

Conservation Planning and Low-carbon Values

John Pendlebury, Neveen Hamza, Adam Sharr

Abstract: The desire to reduce carbon emissions and the desire to sustain historic buildings and environments are two powerful contemporary value systems that potentially conflict. It is through local governance and policy systems that much of the mediation between these values will take place, and in particular, in the UK, through the interaction between the conservation-planning system and building regulations. This paper will focus upon the relation between conservation values and the powerful emergent agenda of carbon-reduction through a number of planning case studies and in particular, a case study of Hexham Abbey in northern England. Accepting that carbon control aims and heritage values both have legitimacy, there is a need to explore how these two forces might positively interact.

Keywords: Conservation Planning; Urban Carbon Emissions; Low-carbon Values; Planning Control System; Building Regulations

Introduction

It is increasingly common in both academe and practice to conceive of conservation and heritage management as values-based activities, to focus on ideas about what is *significant* about a building or place that makes it something we should seek to protect. In other words, what is special? Why conserve? It is now commonplace to recognise that concepts of cultural, historical, or social value are culturally and historically constructed. Value found in a particular fabric, object or environment is not, here, an *intrinsic* quality. Instead, that fabric, object or environment is a participant in its own cultural construction; it acts as the bearer of a cultural and historical meaning which is projected onto it by individuals and groups in society. It attracts a value status depending on the dominant frameworks of value of the time and place (see e.g. Gibson and Pendlebury, 2009). Whilst it is not the focus of this paper we should, therefore, have in mind the significance of power relations in creating, privileging, sustaining and transmitting particular heritage values and heritage practices and the way this can close-down other possible approaches to heritage (see, for example Smith, 2006).

The ‘fact’ of ‘man-made’ climate change has become broadly accepted and does not need to be rehearsed here. Whilst the precise extent of climate change that will follow from the carbon-burning activities of the industrial world are contested and uncertain, few now argue that they will not be significant and that this heralds an environmental crisis of the utmost gravity. In this context it is clear that conservation practice will increasingly be influenced by responses to the low carbon imperative. However, whilst the scientific case for climate change might be clear, responses to this, such as carbon control, are also premised on value-systems. These value systems, in turn, and the embedded assumptions they contain, can be subject to critique. So, it is generally considered that the reduction of carbon emissions requires technologies for intervention, either to save energy (e.g. insulation) or to create energy (e.g. micro-renewable). At the same time the evidence would suggest that thermal comfort expectations are rising. Average UK indoor winter temperatures have increased from 13 C in the early 1970s to about 17.5 C in 2006; which might reflect an increased preference for warmer homes and hence reflect changed comfort requirements (Shorrock and Utley, 2008), so one potential response to reducing carbon consumption - reverting to the chillier temperatures which most buildings would have maintained historically – seems very much off the agenda in most circumstances. Rather, in the British context at least, the individual householder is exhorted to reduce their carbon consumption on a mixture of fiscal and moral grounds. So, for example, rapidly rising energy costs and government incentives supporting micro-generation infuse an economic rationality to reducing carbon, but wrapped in a wider moral discourse about environmental responsibility and frugality. However, the evidence suggests that

improved efficiency tends to lead to higher demand as consumers become less price sensitive (see e.g. Herring and Roy 2007, Steg 2008). At the same time, the technically damaging effects of interventions such as increasing insulation and air tightness might create to the building have often been ignored. This latter point begins to suggest that the twin desires to protect heritage and reduce carbon emissions can potentially conflict, although our concern in this paper is less with the technical impact of intervention and more with how value is held to be constituted in historic buildings and places.

As two social objectives, one of the principal ways heritage protection and carbon control are articulated is through state legislation and policy, at different governance scales. In the British tradition of policy-making, this policy framework is a tool in a management process that gives discretion in policy interpretation to officials, including the scope to ignore or override policy in the interests of ‘good decision-making’ (Pendlebury, 2014). It is therefore through local governance and policy systems that much of the mediation between these values takes place and, in the UK in particular, through the interaction with systems for conservation-planning and building regulations. Our concern in this paper is on the interaction of values that occurs in the planning system, rather than the building performance issues that building regulations are addressed at and on our specific focus upon how systems of heritage value might respond to the carbon control agenda. The next section examines the evolution of modern heritage values and the way that some values have proved to be rather more enduring than others in this process. The focus then shifts to the policy and governance frameworks through which different objectives are mediated. Some brief case studies are given of how carbon values have been asserted as of primary importance over prevailing heritage values, before in the final part of the paper we explore possible positive interaction of these two goals, with a focus upon a case study of Hexham Abbey in northern England.

Heritage as a values-based activity

Architectural conservation and conservation-planning, grouped together as ‘building conservation’ for the purposes of this paper, sit within a broader field of conservation activity, with important shared values. However, building conservation also encompasses values and validated practices that distinguish it from other conservation activity. So, in the British context at least, we can regard building conservation as part of a family of practices concerned with tangible, material heritage (and not, therefore, natural heritage or notions of intangible heritage). Material heritage conservation encompasses a diversity of activities, including, for example, seeking to sustain in some way a historic building or a place, or a painting, or museum object. Many intersecting values, philosophies and principles can be traced across a broad spectrum of such activities. Salvador Munoz Vinas (2005) sets out a theory of contemporary conservation encompassing a diverse body of practices, including architectural conservation but also, for example, painting conservation. He traces a lineage of conservation that emphasises its unity of practice. He examines powerful underlying precepts such as notions of authenticity, as well as the terminological and conceptual significance of such words as preservation, conservation and restoration that are important in coding, defining and distinguishing conservation processes.

Since the development of ‘modern architectural conservation’ in the second half of the nineteenth century, building conservation has thus, as an activity, been powerfully coded by a series of key individuals and canonical documents, sharing much of the intellectual territory defined by Munoz Vinaz. The origins of modern architectural conservation in Britain rest with claims on two nineteenth century polymaths, famous across a range of artistic and social domains: John Ruskin and William Morris. These figures represent an idea of conservation as critical opposition to practices of transformation and change. In particular, they were famous for opposing the speculative restoration of ecclesiastical buildings through radical interventions in building fabric, claimed as conservation. Rather simplistically, the approach of Ruskin, Morris and their followers came to be characterised as ‘conservative repair’, seen in opposition to ‘stylistic restoration’ which has become particularly associated with the French architect Eugene Emmanuel Viollet-le-Duc (Jokilehto, 1999). Their views about how buildings should be treated were underpinned by a view of why such buildings should be valued, centred on ideas of inter-generational stewardship.

A critical precept for Ruskin and Morris was that the value of the building, its authenticity, is closely associated with its material fabric. The goal of the architect or conservator should be to make as little physical alteration to the historic building as possible. Ruskin's ideas were mobilised and codified by the *Manifesto* drafted by Morris in 1877 at the formation of the Society of the Protection of Ancient Buildings (SPAB) (Morris, 1877). This remains a touchstone document within the field of architectural conservation and SPAB remains a significant amenity body. Thus Ruskin and Morris articulated principles of conservation action, of *how* buildings should be treated, such as minimum intervention, that are still current.

Subsequently, the material content, or the '*what?*', of architectural conservation has undergone an extraordinary transformation. Definitions of objects, places and environments that are ascribed with heritage value have extended to encompass a huge diversity of buildings and locations in terms of architectural style and temporal period. Whilst continuing the tactics of Ruskin, Morris and SPAB of critical opposition; over the course of the twentieth century campaigning became increasingly focused on influencing the planning system through, for example, lobbying for buildings to be listed and opposing any subsequent moves to gain listed building consent for demolition or unsympathetic alteration. And the mission also developed in other ways – most notably the increasing focus from the mid-twentieth century to look beyond the monumental to historic *places*, as perhaps best represented by the formation of the UK's now defunct Civic Trust, alongside a myriad of local place-based groups, and the subsequent creation of the conservation area system.

In the process, key principles of intervention have endured albeit within an evolving framework. So, for example, this has included new approaches to traditional architectural conservation problems. There is now greater tolerance towards interventions where these can be considered reversible (British Standards Institution, 1998). A greater emphasis on aesthetic considerations has also developed. The extension of the mission of conservation from object to place, and the management of place, reinforced this compositional element, for example, through the influence of the townscape movement (Larkham, 2003; Pendlebury, 2009; Worskett, 1969). Thus, while architectural conservation as an activity has been extended over a larger quantity of buildings and places over time, its value framework has changed and part of the domain of architectural conservation has been increasingly linked into systems and processes of town planning, acquiring values and tropes from planning.

Thus, in broad terms, building conservation has developed around dominant values which put an emphasis on the preservation of fabric, which we might consider a foundational value, and a more recent emphasis on aesthetics and visual appearance. We would suggest that, in the management of listed buildings, both these values tend to be significant but, in the stewardship of conservation areas, management goals often emphasise a particular idea of how a place should look (Pendlebury, 1999). As the twentieth century progressed the prevailing aesthetic became increasingly antagonistic to the visual impacts of modern life. Whereas historically new technologies might be visually emphasised, such as red telephone boxes (a technology almost redundant, but which in some places is now protected as heritage), increasingly there was a desire for these services to be hidden or non-assertive in the streetscene. For example, a popular early focus for enhancement in the new conservation area system in the 1970s was the putting underground of infrastructure such as electricity cables. Houses, however old their construction, have been retrofitted with building services – water, sewerage, electricity, central heating, broadband and so on – providing a new domestic infrastructure and fundamentally changing the way we live. But whereas these are generally very apparent in interior spaces, and might be celebrated in areas such as kitchens and bathrooms, there has been very often a broad consensus in the planning and conservation professions and beyond about minimising their visual impact.

So building conservation is partly defined by a history in architectural conservation, its mythology and organising ideas that, whilst not immutable, is stable and reinforced by canonical texts which code and solidify the identity of the practice and its norms. But changes do occur in terms of how, why and what buildings should be conserved, and these changes occur at differential speeds, with each dimension having a different pace of change and ability to be normalised. So whilst an

emphasis on the authenticity of fabric is an extremely stable value, other values can shift fairly rapidly. For example, the first English post-war listings of modernist constructions were seen at the time, in the late 1980s, as very controversial. However, within a decade, the broad principle of selective post-war listing no longer seemed particularly remarkable and a sub-conservation sector with a focus on these buildings and places had developed.

Mediating values

Whilst our proposition in this paper is that carbon control and heritage management are both values-based systems, in practical terms, the focus in contemporary practice largely accepts the need to control carbon and be more energy efficient and the question arises about how this imperative interacts with heritage values? Which changes to historic buildings and historic environments are acceptable, and which are not, in addressing the climate change agenda? In Britain, these decisions are addressed case-by-case in two principal arenas; first, through town planning and development management and second through building regulation. The emphasis in the first of these systems is principally around policy considerations, such as in this case the trade off between carbon control and heritage protection. The second is a more technical, standards-based consideration of building performance on various measures, with a substantial emphasis on energy efficiency in recent years. These two systems are not formally linked and it is quite possible to have consent approved for a proposal through one system but denied through the other. In this paper our concern is with planning issues.

Planning decision-making takes place within the framework of policy guidance at national and local level. Historically national guidance built up incrementally and messily through a wide variety of complex interlocking policy documents. Area or topic based plans for localities have always had to have due regard for these national frameworks. The current UK coalition government has sought to simplify and consolidate planning guidance around one fairly brief central National Planning Policy Framework document (Department for Communities and Local Government, 2012). As might be expected in these recessionary times, there is a strong emphasis on economic competitiveness in the document, albeit framed as ‘sustainable development’. Within this over-arching framework there is substantial acknowledgement of both issues of climate change and the importance of heritage protection. However, as is typical (and perhaps inevitable) with planning policy there is little indication of how to balance or reconcile these potentially competing priorities where they may conflict, leaving to the individual decision-maker the job of reconciling these different policies on a case-by-case basis.

This is mirrored at the local level in Britain. The conservation-planning system is in large-part based in local planning regimes led by local authorities. Increasingly, it seems, the management of carbon emissions is also becoming focused on and a focus for local governance (Jonas et. al. 2011). A challenge for local governance, therefore, will be to reconcile the competing agendas of heritage management and carbon control alongside many other policy goals such as economic well-being. For this paper, we looked at the policy frameworks of one historic city, York, by way of illustration. There are many relevant York policy documents, including the city’s design-based economic vision, a climate change action plan and the emerging Local Development Framework where policy objectives are gathered together (Simpson et. al. 2010, City of York Council 2011, Sustainable City York and Without Walls Partnership 2011). We found, not surprisingly, that issues of heritage protection and management and issues of carbon control were both identified as of the utmost importance but that, mostly, they sit discretely within the various policy arenas, with little sense of how they might interact. Occasionally some cross-reference occurs; so, for example, policy in the Climate Change Action Plan, on making the city’s existing housing stock more energy efficient through such measures as loft and cavity wall insulation, adds ‘including, where viable, historic homes’. However, perhaps more typical is the strategic objectives identified in the Local Development Framework (the statutory development plan) for York City Centre where sustainability goals are pigeon-holed on to new development.

Asserting carbon values

In practical terms the balance between heritage protection and the carbon agenda is being played out through a myriad of individual planning decisions, usually made by local planning authorities. Battles might be fought, for example, between property owners and local authorities over reducing energy consumption through replacing timber single glazing with double-glazing in timber or PVCu. Equally the introduction of micro-generation, such as the addition of photovoltaic panels to buildings, can be the cause of conflict. Two brief examples from designated conservation areas in the north east of England illustrate the particular point. In both cases photovoltaics were introduced without planning permission and an application was subsequently considered necessary; in one case on the roof of a relatively new built house at the edge of the small Northumberland village of Netherwitton (figure 1) and in the other on the elevation of a nineteenth century building in the much harder urban context of Blaydon in Gateshead (figure 2). There are some distinct similarities between the case studies and, in particular, how the planning cases proceeded (the Netherwitton case in 2010 and the Gateshead case in 2007). In both cases the officer recommendation was for the refusal of planning permission, purely on the perceived impact on conservation area character. Both officer reports made reference to a range of specific policies embedded in national and local policy documents (these cases precede the National Planning Policy Framework which replaced PPSs and PPGs) including the then extant national policies Planning Policy Statement (PPS) 1 Delivering Sustainable Development, PPS22 Renewable Energy and Planning Policy Guidance (PPG) 15 Planning and the Historic Environment/ PPS5 Planning for the Historic Environment. Not surprisingly, the negative impact perceived was primarily visual with the reports making statements that the panels ‘would cause harm to the visual amenity of the established streetscene’ and that they were ‘incongruous and out of keeping’. Embedded here are the values referred to earlier. This is a visual emphasis on keeping conservation areas free of too many visual indicators of modern life, even, in one case, on a fairly new building.



Figure 1 Photovoltaic cells on the roof of a new house in the rural village of Netherwitton, Northumberland



Figure 2 Photovoltaic cells on the elevation of a house in urban Blaydon-upon-Tyne, Gateshead, Tyne and Wear

However, in both cases, elected councillors rejected the advice of their officers and granted planning permission. At the heart of this different conclusion there seemed to be a view that if there was a clash of values then the sustainability drive to reduce carbon emissions should prevail. If there was a negative impact on the character of the conservation area this was felt to be very minor – although the carbon reduction impact of a few photovoltaic cells could equally be argued to be modest in the extreme. However, it is also noticeable that some actors in these cases did not recognise that harm might be done to the character of the conservation area. This was perhaps clearest in the Netherwitton case, where the application attracted five letters of neighbour support which generally contested the idea that the proposal would result in any negative visual impact and indeed argued the PV cells would be a positive symbol.

The issues presented in these examples are, presumably, being replicated around the UK. We see established conservation values with their particular visual reading of the built environment coming into conflict with the emergent values and symbolism of carbon control. And we would like to emphasise the symbolic content – a serious analysis of how best to reduce carbon emissions in either of these locations would be unlikely to propose a few photovoltaic panels – but they are a visual symbol of the householder's green credentials and that they are 'doing something'.

Balancing values

In the latter part of the paper, we wish to consider attempts to reconcile heritage and carbon values. First, we briefly consider a study that explores the interaction of a historic area and a carbon control agenda before discussing at greater length our own work on the historic abbey church of Hexham.

Retrofitting Soho, by researchers at The Max Lock Centre (2008), University of Westminster is a report commissioned by Westminster City Council, the Soho Community Environment Fund, the Crown Estate, English Heritage and Shaftesbury PLC. Soho was selected as a dense, heterogeneous historic city core and the report looks in some depth at the practicalities and barriers to reducing local carbon emissions and improving the efficient use of resources more generally. The report concludes, first, that there is significant potential for retrofitting in the Soho

area and, second, that the challenges to retrofitting such historic areas are not as big as might be supposed. It argues that existing buildings are mostly pretty adaptable, with extensive areas of roof that are not visible, and that there is plenty of potential for internal upgrades to improve energy efficiency. The third and fourth main conclusions suggest that the main challenge is getting building occupants to be more energy conscious, noting that sufficient incentives do not exist for landlords to engage in this process, and that the greatest benefits could be achieved through community-wide solutions such as Combined Heat and Power.

Most of these key findings would apply to any dense, mixed-use commercial area but two of the key findings are more specifically concerned with the historic nature of the neighbourhood: ‘many buildings are not listed or of historic merit, and the rear of non-listed buildings can be adapted’, and, ‘an integrated approach to retrofitting is essential and one that works with the intrinsic characteristics of historic buildings’. We can see with these statements both a differentiation of approach between properties judged by their defined heritage merit – listed, non-listed historic, non-historic – and assumptions about the implications for this in achieving retrofit. Following the discussion above, listed buildings are considered to have significant fabric and aesthetic qualities, whereas for the conservation area as a whole the concern is for visual management. Thus it is notable that the two key value systems at the heart of this report, carbon control and heritage protection, are accepted on their own terms. Whilst the emphasis is often on showing how heritage designation does not present a constraint, where conservation and sustainability are seen in potential conflict – for example with listed buildings or street facades – heritage protection goals are considered to have more weight and to take precedence.

The brief for the report we prepared (with colleagues) for Hexham Abbey (figure 3), in the Tyne Valley 20 miles west of Newcastle, was centred on how the Abbey might reduce its carbon footprint (Wilkins et. all. 2011). Whilst the study included some ancillary buildings, the main focus was upon the Abbey church. Our brief was to think strategically and to stimulate discussion rather than present a singular approach. We were also asked to think about the way the building is used and the way that the Abbey community engages more broadly with the people of Hexham. The second stage of the work was to undertake some consultation on our findings. One of the issues which was not always clear in the brief was whether the main motivation was to reduce energy bills, to reduce carbon emissions or *to be seen to be* reducing carbon emissions. This visibility of action, the symbolic potential of ‘doing something’, did seem to be an issue and as we will touch upon has implications for the sort of strategy one might deploy.



Figures 3 Hexham Abbey

For most of its history, Hexham Abbey was without heating or anything more than candles to light it. Today, however, it has a reasonably modern gas boiler powering a central heating system of pipes and radiators, largely at the periphery of the abbey church, as well as electrical wiring for a host of uses. Over two thirds of the carbon emissions, and utility bills, are consumed with space heating so this became our main focus. The current objective is to sustain a constant temperature inside the church of 16°C, both as a reasonable level of comfort for Abbey staff, worshipers and

other visitors and, importantly, for to keep the church organ in-tune. Possibilities for the future obviously have to be mindful for the architectural and historic importance of the building, but also of its use for religious observance. Another more practical factor we had to consider was whether the focus should be to heat the church through a long and dispersed approach – as is the case at the moment – or to consider quicker and more localised approaches – ‘task heating’.

In considering potential interventions, we started by analysing conventional approaches to generation, delivery and retention, and divided these between technological or management interventions. Less conventionally, we added another layer to the categorisation – symbolism. This was orientated towards the pedagogical desire for the Abbey to display its carbon reduction credentials but it could also, in our view, offer new opportunities for adding architectural value and new opportunities for ceremonial practices.

It wasn’t our brief to propose a definitive solution but inevitably we had our favourite approaches and sense of an overall strategy. What made most sense to us in terms of reducing bills, carbon and celebrating these moves was a combination of generation, delivery, retention and management. The best approach to generation seemed to be a wood pellet boiler, not least because of Hexham’s location near the vast man-made forests of the Kielder area. It seemed best to deliver this heat through under-floor pipes (accepting there is some very sensitive archaeology to consider). It also seemed best to accept a colder Abbey, with a lower ambient temperature, again accepting the transition would need to be carefully handled for the organ and other building fabric. Localised short-term heating could be introduced in various ways and again we looked at various approaches including heated kneelers. Heat retention was considered through the possibility of introducing window shutters or curtains – with the ‘curtain cranes’ designed in the nineteenth century by AWN Pugin in mind. The idea here would be to introduce something less intrusive than secondary glazing which might be in an exquisitely patterned fabric (if curtains) or in expert carpentry (if shutters), forming a positive adornment to the church. Opening and shutting of the curtains or shutters could be a processional and ceremonial moment at the beginning and ending of each Abbey day. Finally, one of our favourite ideas, and one that caught the imagination of many of our consultees, was the ‘Hexham Habit’. This is a very simple idea of lending visitors a cloak like a cassock – hopefully beautifully crafted – to keep them warm during their stay in the Abbey. So, our preference was based upon changing some management practices, introducing a few new elements into the building that could hopefully be celebrated as positive visual additions, generating heat more sustainability and having only minimal impact on the fabric.

It is noticeable that our preferred ‘symbolic gestures’ were mostly about retaining energy (the ceremony of curtains or shutters) or about accepting a colder building and dressing accordingly (the Hexham Habit) or perhaps providing some small-scale temporary local heat sources (the kneelers). But, in the consultation we undertook, at least some of our consultees were very focused upon another symbolic gesture – the introduction of photovoltaic cells on roof slopes. We had largely discounted photovoltaics as having a significant role to play, because our estimates suggested that they could only generate a limited amount of the electricity the Abbey uses, which in turn is the minor part of its carbon consumption. Despite having these conversations, photovoltaics remained appealing to some in the parish. In part, this may have been because they were seen as a ‘quick win’ – our proposals would take longer to work through – and solar generation could also benefit from government financial incentives. But, in part, it seems to have been about wanting to achieve a visible gesture of intent, setting an example for the wider community.

Discussion

Making a historic building more carbon-efficient might involve physical works to reduce energy consumption and encompass micro-generation. It might also involve changes to management practices and the way that a building is used. Physical works in turn, if permitted, might have an influence on the historic fabric of the building or on an aesthetic reading of the building. The extent to which heritage values accommodate the push for carbon-neutrality might dictate which strategy is used in practice. No shifts in heritage value might seriously limit the work we

undertake. Asserting carbon goals as an overriding imperative might mean the retention of a building (given the embodied energy it represents) but significant change to its fabric and aesthetic appearance. Indeed, one rather gloomy scenario we might contemplate in the UK would be a situation where listed buildings and conservation areas stand as islands of visible natural walling materials, whilst the rest of the country becomes swaddled in external insulation (Preston, 2013). Whilst carbon values are important, so are heritage values and aesthetic considerations. A further factor we need to consider is the powerful symbolism of the carbon-reduction agenda. The case studies presented briefly here have illustrated how powerful this can be. The photovoltaic cell in particular seems to have become a potent symbol of green credentials. This was evident in our discussions with stakeholders at Hexham Abbey some of whom wanted a clear visual symbol of intent, despite PV cells not being technically the most effective, or ‘greenest’, way forward.

The planning system is the arena in which conflicts of value are often resolved. Much of the time planning policy frameworks present heritage protection and carbon control as equally important objectives, with little indication how to resolve their competing claims, other than through the discretion of the decision-maker. From the limited evidence we have, we suspect that for professional planners the special circumstances of heritage designation, and the assumed values of the implications of this, can militate against carbon reduction measures that would be considered acceptable in other contexts. Equally, it seems to us, that there can be public sentiment or political support for the symbolism of carbon-control that outweighs this traditional lens on the historic environment. Either way, it often seems to be an either heritage protection/ or carbon-reduction decision.

In our work at Hexham we sought a middle position – a shift in heritage value accommodating the importance of carbon values. On the premise that aesthetic readings of buildings are more volatile and short-term than the emphasis on historic fabric, we envisaged a situation where we accept and perhaps even celebrate new aesthetic readings of buildings whilst continuing to emphasise the importance of fabric in what makes historic buildings significant. We would like to think that some of the measures we proposed as possibilities at Hexham fit this approach better than the standard PV cell. But, equally, should we really worry about these in most circumstances? They are eminently reversible and even if introduced *en masse* are likely to become, over time, either as ‘invisible’ as television aerials or as transient as satellite dishes.

An article by Paul Selman (2010) was titled ‘Learning to Love the Landscapes of Carbon-Neutrality’. He argued that, whilst landscape changes often provoke controversy, they may produce outcomes which become accepted and valued after a period of time. The pursuit of a low-carbon economy is producing landscape change with such protest and opposition. But he goes on to discuss ‘the notion of the ‘acquired aesthetic’, which might suggest the capacity to develop a taste for emerging landscapes if we endorse their underlying story’ (p. 157). He raises the possibility that ‘we can learn to see beauty and attractiveness in emerging landscapes of carbon neutrality’ (p. 157). As we have seen, heritage and conservation values change over time. The ‘shock of the new’ becomes tomorrow’s heritage. Why we need heritage, what it is, and how we conserve it, remains in a constant state of negotiation, with some elements of change quick and some slow. As part of this on-going iterative process, we need to think about how we can come to love the heritage of carbon neutrality.

References

- British Standards Institution. Guide to the Principles of the Conservation of Historic Buildings[M]. London: British Standards Institution, 1998.
- City of York Council. Local Development Framework–Core Strategy Submission[EB/OL]. York: City Council. (2011-03-01) [2013-09-09].
<http://democracy.york.gov.uk/documents/s47833/LDF%20Core%20Strategy.pdf>.
- DCLG. National Planning Policy Framework[EB/OL]. London: Department for Communities and Local Government. (2012-03-27) [2013-09-09].

- https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf.
- Gibson L, Pendlebury J. Valuing Historic Environments[M]. Farnham: Ashgate, 2009.
- Herring H, Roy R. Technological Innovation, Energy Efficient Design and the Rebound Effect[J]. *Technovation*, 2007, 27(4): 194-203.
- Jokilehto J. A History of Architectural Conservation[M]. Oxford: Butterworth-Heinemann, 1999.
- Jonas A, Gibbs D, While A. The New Urban Politics as a Politics of Carbon Control[J]. *Urban Studies*, 2011, 48(12): 2537-2554.
- Larkham P J. The Place of Urban Conservation in the UK Reconstruction Plans of 1942-1952[J]. *Planning Perspectives*, 2003, 18(3): 295-324.
- Lloyd-Jones T, Eldridge A, Mulyawan B, Theis M. Retrofitting Soho: Improving the Sustainability of Historic Core Areas[R]. London: University of Westminster, Max Lock Centre, 2008.
- Munoz-Vinas S. Contemporary Theory of Conservation[M]. Oxford: Elsevier, 2005.
- Pendlebury J. The Conservation of Historic Areas in the UK: A Case Study of Newcastle upon Tyne[J]. *Cities*, 1999, 16(6): 423-434.
- Pendlebury J. The Urbanism of Thomas Sharp[J]. *Planning Perspectives*, 2009, 24(1): 3-27.
- Pendlebury J. Heritage and Policy[M] // Watson S, Waterton E. The Palgrave Handbook of Contemporary Heritage Research. Basingstoke: Palgrave Macmillan, 2014.
- Preston J. The Green Deal and the Energy Company Obligation[J]. *Context*, 2013, 128: 46.
- Selman P. Learning to Love the Landscapes of Carbon-neutrality[J]. *Landscape Research*, 2010, 35(2): 157-171.
- Shorrock L D, Utley J I. Domestic Energy Fact File[M]. Watford: BRE Press, 2008.
- Simpson A, Chapman D, Adams S, Bianchini F, Reynolds M, Stockley M. York New City Beautiful: Towards and Economic Vision[R]. York City Council, 2010.
- Smith L. The Uses of Heritage[M]. London: Routledge, 2006.
- Steg L. Promoting Household Energy Conservation[J]. *Energy Policy*, 2008, 36(12): 4449-4453.
- Sustainable City York and Without Walls Partnership. A Climate Change Action Plan for York 2010-2013[R]. York City Council, 2011.
- Wilkins C, Witham R, Thomas R, Sharr A, Hamza N, Pendlebury J, Strachan T, Davoudi S. Hexham Abbey: A Sustainable Strategy for the Future[R]. Newcastle: Newcastle University, Design Office, 2011.
- Worskett R. The Character of Towns: An Approach to Conservation[M]. London: The Architectural Press, 1969.