

Review

Charles Blackett-Ord finds this book to be of use to two audiences: the first half is essential reading for engineers with an interest in conservation, while the second half will be of more benefit to students.

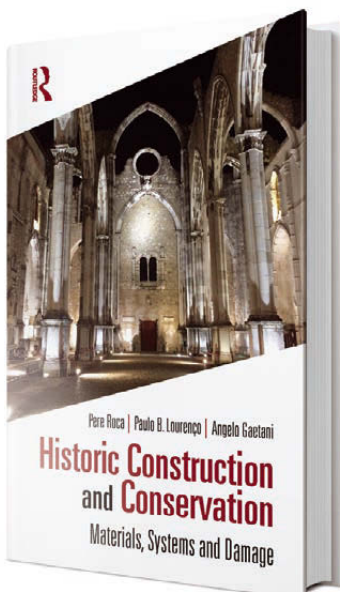
Historic construction and conservation: Materials, systems and damage

Authors: Pere Roca, Paulo B. Lourenço and Angelo Gaetani

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THIS BOOK IS NOT WHAT ONE MIGHT INITIALLY EXPECT from the title, in that it is not a textbook on structural conservation. It is really a book of two halves, or it perhaps could have been two books. The first half is a useful discussion on historic construction in the various materials, and historic approaches to conservation. The second half is concerned with arches and vaults in stone and other materials, and collapse mechanisms in masonry structures.

The preface opens by raising the question, ‘What does conservation mean?’, and this is discussed in the first of the six chapters. It includes a discussion of the principles of conservation from the Athens Charter (1931) onwards. This was the first attempt to define the principles of conservation that are largely followed today.

The authors comment that previous to the Charter, interventions were made following incorrect assumptions (unfortunately still existing today in some quarters) such as i) mistrust (due to ignorance) towards original or ancient materials, ii) a blind confidence in modern materials, iii) lack of recognition of the value of original structure and structural features, and iv) lack of recognition of the importance of studies previous to any intervention.

The Athens Charter recommended the use of traditional materials, and where of necessity modern materials have to be used they should be distinguishable from the original ones. Current structural conservation practice should be a multidisciplinary, multi-faceted activity, and it must acknowledge that conventional calculation techniques and legal codes and standards are difficult to apply, or are even inapplicable, to ancient structures.

In the context of conservation, repair is not meant to correct any historical deterioration or transformation (including those manmade) that only affects the appearance and does not compromise its structural stability. Repair should only be used to improve structures having experienced severe damage, actually conveying a loss of structural performance and thus causing a structural insufficiency.

Rehabilitation may, on the other hand, in some cases require significant transformation with loss of authenticity and cultural value: rehabilitation may constitute an activity substantially different from strict conservation.

The ‘History of conservation’ chapter starts with Ramesses II and Abu Simbel, around 1200 BC (although there is no mention of the monument’s translation from its original site on the Nile, now inundated by Lake Aswan),

and passes quickly on through the Parthenon and Hagia Sophia to the 18th century.

Then Viollet-Le-Duc comes in with his approach to conservation entailing, in some cases, completely imaginary structures, and reconstruction after World War II, which was often carried out without any scientific or historical insight. This chapter describes several examples of practices that we would now regard as inappropriate.

The longest chapter, about a quarter of the text, covers the history of the use of structural materials: masonry, timber and metals, describing construction techniques in a historic context. There is a miscellany of fairly standard information that would be more useful in a textbook of construction rather than in an essay on conservation.

The second half of the book covers vaults and arches, in stone and concrete, and damage in masonry structures. This is a large subject which would justify a book on its own.

There are a number of irritations, and more typographic errors than one would expect in a book of this quality. Your reviewer is constantly complaining

about indexes, and this book is no exception. There are three separate indexes: a General Index, an Index of Monuments, and an Index of Scholars. The latter leaves out a number of well-known names mentioned in the text.

However, the first half of the book at least should be read by all engineers with an interest in conservation and a need to understand the principles that should be adhered to. The second half will be of more interest to students, as it has useful information and background to masonry and its defects. It should be noted that it does not give answers or case studies.

There remain two open issues: reconstruction following sudden destruction of a monument by war or earthquake, and the conservation of 20th century buildings built with less durable materials where the conservation principles adopted for ancient buildings are not applicable. The debate must continue and this book is a useful part of it.

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THE LONGEST CHAPTER COVERS THE HISTORY OF THE USE OF STRUCTURAL MATERIALS”