Journal of Social Science Humanities and Literature, Vol. 9, Issue 6, (Jun)
ISSN 2277-842X **2026**
DOI: 10.66069/ojspub.22770601

Sustainability as an Intrinsic Quality of Archaeological Intervention: The Conservation and Enhancement of the Roman Amphitheatre of Ammaia, Portugal

Mamata Kuila, Aiswarika Sahoo

College of Agricultural Engineering and Technology, S K University of Agricultural Sciences and Technology of Kashmir, India

Abstract: ***This paper argues that architectural intervention in heritage contexts—and particularly in archaeological settings—is not merely compatible with sustainability but can, by virtue of the inherent logic of archaeological practice, constitute a naturally and intrinsically sustainable form of intervention. The argument is structured around a tripartite operational framework that mirrors the fundamental purposes of heritage stewardship: Knowing (through excavation and systematic documentation), Protecting (through conservation and structural stabilization), and Enhancing (through valorization, interpretation, and public engagement). Each of these stages, when properly executed, embodies principles of sustainability—minimizing waste, respecting material authenticity, extending the useful life of existing fabric, and fostering cultural continuity without imposing irreversible transformations.***

Keywords: Architectural intervention, Archaeological heritage, Sustainability, Conservation,.

1. INTRODUCTION

It is now universally accepted that the most sustainable building process involves rehabilitating existing construction. Only afterwards, and if rehabilitation is not possible, should one opt for new construction, desirably using natural and local materials, capable of allowing accessible maintenance over a long period of time.

This principle is not strictly material but also conceptual, since knowledge and practice of past architecture are also an immense source of learning for the Architect; in other words, the most cultured architects have always sought to learn from past architecture. "Let us note, in passing, that the epochs characterized by a great step forward distinguished themselves from others by a study, even if partial, of the past" (Viollet-le-Duc, 1866, p.16, our translation) [1].

In the case of intervention in an archaeological context, the issue is of greater relevance; since the ruin, a fragment of past architecture, as we have repeatedly mentioned, conveys an unquestionable didactic value. "For this reason [as Ustárroz states] Ruins represent for the architect, in an exemplary and enigmatic way, the most fortuitous and perfect artistic synthesis that can result from the collaboration between man, time and history" (1977, p.33, our translation) [2]; and given its own specificity, intervention on it can also result in a highly sustainable construction process, a theme that we aim to demonstrate very succinctly in these lines.

2. DEVELOPMENT

In any architectural intervention on an existing construction, and by majority reason if it has heritage and archaeological value, there are three actions that we must consider as fundamental and inseparable, namely: To Know, To Protect and To Enhance.

The first action after identifying the ruin, which may involve its total or partial discovery, is excavation; a sine qua non condition to begin the process aimed at its knowledge.

The current excavation process, called stratigraphic methodology excavation, implies that the archaeology team uses manual resources to excavate the various layers successively superimposed over time and from these determine the chronology of the structures and their transformation process; seeking to identify objects commonly considered of greater value (gold or silver objects, glass, ceramics or other materials), but also other clues that may

seem more irrelevant to a layperson (such as construction materials or methodologies, personal use objects, traces of worship or food, etc.). This entire excavation method must be very careful and slow and, therefore, manual and naturally sustainable (Figure 1).

Figure 1: Excavation at Ammaia, São Salvador da Aramenha, Portugal.
Source: Author's photograph, September 2015.

It is also important to note that even in earlier times, where other excavation methods were used that we might consider more archaic, the interest in identifying objects used by our ancestors always involved manual excavation, the only one that has always guaranteed the identification and safeguarding of these same testimonies of the past (Figure 2).

Figure 2: First excavations in the Romanized city of Conimbriga, Portugal
Source: DGEMN Bulletin, 52-53, 1948, fig.6.

The next phase consists of the conservation of the ruin, which can be carried out in various ways.

After the essential drawn and photographic recording of the ruin, once its importance and fragility have been established, one option may be its subsequent reburial; an option that allows the ruin to be completely preserved for future generations, in particular so that they may come to excavate it again. One of the recommended options for reburial of the ruin, after placing a protective barrier around it, is precisely using the soil removed during the excavation.

Other conservation actions for the ruin may involve protecting, above all from the effects of rain and frost, sections of walls or parts of pavements, always ensuring the principle of reversibility (which implies that these new protective actions can be removed or replaced). In the case of walls, and with the aim of ensuring a minimum level of waterproofing, they are generally raised, after ensuring separation between the new materials and the original structure (Figure 3); the same applies to the protection of pavements, often with mosaics that need to be preserved, in this case by creating a protective layer with gravel (Figure 4). These contemporary protective actions, so as not

to become discordant with the ruin, are generally carried out using stone identical to the existing one, mostly taken from the site or its surroundings.

Figure 3: Ampurias, Girona, Spain

Figure 4: Italica, Santiponce, Spain.

An interesting example worth highlighting is, in cases where structural containment is needed, the use of gabions, as they are also reversible and filled with existing stone (Figure 5); just as it evokes the type of construction used, for example, by the Romans, who filled the interior of their walls and slopes with smaller stones (Figure 6).

Figure 5: Structural consolidation. Clunia, Spain

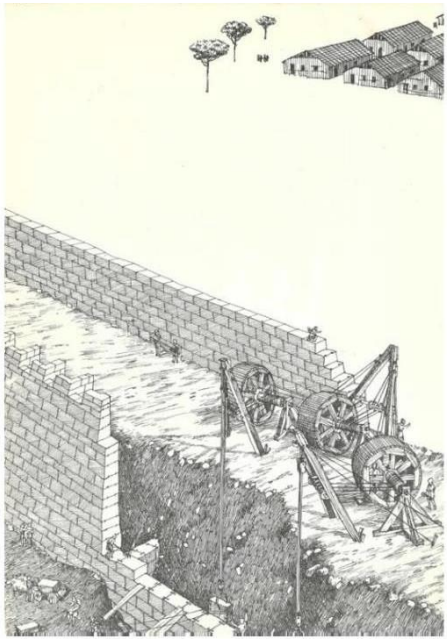

Figure 6: Construction of a Roman wall.

Finally, and in order to make the ruin more intelligible, some reconstitution actions can be carried out. These conjectural reconstitution actions are generally partial, that is, the minimum is reconstructed to make the ruin more understandable, without precisely losing its ruinous character.

The reconstruction action that best ensures the authenticity of the ruin is the so-called anastylosis, which consists of placing the original elements found during the excavation precisely in what is thought to have been their original location; an action that we consider, it is worth repeating once again, to be highly sustainable.

On several occasions, in order to place these original elements in their original locations, it is necessary to resort to what is called gap filling, that is, filling these gaps with new materials; which, once again, as we mentioned in some conservation actions, to avoid being discordant, are carried out using materials present on site (Figure 7).

Figure 7: Provincial Forum Temple, Merida, Spain

3. CONCLUSION

In conclusion, a concrete practical example of a Conservation and Enhancement action is presented, to be carried out at the Roman Amphitheatre of Ammaia, São Salvador da Aramenha, Portugal (Figure 8).

Figure 8: Aerial view of a section of the Roman Amphitheater of Ammaia.

In view of the rehabilitation and reuse of the ancient Roman amphitheater, the wall structure of the arena will be kept entirely intact and only subject to some consolidation actions; in a specific area, structural containment will be ensured by gabion walls, which, as mentioned, allow optimizing the consolidation and the levels of understanding of the lost architectural structure, as well as installing light wooden benches (Figure 9).

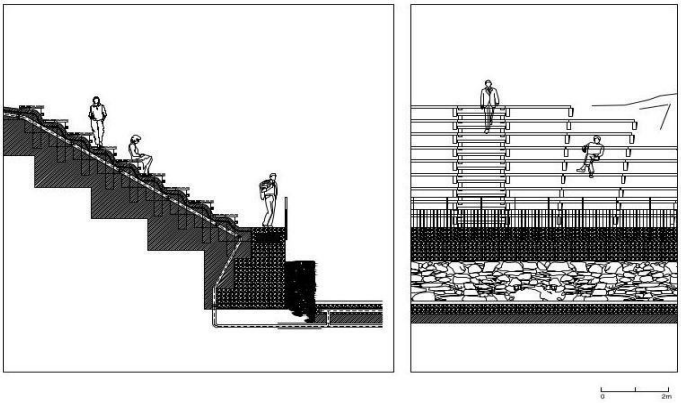

Figure 9: Conservation and Enhancement of the Ammaia Amphitheater. Construction section.

This architectural intervention, intended to be integrated and analogical rather than contrasting, will be reversible and implemented (both in material and conceptual terms) using the stone and wood existing on site (Figure 10).

Figure 10: Conservation and Valorization of the Ammaia Amphitheater. 3D Simulation

REFERENCES

[1] ADAM, Jean-Pierre. La constrution Romaine: matériaux et techniques. ed. Paris: Grands Manuels Picard, 1989 (1st ed. 1984).

[2] ALARCÃO, Jorge. Why Conserve and How to Present the Vestiges of the Past, Al-Madan, Almada, 2nd Series, No. 7, p.53-57, 1998.

[3] ALARCÃO, Pedro. Building in the Ruin. Between Reconstruction and Rehabilitation. Porto: Edições Afrontamento, 2018a.
[4] ALARCÃO, Pedro. Conimbriga. Beyond the Ruin. Porto: Edições Afrontamento, 2018b.
[5] BOITO, Camilo. Conserver ou restaurer: les dilemmes du patrimoine, trans. by Jean-Marc Mandosio, Françoise Choay (afterword). Bensaçon: L'Imprimeur, 2000.
[6] Bulletin of the Directorate-General for Buildings and National Monuments (Ruins of Conimbriga). Lisbon: DGEMN, No.52-53, 1948.
[7] FABIÃO, Carlos et al. Anfiteatro de Ammaia (Lusitania). Nuevo ejemplo de modelo provincial, ZEIT (EN) DES UMBRUCHS. Akten des 17. Internationalen Kolloquiums zum provinzialromischen Kunstschaffen. Wien – Carnuntum, 16-21 Mai 2022, p.387-404.
[8] LOPES, Flávio; CORREIA, Miguel Brito. Archaeological Heritage. Charters, Recommendations and Conventions. Lisbon: Livros Horizonte, 2004.
[9] MACAULAY, David. The City. Planning and Construction of a Roman City. Lisbon: Publicações Dom Quixote, 1978.
[10] Modelos de Paisajes Patrimoniales. Estrategias de protección e intervención arquitectónica. Darío Álvarez e Miguel de la Iglesia (coord.). Valladolid: LAB/PAP, 2017.
[11] PEREIRA, António Nunes. For a terminology of the discipline of built heritage protection, In Search of Lost Time. Journal of Architects, 213, p. 27-32.
[12] PEREIRA, Paulo. "Places of passage" and the recovery of time, Heritage/Studies, no. 1, 2001, p. 6-16.
[13] USTÁRROZ, Alberto. The Lesson of the Ruins: Presence of Greek and Roman Thought in Architecture. Barcelona: Fundación Caja de Arquitectos (Arquíthesis Collection, no. 1), 1997.
[14] VIOLLET-LE-DUC, Eugéne. "Restoration", Dictionary of French Architecture from the 11th to the 16th Century, volume VIII. Paris: A. Morel, Publisher, 1866, p. 14-34.