

# **Learning from the Past: Performance Characteristics of Heritage Buildings.**

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# 2.0 Background

## 2.1. Can we learn from the past performance of Cultural Heritage?

Byers and Jowell (2000) stated:

*‘England’s historic environment is one of our greatest national resources. From prehistoric monuments to great county houses, from medieval churches to the towns of the Industrial Revolution, it is a uniquely rich and precious inheritance.’*

And add:

*‘This historic environment is something from which we can learn, something from which our economy benefits and something which can bring communities together in a shared sense of belonging.’*

Similar sentiments could be expressed for the ‘building stock’ of many developed nations. The present study, however, focuses upon and evaluates buildings, located within Wales, England, and Scotland.



- According to: The Department for Culture, Media and Sport (2008) the UK possesses:
- **20 sites, designated as 'World Heritage Sites'.** (Eleven in England, three in Scotland, two in Wales, and one in Northern Ireland).  
*Within, these globally recognised, internationally significant, heritage sites, there are numerous fine buildings, spaces and monuments.*
- **approximately, 500,000 Listed Buildings,**
- **17,700 Scheduled monuments and 8,500 conservation areas.**

These built assets offer potential scope, for use as visual records and physical, real-time laboratories; that reveal the consequences of weathering, decay processes and ineffective repair.

## 2.3. Climate Change

The function of most building structures is to provide support and shelter: filtering out extremes - posed by an ever changing external environment – however, these challenges are set to increase dramatically.

Ingvar Maxwell (2007) claims:

*“Climate Change is the greatest threat facing both the built and historic environment.”*

## 2.4 Maintenance / Repair needs of traditional buildings

- Maintenance, defined in British Standard 7913 (1998) as:  
*‘Routine work necessary to keep the fabric of a building... in good order’.*

And a repair, as:

*‘Work beyond the scope of regular maintenance to remedy defects, significant decay or damage caused deliberately or by accident, neglect, normal weathering or wear and tear, the object of which is to return the building or artifact to good order, without alteration or restoration.’*

But, does any organisation, really undertake effective maintenance of their property stock?

# 3.0 Design of Buildings from 'First Principles'

Addleson and Rice (1992) identified a concept of:

- **"Principles for"** as opposed to **"Principles of"** building. to act as guides to designers and constructors.
- **High > Low.** (E.g. hot > cold; high pressure > low pressure (temperature, moisture, gases etc)).
- **Separate Lives** (Buildings are assemblies of materials and components with different properties. Causes of decay and rates of deterioration and movement).
- **Creative Pessimism** (If something could possibly happen, then it almost certainly will – hence, try to make provision that allows for it).
- **Continuity** e.g. Structural.
- **Balance** (e.g. understanding movement characteristics e.g. Green Oak, Laminates, veneers etc).
- If we adopt the performance approach suggested, we come closer, to achieving quality: design, maintenance, conservation and construction practices - (comparatively) free of obvious, inherent defects.

## 3.3.1. Windows



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**Figure 1.** Traditional sash windows, fitted close to the face of a wall. Details that were challenged by their performance in use and fire safety issues.



**Figure 2.** Box sash and pulley stile, rebated behind the window reveal. 200 years later, Building Regulations acknowledge the effectiveness of such details in reducing heat losses, controlling ventilation, decay and water penetration.

Some modern



by the text.

Set on the BRE Innovation Park at Watford, U.K., constructed in 2007, this net-zero carbon house, has achieved Level 6 of the Code for Sustainable Homes. The English Government's Standard, for all new homes to be constructed and designed by 2016.

Laudable as the many sustainable features are, e.g. Photo-voltaic panels, solar water heating, eco-friendly materials, flexible design etc; the durability of the building and the sweet chestnut cladding, in particular, must be seriously questionable.

Is this really a beacon for volume housing within the U.K.?

Details found on recent developments

## 6.0 Conclusions

The existing 'Heritage' building stock, is potentially, a field laboratory for Construction and Architectural professionals, which can help shape the detailing and performance in use of future developments.

Designers require clear, logical understanding, and must take an enquiring approach when utilising first principles (*Principles for*) whilst, retaining an appreciation of traditional 'performance in use' (*Principles of*) methods.

It is hoped that this study has demonstrated, there remain considerable opportunities to learn from the past, in order to inform the present.

Thank you.