Book reviews

Building Pathology

Title: Building Pathology	Author: David Watt
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This book was originally published in 1999 and has been a valuable introduction to a complex subject. While the reviewer, as Joint Co-ordinator for the CIB Working Commission W086 for ten years, is very familiar with the concept and skills required of a building pathologist, the author confirms in his preface to this edition that the discipline is now becoming more widely used throughout the construction industry. There has been much involvement in recent years in the UK with condition of buildings and in particular the training of Home Inspectors to undertake Home Condition Reports. This inspection aims to look for defects and to categorise the need for further action. This is where the Building Pathologist takes over and uses specialist skills and techniques to determine the reason for a defect, possibly apportion blame for its occurrence and recommend methods for repair.

The author recognises that practitioners need to have an understanding of the underlying basis on which buildings are designed, constructed and utilised, and how they might sensibly and economically be managed, repaired and maintained now and in the future. He recognises that there have been changes in emphasis since the first edition, particularly in environmental awareness, sustainability and the use of information technology.

The first chapter examines the several definitions given for the term ‘Building Pathology’ and, while recognising the different emphasis that each has, concludes that the discipline is concerned principally with defects and associated remedial action. The book’s purpose is to expand the range of investigation and information needed in order to make informed decisions on how to repair and maintain for the future. The holistic approach to understanding buildings examines the context of the building, its design and construction and the long list of people who will be involved throughout its life and possibly its subsequent demolition.

The next chapter attempts to answer the question — ‘what is a building?’ and takes the reader down the path of functional requirements, performance requirements, through the minefield of statutory requirements and into the conflict zone of user requirements. This is followed by an introduction into the user expectations of a building, what is anticipated in the design and what faults are likely to arise from the anticipated use or future use. The chapter concludes with a brief piece on aesthetic values and the art or architecture and even archaeology of the building.

Chapter 3 takes the reader into building performance with an introduction covering structures, nature, understanding and sources of building materials. Individual materials are covered in some depth, including many of the older traditional ones. Brief coverage is given to services; however, the influence that environmental conditions can have on older buildings is highlighted. The chapter concludes with details of a 'forensic conservation' approach illustrated by three case studies. While the selection of buildings is not typical of the national stock, the systematic approach to the recording of the history, the materials and services audit, performance and general details provides a useful model to follow. The wide range of subjects covered in this chapter is well supported by the four pages of references and further reading.

The next chapter provides the meat of the book covering defects, damage and decay. Some coverage is given to surveys of defects by BRE and other authorities and has been updated by recent research by the author into defects with listed buildings. However, at the time of writing the website given in the references is no longer available. These surveys do highlight the number of problems related to moisture in one form or another. Climate is covered with the figure covering climatic factors updated to 2006. However, little is changed in any of the figures given apart from an increase of 0.6°C in the highest recorded air temperature. Weather-related effects on materials and structures follow together with the importance of chemical, physical and biological factors being considered in the design and servicing of buildings. These factors are then given detailed coverage, concluding with fire and human intervention in various ways. This chapter ends with five pages of references.

Having comprehensively covered the depth of knowledge needed by a practitioner, the next part of the book covers survey and assessment. These are handled by tables for the building survey, the content of a report and undertaking an assessment of defects. Only a passing reference is given to the need and requirements for chemical analysis or other possible tests. In the reviewer's experience the additional information provided by an appropriate test may be the vital clue in understanding a particular defect. Some of the references cover individual testing regimes but some guidance on this topic would be of value. More comprehensive details are given for a wide variety of non-destructive survey techniques mainly carried out *in situ*. Monitoring of defects is briefly covered with examples of structural methods and equipment for environmental recording.

Remediation in practice is another large section of the book and is illustrated by a series of case studies. The first may have little relevance to many practitioners as it deals with earthquake-resistant housing in Peru and improved quinchu technology. Another covers work on the leaning tower of Pisa. Of more practical use is a detailed examination of stone deterioration by salt action which involved different monitoring methods. Other case studies mainly deal with heritage buildings and is brought up to date with a useful section on hydrocarbon spillage and its effect on stone monuments. Another new item covers gauged brickwork, although this is of little relevance to the main topic of the book. The chapter concludes with a short survey of climate change, the factors involved and key recommendations.

The book concludes with a chapter entitled 'Building Management and Aftercare'. It points out that any building is likely to be changed at some time in its life and details differences between conservation, preservation, repair, maintenance and reconstruction. Some information is given for durability and lifecycle costs using as an example roofing materials. Principles of repair, restoration and repair are more aimed at historic buildings with particularly useful guidance on preparing a disaster or emergency plan. Three

appendices are included covering Building Regulation requirements, an RICS hazard identification checklist and 'Useful Contacts', and finally a Glossary.

The book is to be recommended to new readers, particularly those involved with heritage buildings. Anyone owning the first edition should carefully examine their need for the limited amount of new material before purchasing. The main complaint is the poor quality of some of the black and white illustrations in the new edition. They are much better in the original.

Peter Trotman
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Head of BRE Advisory Service