book "Lettere e comisiones di levante XXXIII is registered in the Dubrovnik Archives (see Defterdarević, 1969).

<sup>16</sup>Several authors indicate a different length and width of the bridge; as relevant, we take Gojković (1973).

<sup>17</sup>For a more detailed explanation of the Arslanagić Bridge photogrammetry process, see Pandža and Pleško (2018).

<sup>18</sup>Technical drawing made by the Institution of Monument Protection in Mostar made in 1958. This is closely related to the aforementioned research of Katanić (1971).

<sup>19</sup>It is explained in detail in the following subsection 5.2. Structural strategy.

<sup>20</sup>For a detailed explanation of the implementation of certain bridge restoration measurements, see Ademović & Kurtović (2017).

<sup>21</sup>Exceptions with only crushed stone infill are noted in the

section between pier "2" and the crown of the larger vault.

<sup>22</sup>Both the main piers and the shore pier foundations, due to their considerable length, were constructed as reinforced concrete beams (see Gojković, 1973).

<sup>23</sup>Two cities from the Adriatic were connected by this road, Dubrovnik and Herceg Novi (see Gojković, 1977-78).

<sup>24</sup>We use the word estimate because we found no evidence of the regulations that the expert took as relevant. There are no written sources.

<sup>25</sup>It refers to the relocation of the Arslanagić Bridge.

<sup>26</sup>For a more detailed explanation of the regulation for the protection of monuments in SFRY, see Бргуљан (2006).

<sup>27</sup>Dismantling of the bridge, transport of the deposited material and initial reconstruction, together with laboratory checks and photogrammetric records.

<sup>28</sup>All contributors are given in Čelić et al. (1972).

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