

Richard Oxley predicts a crisis for timber framed buildings because of the use of unsuitable modern materials.

Mistaken Protection

'In prioritising action, the rate of deterioration of a building is always more significant than its current condition'- Buildings at Risk. A New Strategy. English Heritage 1998.

This quote, from a publication that is providing a positive response to the Buildings at Risk problem, is pertinent to the main issue raised in this article: that the rate of deterioration suffered by many timber-framed buildings is unacceptable.

Evidence I have gained from recent case studies indicates that the extent and, most importantly, the rate of deterioration suffered by historic timber-framed buildings is such that a significant number of these buildings are at serious risk of being lost forever within the next couple of decades.

The Rate of Deterioration

Many people have a perception that the rate of decay suffered by historic buildings has been a gradual process that has taken place over their long history. However, in some cases it can be shown that the actual rate of deterioration has accelerated to such an extent that the rate of decay suffered over the last couple of decades has been far greater than that experienced over a period of up to five or six centuries. This is because of the use of impervious materials that prevent buildings from breathing and so create the right conditions for timber decay.

Consider for example, a timber-frame building of c.1350 that was provided with an impervious cement and painted render some 20-30 years ago. In areas the face of the timber was flush with the render and no significant decay had taken place. However, where water had run into cracks between the timber-frame and the hard impervious render the eight inch timber had decayed between one and two inches. This rate of deterioration, in such a short time, is clearly unacceptable. If allowed to continue at this rate the structural integrity of part of the building would have soon been put at risk.

If this rate of decay is applied to other timber-framed buildings that have been repaired with impervious materials it is clear that we are standing on the precipice of a conservation catastrophe.

The extent and nature of the problem is illustrated in the following case studies.

Case study 1

The materials used to achieve this appearance, and to repair and maintain the building, were leading to its premature demise. In this case extensive remedial work was required to address the extent and rate of decay, wet rot and active death watch beetle attack, to reinstate the structural integrity of the timber-frame and to prolong the life of the building.

What is perceived as being the correct appearance for traditional timber-framed buildings, that they should be presented as the archetypal half-timbered black and white building, is an important factor in their imminent demise. In many cases this is historically incorrect, as it is largely a Victorian concept. To achieve a black and white appearance the historic finishes are usually covered, or removed and replaced, with impervious finishes such as paints and cement renders.

Historically, the traditional finish consisted of the timbers and the infill panels being completely covered with lime render and/or limewashed. The removal of these finishes not only results in the loss of the

traditional appearance and therefore the physical protection offered by these materials, but more crucially the ability of these old buildings to 'breathe' is significantly reduced.

Any attempt to reinstate the appearance, and therefore the traditional 'breathing' performance of these buildings will have to overcome the emotional hurdle of people knowing and loving timber-framed buildings as black and white structures.

This is well illustrated in this case. There was local resistance to limewashing over the infill panels and the timbers because it would change the 'character' of the building even though this would have been in the best interest of the building.

Case study 2

The presence of cement and paint increases the risk of decay, and will actually exacerbate any existing decay. The consequences of these inappropriate repairs are well illustrated (see photo) when the cement is removed.

The joints between the collar, purlin and principal rafter to the gable have completely decayed and no longer perform a structural function. This is reflected by the need for temporary emergency strapping to prevent the collapse of the gable. In this case the timber-frame and the infill panels had to be dismantled to facilitate traditional carpentry repairs.

Case study 3

The original lime based render has been predominantly replaced with a cement render applied on to expanded metal lathing. The laths were used to provide a key to enable the render to be applied onto the timber frame. The removal of the cement render revealed that the timbers had decayed back from the expanded metal lathing, illustrating that the decay had originated after the application of the cement render.

Water that entered the fabric through cracks became trapped behind the impervious render, providing the conditions for decay, in the form of wet rot and active death watch beetle. In stark contrast, where the porous lime render survived there was little or no decay as moisture was able to evaporate.

In this case total rebuilding of the elevation was found to be necessary as the timber-frame had completely lost its structural integrity.

The extent and nature of decay unfortunately resulted in the need for extensive repair in all the cases described above. Although intrusive repair is against the basic principles of building conservation, in a significant number of cases the problems suffered and the nature of timber-framed buildings will make this level of intervention unavoidable.

Case study 4

The impervious nature of the paint has removed the surface from where moisture can readily evaporate. This has resulted in moisture being displaced and attracted to the timber beam, providing the conditions for wood rotting fungi (*phellinus contiguus*) to be present and develop.

Summary of Case studies 1-4

The buildings in Case studies 1-4 are all occupied and in beneficial use, they have been subject to regular maintenance and have not been neglected. The principal agent of decay is **inappropriate** repair and maintenance. In most cases repair and maintenance is carried out with the best of intentions. However, the use of incompatible impervious materials has resulted in these buildings effectively being 'loved to death' by their owners.

To illustrate this point, comparison needs to be made with buildings that have generally escaped the introduction of impervious materials. The following two Case studies (5 & 6) involve buildings that are empty and are perceived as being at risk as a result of their circumstances.

Case study 5

Even though the building is suffering from water penetration it is well ventilated. This is allowing the fabric to readily dry-out. The building has escaped the introduction of impervious materials. Consequently, the fabric is deteriorating at an acceptable rate. This is reflected in the amount of surviving historic fabric and its excellent condition.

Case study 6

Minimal intervention has resulted in a significant amount of historic fabric surviving at the property, including earth panels and lime plasters. Although repairs are required the main risk to this building is that it is vacant and situated in a remote location, and, with some minor exceptions, it is not the result of deterioration due to the introduction of impervious materials.

Summary

The Case studies illustrate that this generation has inherited a legacy of decay – to which there is no simple solution. However, it is time to face up to the fact that a significant proportion of historic timber-framed buildings are deteriorating at such a rate that a significant amount of historic fabric will be lost. This will be compounded by the need for a significant amount of unavoidable intrusive repair to reinstate the structural integrity of these buildings.

If this impending crisis continues to be ignored, or at best under-estimated, the opportunity to try and mitigate this loss will be wasted. This is unacceptable from a conservation, and environmental, point of view. To avoid the unnecessary loss of materials, workmanship, and a significant and important part of our built heritage immediate action is required.

The potential magnitude of the problem, the extent of decay suffered and the amount of work required, needs to be determined. This can be achieved by:

- Assessing the true condition of our historic building stock
- Targeting timber-framed and earth buildings, as these building types are the most prone to accelerated decay
- Carrying out a scientific study of the impact and influence of impervious materials upon historic fabric, including the rates of deterioration suffered
- Determining the best ways of helping these buildings

It is important to appreciate that the problems are not only physical, but that there are practical, financial and philosophical considerations that also need to be taken into account. For example, it is essential to appreciate that by highlighting a potentially vast problem every effort needs to be made to prevent making timber-framed buildings unwanted and unsaleable. Blighting these buildings will only compound the physical problems.

English Heritage summarises the approach required in their *Buildings at risk – A New Strategy* publication: *'Encouraging appropriate maintenance of our historic building stock, and providing help and guidance to owners should be a priority for all concerned with the conservation of the built environment.'*

This aim, which is at the heart of the SPAB's principles, can however only be implemented once the rate of deterioration has been halted, or slowed down to an acceptable level. The gloomy prediction made in this

article clearly illustrates that it is now time to stop dreaming of the past. Action is required to prevent our worst nightmare becoming a reality.

The author thanks Ian Pritchett for his support.