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Editorial Notes

Transactions is the annual journal of the Association. As the title indicates, its purpose is firstly as a permanent record of some of the proceedings at lecture meetings and conferences, but contributions on any aspect of the historic environment from members and other interested professionals are welcome.

The journal aims to provide a platform for authors and topics which might not otherwise be published. Contributions will be reviewed by members of the Editorial Panel, who are drawn from or appointed by the Committee.

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Association for Studies in the Conservation of Historic Buildings

The Association was founded in 1968 and aims to keep members informed on all aspects of building conservation by providing a forum for meetings, lectures and discussions and by arranging visits to buildings, work-in-progress and places of interest. Membership, now about 400 strong, is by election and is open to those professionally engaged in work relating to the conservation of historic buildings. The application form can be downloaded from the website.

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The Office: Listing Commercial Buildings 1965–95

Roger Bowdler

Next to the Church of St Dunstan-in-the-West on Fleet Street is a handsome Jacobean Revival building of 1834 by John Shaw junior. It's an early example of the style, but perhaps more interestingly it is a remarkably early purpose-built office building, erected for the Law Life Assurance Company. During the 19th century the office started to emerge as a distinct building type and by the early 20th century the hearts of England's principal cities were being re-shaped as converted dwellings were replaced with bespoke new premises. This article considers English Heritage's programme of listing commercial buildings in 2013–14, shortly before the organisation became Historic England.

How we work is a subject of fascination. Too much of our lives is spent beneath strip lighting, eyes on screens, our arms resting on Formica work surfaces, our socialising clustered around the photocopier or hot-water point, while meetings relieve our cellular anomie. The workplace is changing: huge upheaval has gone on over the course of the last half-century as the computer has revolutionised communication, air conditioning has become the norm, and open-plan working has knocked the hierarchies of executive suite and typing pool into redundancy. Commercial buildings have to sing for their supper and are often subject to particularly acute pressures for ever-greater financial performance. These are valuable buildings, and buildings in transition. How they are managed is of critical importance to many. How they are listed can matter too.

Fig 1 Bracken House, Friday Street, City of London, 1955–59

Background to Post-War Commercial Listing

The start of post-war listing began in 1987, when Bracken House (1955–59) (Fig 1), the former Financial Times HQ and printing works just to the south-east of St Paul's, was listed. Sir Albert Richardson's clever monumental design, with its elegant brick elevations and playful detailing, had been purchased by a Japanese firm and Michael Hopkins was lined up to design the replacement. An effective campaign to protect Bracken House was mounted and listing was the outcome. But it didn't end there.

The Department for the Environment, realising that post-war cases were likely to need attention in the near future, then set in place the ground-rules of listing as we still know them today. The '30-year rule' – not really a rule, as there is wriggle room, but let that pass – states that 'normal' listing can be considered 30 years on from the date on which construction was commenced; buildings more than 10 years old but less than 30 years old can be considered, but only if of outstanding quality and palpably under threat. The '10-year rule' says that buildings under 10 years old can't be considered for listing at all (some lawyers think this is not a sound principle: but given the difficulty of objective assessment of the very recent, this position is one which we welcome). Thus was modern post-war listing born, out of a threat to a 1950s commercial building in the City.

And yet there is more to Bracken House than establishing a framework for assessment. More importantly, perhaps, the very first attempt by an architect to work within the context of a novel listed building actually produced one of the most imaginative of all interventions. In 1988–91 Hopkins' high-tech pod was dropped into the void where the printing works had stood, and nestled comfortably within the outer ranges of office buildings. Far from losing a commission as a result of the listing, Hopkins switched tack and achieved one of the enduring fusions of old and new: the 'constructive conservation' ideal which is so central to 21st-century thinking about the management of change. Hopkins was able to introduce modern office servicing into the design, thereby bringing Richardson's buildings into the modern, air-conditioned computer age – something 'the Professor' would surely have viewed with deep alarm.

Bracken House forms a useful starting point for a discussion about listing recent commercial buildings. It reminds us of the pressure to keep the best of the recent past, and the importance of identifying the best in advance of proposals for replacement. It shows that how we use offices has changed hugely in the 70 years since 1945. And it highlights the scope for imaginative adaptation. I want to look at English Heritage's last thematic programme of post-war listing, carried out in 2013–14, in the last months before the organisation metamorphosed into Historic England in April 2015.

Post-war listing swung into action in the 1990s, and tackled different categories of buildings thematically – housing, education, transport and so on. Centre Point (Fig 2), built to the designs of George Marsh in Richard Seifert's office in 1961–66, was listed as long ago as 1995 as one of the fruits of this particular project. Listing Centre Point over 20 years ago was a bold call: the zeitgeist had yet to swing round to admiring the architecture of the 1960s, and many still remembered with regret the urban harm that the Centre Point scheme had caused to St Giles Circus. Also notorious were the tactics deployed by the developer, Harry Hyams, in sitting on the completed structure waiting for rental values to rise rather than opening it up for business. Centre Point is an extremely graceful skyscraper, its slender form and modulated outer surfaces creating a building of undeniable power. However, tall buildings in the heart of the capital (and in England's other major cities as well) remain one of the leading challenges facing planning today, and it is one of the ironies of conservation that the same organisation, Historic England, is responsible for recommending listing of some tall buildings while opposing the erection of others. Centre Point shows how prominent commercial buildings continued to be in the modern city, and how the American model of tall blocks – dramatically embodied in Howard Robertson's Shell Centre on the South Bank, finished in 1961 (which hasn't been recommended for listing) – continued to influence developers and corporations.

Other commercial buildings listed at the same time included the Co-operative Insurance Society HQ (1959–62) on Miller Street, Manchester by Sir John Burnet, Tait & Lorne, an uncompromising but sleek complex of international modernism; the Heinz

Fig 2 Centre Point, New Oxford Street, London Borough of Camden, 1961–66

UK HQ (1962–65) at Hayes Park, London Borough of Hillingdon (an American design for an American firm by Gordon Bunshaft of Skidmore, Owings and Merrill); and Ronald Ward & Partners' Millbank Tower, Pimlico (1960–63). These were buildings of the early post-war period up to 1965 in start-date: because of the '30-year rule', a thematic review taking place in 1995 could only look at those earlier buildings. The selection was judicious, informed, and varied, with no single architectural style dominating. Some of them captured concepts like the 1950s development of the *Bürolandschaft* (the open-plan office, laid out with variety in mind) but, because of the period covered, fundamental aspects like extensive provision for IT and air conditioning were not yet evident. To modern eyes, the resulting list descriptions were more descriptive than analytical, and it was sometimes difficult to understand just why a building had been listed. In those days, listing was still all about identifying the special – explaining was felt to be the task of a different process, such as a management plan.

The 2013–14 Listing Programme

Two challenges therefore presented themselves in relation to the 2013–14 programme: first, bringing the coverage of the thematic survey on commercial buildings up to date by advancing the coverage to 1985; and second, bringing the list descriptions more in line with modern practice. For listing descriptions are no longer purely descriptive: they strive to identify special interest with greater precision, and do a better job of explaining just what this special interest consists of. This mission of communicating more effectively is at the heart of what Historic England is all about, and lay at the heart of the *Heritage Protection Review* of 2004–11, which sought to place conservation on a more consensual, less regulatory and oppositional footing by working hard to celebrate what makes historic buildings so special and to explain that clearly to owners. Accordingly, the 30 already-listed post-war commercial buildings were the subject of a programme of list revision which took place in 2012–13.

It was timely to do so for various reasons. For one, the recent (2011) listing case of Broadgate, on the eastern edge of the City of London beside Liverpool Street, had brought into stark relief the prominence of listing commercial buildings, and the threats that even some recent buildings of cachet were prone to. For another, the *Penfold Review of Non-Planning Consents* of 2010, produced for the Department of Business Innovation and Skills by Adrian Penfold of British Land, had identified the exercise of heritage consents as a contentious area, and proof was needed that we were alert to the challenge of creating a modern system. The revision of older list entries for listed post-war office buildings became one of English Heritage's responses to the DCMS request for evidence to show that we were responding to the call for better regulation.

The first recent post-war building to be listed at Grade I was Foster Associates' Willis Faber Dumas Building of 1972–75 in Ipswich (now known as the Willis Building). This took place in 1991. Listed for its architectural flair (best seen at night) and its technical sophistication, it was also given the highest grading because of its planning. This prestigious insurance firm lured staff to new premises by offering a restaurant, roof garden, gym and swimming pool, while the deep plan reflected new approaches to office lay-out which rejected older hierarchical arrangements. The listing was a landmark in another way: anxieties that listing would lead to a freezing of options for change, and the need for endless repeat consents, resulted in the very first set of management guidelines, drawn up by the town's conservation officer, Bob Kindred, in association with Dr Diane Kay of English Heritage and the owners. Office buildings are particularly suited to this approach: there are some spaces of clear prestige, such as entrance foyers and boardrooms, and then there are other spaces (in particular service areas) where special interest is slight, or zones of repetition where a lighter protective touch can be bestowed. Being proportionate on the control triggered by listed status has been at the forefront of recent work.

As is the custom with thematic projects, one starts off with a long list, and then narrows it down. Scoping work by Geraint Franklin of English Heritage's Investigation and Analysis Department involved scouring the architectural press of the period, reviewing the literature, and seeing which buildings had been singled out for praise (and prizes). What it is that we look for in a building for listing is now set out with more precision than before in our selection guides. So what was selected?

Of the 47 identified as possible candidates, half (24) were assessed, and we ended up with 14 new listings, one amendment and two new registered landscapes. One of the new listings, the office of the renowned northern practice of Ryder and Yates at Killingworth, Northumberland was de-listed on appeal when it emerged that one set of owners had not been consulted and could demonstrate reasons why the building's performance had been less than adequate. Two practices emerged through the new listings: Arup Associates, not surprisingly, and Richard Seifert and Partners. Four Arup-designed buildings were designated: a list of all the new listings is supplied below as an appendix.

Some of the claims to special interest are technical ones of materials. Here is an extract from the list entry for 30 Cannon Street, City of London – the former Credit Lyonnais London HQ (Fig 3), which

Fig 3 Credit Lyonnais, Cannon Street, City of London, 1974–77

Fig 4 Civil Aviation Authority House (formerly Space House), Kingsway, London Borough of Camden, 1964–68

became the pin-up of the project because of its strongly photogenic exterior:

30 Cannon Street is the first building internationally to be fully clad in double-skinned glass-fibre reinforced cement (GRC) panels. The initial choice of cladding was pre-cast concrete, but this was rejected by the freeholder at a late stage. Enamelled pressed steel was then considered, and the architects consulted Jean Prouvé, the authority on this material, but no press was found large enough to manufacture the pre-cast units. Bronze and aluminium were also rejected on grounds of cost and concerns about oxidisation. Fire regulations prevented the use of glass-fibre reinforced plastic (GRP) on a structure of this size. The architects eventually turned to its non-combustible equivalent, GRC.

This extract gives a sense of the detail modern listing can go into. Some of our understanding is now captured in a document we produced to accompany the listings: *The Late 20th-Century Commercial Office* (see References section).

Other buildings were selected for their external inventiveness: both of the listed Seifert buildings – Alpha Tower in Birmingham and Space House, Kingsway, London (Fig 4) – possess a volumetric impact that responds well to changing light conditions, and provides a relief from the Miesian regularity of so many modern commercial blocks. Contrast is a factor too in the overall selection: while the Arup building at Chatham, Gun Wharf, was strictly contextual in its horizontality and use of brick, Building Design Partnership created a citadel of bullion in its design for the Bank of England's regional headquarters in Leeds (Fig 5). We were keen to stress the variety one encounters in designs for commercial buildings of this period, and make sure that our coverage reflected the full range of design approaches. The City of London building by Fitzroy Robinson, the headquarters of bullion dealers Brown Shipley, possesses a fine set of bronze doors and a screen by A John Poole which shows the level of finish these buildings could possess. Quite different was the Ryder- and Yates-designed MEA House in Newcastle, a voluntary sector hub (containing offices, hence its inclusion in the project) which was listed principally for its structural engineering interest by virtue of its Vierendeel

Fig 5 Bank House, King Street, Leeds, 1969–71

truss. Foster's IBM building at Cosham (Fig 6) has undergone change, but it was still felt to possess special interest by virtue of its rigorous structural logic and influence; the interior was effectively excluded from the listing, with only the structural members being assigned special interest. In this way, only aspects that actually warrant control should be subject to the consent process.

Other buildings were rejected for listing – even when quite well known. Foremost of these was the Seifert-designed NatWest Tower (now Tower 42) in the City. The tallest building in Europe when finished in 1981, it had undergone considerable alteration at its lower levels and had operational challenges owing to its small floor-plates. Several John Madin-designed blocks in Birmingham were felt to fall below the line, and Gollins Melvin Ward's Miesian blocks on Leadenhall Street and Bishopsgate, City of London were too derivative and late in date (1974–81) to merit inclusion.

Fig 7 No 1 Finsbury Avenue, City of London, 1982–84

Fig 6 Lynx House, Cosham, Hants, 1970–71

Fig 8 Mountbatten House (originally Gateway 1), Basingstoke, Hants, 1974–76

Conclusion

Perhaps the best way to summarise the exercise is to quote not from a Historic England source, but from an owner. Listing does cause concern among commercial owners, as they see their freedom of options being reduced. How welcome it is, therefore, when commercial property managers are also proud to see the heritage virtues of their buildings. Here is what Tim Roberts, Head of Offices at British Land, said of the listing of 1 Finsbury Avenue (Fig 7):

[It] has been arrived at after a constructive dialogue between British Land, English Heritage and the City of London Corporation. The detailed and rigorous analysis and assessment of elements contributing to the significance of 1 Finsbury Avenue means that British Land will have the flexibility to adapt the building to keep pace with the continued evolution of Broadgate as an exemplar of flexible and adaptable commercial place-making.

If we need to lighten up on some aspects of control to garner such plaudits, that might be felt to be a price well worth paying.

Acknowledgements

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Appendix: Commercial buildings from 1965–85 listed in 2013 (all at Grade II)

Alpha Tower, Queensway, Birmingham, 1970–72 by Richard Seifert & Partners (George Marsh, lead architect), built for Associated Television, now offices

Fig 9 The Pavilions, Bedminster, Bristol, 1975–78

Bank House, King Street, Leeds, 1969–71 by Building Design Partnership, built for the Bank of England (Fig 5)

Brown Shipley, Founder's Court, Lothbury, City of London, 1973–75 by Fitzroy Robinson & Partners

Civil Aviation Authority House, Kingsway, London Borough of Camden, 1964–68 by Richard Seifert & Partners (George Marsh, lead architect), now occupied by the Civil Aviation Authority, it was formerly called Space House (Fig 4)

Credit Lyonnais, 30 Cannon Street, City of London, 1974–77 by Whinney, Son & Austen Hall (Fig 3)

1 Finsbury Avenue, City of London, 1982–84 by Arup Associates (Peter Foggo/Team 2) (Fig 7)

Gun Wharf, Chatham, Kent, 1976–78 by Arup Associates, now occupied by Medway Council, it was originally designed for Lloyd's of London to store its records

Institute of Chartered Accountants, Moorgate Place, City of London, 1966–70 extension by William Whitfield, this was added to the listing of the renowned Belcher and Joass hall of the 1890s and 1930

Lynx House, Cosham, Hants, 1970–71 by Foster Associates, this was originally built as the IBM Pilot Head Office (Fig 6)

MEA House, Ellison Place, Newcastle-upon-Tyne, 1972–74 by Ryder and Yates, built to house several voluntary organisations

Midland Bank, Dale Street, Liverpool, 1971 by Bradshaw, Rowse and Harker, now retail

Mountbatten House (originally Gateway 1), Basing View, Basingstoke, Hants, 1974–76 by Arup Associates, built as the HQ of the Wiggins Teape firm of paper manufacturers, now offices, the designed landscape here (Fig 8) was also separately added to the Register of Parks and Gardens

The Pavilions, Bedminster, Bristol (Fig 9), 1975–78 by Arup Associates, formerly the regional HQ of the Central Electricity Generating Board, the designed landscape here was also separately added to the Register of Parks and Gardens

St James House, Frederick Road, Edgbaston, 1954–57 by John Madin, built for the Allied Employers' Federation; although outside of the period under study, this industry-related building was included within the project

The Edwardian Trade in Architectural Salvage and the Fashion for 'Queen Anne'

Helen Ensor

The Edwardian period saw the revival of a number of different architectural styles. These have been written about extensively and eruditely, not least in such household texts as The Edwardian House by Helen Long and Stefan Muthesius, Sweetness and Light: the Queen Anne Movement by Mark Girouard and in a new volume, Neo-Georgian Architecture 1880–1970: A Reappraisal edited by Julian Holder and Professor Elizabeth McKellar. However, an aspect of Edwardian revival style which does not seem to have been much written about[1] is the use of imported architectural items from 18th-century buildings in either newly built Edwardian houses or those which received a 'makeover' in the Edwardian period.

In 1926 the Survey of London published its Westminster volume which covers Queen Anne's Gate. The date of publication coincided with, and arguably influenced, the resurgence of interest in buildings from the early and mid-18th century in the first quarter of the 20th century. Indeed, the buildings of the early 18th century were never more popular than in the early 20th century, and Edwardian refurbishments of these and other 18th-century buildings were commonplace. As a conservation officer at Westminster City Council in 2000, I saw the results of this at a building on Queen Anne's Gate. Here it transpired, after listed building consent had been granted, that the panelling on the first floor was in fact a mixture of genuine early 18th-century work and work from the early 20th century (and later) which had been made to match. However, it was not until many years later, and having seen more evidence for this in the buildings which I looked at subsequently, that I began to wonder more about it.

In 2016 ASCHB organised its annual conference, with the theme 'Transition and Tension – Construction 1900–1925', and kindly asked me to

Fig 1 Harcourt House, Cavendish Square, London, before demolition with items marked for salvage with white crosses, 1906

contribute to it. The talk I gave was based on my observations of looking at old buildings and noting the similarities between those parts of them which were early 18th-century and elements added in the early 20th. It is apparent that the early 20th century saw a greater respect for and a more scholarly understanding of architecture from the Queen Anne period than one finds in the Victorian era, even though the 'Queen Anne Revival' (actually resulting in buildings which look quite different from the ones I shall be referring to) started in the 1860s and 1870s. There was also a significant amount of demolition and rebuilding in the early 20th century – Regent Street is a good example, but there are many more – which gave rise to opportunities for the reuse of parts of the demolished buildings, through the salvage of their more portable features. This in turn created opportunities for studying the architecture and copying the features in more detail than happened in previous decades. Indeed, the salvage trade – often referred to as the 'Wardour Street trade' – was extremely lucrative and well-organised, both in terms of removing items of value from buildings which were to be demolished and finding willing buyers keen to 'trick out' their buildings with convincing and authentic 18th-century curios (Fig 2). As noted above, this is not something which has been much explored in the literature on the subject.

Fig 2 Architectural salvage outside a dealer's shop in Petty France, London, 1922

As someone who deals with the conservation of old buildings through the listed building consent regime, I am particularly interested in how the planning system would approach these types of interior. Altering listed buildings requires one to focus on what elements of a building are 'significant' and should be kept, and what elements are not significant, or even detract from the building's significance, and therefore can be removed. It is therefore necessary with a multi-phase building to be able to accurately date different parts of the building, including what may amount to layer upon layer of interior decoration such as cornices, wall-panelling, decorative plasterwork, doors and joinery, all of which may have been added at different intervals. Reusing bits of old buildings in other old buildings, and making new bits which look like old ones – older sometimes than the old building for which they were intended – raises questions of 'significance' which can be particularly hard to answer. The value which we place on 'real' early 18th-century fabric, in a 'real' (in other words, unaltered) context is generally accepted. It is very old, rare and important, and in its 'handmade-ness' gives us a direct link to people from the early 18th century. We are also clear, and becoming clearer, on the value we place on the 'moderne' movement architecture of the early 20th century – its bold new forms and experimental use of materials speak strongly of an age emerging from the old-fashioned stuffiness of the Victorian period. If we reach our hand across the gap of history, we can almost touch the fingers of these bold new architects as they in turn reach towards the future. Interiors of the early 20th century which are considered to 'mimic' or 'ape' 18th-century work are, however, often ascribed less significance than I believe they deserve. This is clear when seen through the lens of the listed building consent system, which seems to struggle to make sense of what happened in these early years of the 20th century. There is little consistency in decision-making about what is significant and as a result we are in danger of under-valuing and under-conserving Queen Anne revival interiors.

Queen Anne's Gate is probably the best known enclave of early 18th-century houses in London. A half street of red brick terraced houses, it was originally a square until 1873 when the wall at the western end (where the statue of Queen Anne now

Fig 3 Savage Gardens, from Trinity Square, London, 1912: 18th-century houses demolished in 1913

sits) was removed to allow the thoroughfare to be extended westwards into what was Park Street. The Queen Anne houses are similar enough to presage a time when much of London would be covered in matching brick terraces, but with sufficient quirks and curiosities to mark them out as early, tremulous, unresolved and entirely new. The narrow blind windows – which could not have been sanctioned by the later and more austere Palladian-inspired terraces which appeared as the Georgian re-making of the city got into full swing – are a product of this lack of resolution. The carved canopies, about which so much has been written, are full of vigour in their draping and drooping. Queen Anne's Gate was something of a magnet for early 20th-century architects and aficionados. For example, Lutyens had his offices at No 17 from 1910 to 1931. He renovated No 15 for Edward Hudson, proprietor of the influential style guide *Country Life* in 1907. Another Edwardian architectural giant, Sir Aston Webb, had his offices at No 19. Lutyens' approach to his office appears to be typical – he ripped out the Victorian chimneypieces, preferring to have a gaping hole in his work room than the 'wrong' feature. The parts of the building which were seen by clients received the full Queen Anne restoration treatment.

At the same time as the fashionable architects were re-inhabiting Queen Anne's Gate, all across London early 18th-century buildings were being demolished to make way for new developments (Fig 3). Other buildings were the recipients of their more portable parts. Some of these buildings were entirely new; others were already 'old' buildings which were restored with these salvaged features and which therefore benefited from the boom in building at this time. The remainder of this paper will look at the different approaches taken to reuse of salvages in domestic and commercial buildings, and the influence which this had on Edwardian architecture.

In seeking to better understand these buildings I have divided the architectural approach into four broad categories: Queen Anne outside and inside; Queen Anne outside with a contemporary (for example Art Deco) interior; contemporary (often

idiosyncratic) exterior with a Queen Anne interior; and 'the mixture' – a 'real' old building with a mixture of retained, imported and created 18th-century interior features. The latter is the focus of this paper, although I will run through examples of the first three.

Queen Anne Outside and Inside

Often very convincing, these buildings are typified by red brick exteriors, flush or only slightly recessed sash windows, stone or rubbed brick dressings, eaves-cornices, etc. Internally the building tends to be less persuasive, using rather more generic references to Queen Anne interiors and mixing these with later 18th-century styles. The building shown in Figure 4 typifies this approach, with a well-handled early 18th-century style exterior and an interior which broadly follows through on this promise. The staircase, for example, is contemporary with the building but recalls the general appearance of an early 18th-century staircase (Fig 5). Cornices and chimneypieces are similarly handled. It was designed and built in 1913–14.

Such buildings are often unlisted and this appears to typify the approach to the significance of their architecture and interiors.

Queen Anne Outside Hiding Art Deco Inside

I am sure readers will be able to offer better examples of this approach, but it is Oliver Hill's extraordinary work on Gayfere Street/Great Peter Street in Westminster (Fig 6) to which I have been drawn by way of an example. It is a matter for extreme regret that much of his lavish Art Deco interiors were removed in the later 20th century. Photographs held by the RIBA hint at the effect – mirrored surfaces and Vitrolite abounded, alongside extraordinary faceted green glass tiles and other Art Deco motifs (Fig 7). The buildings now are plain plastered with standard office fit-outs, but the stair compartment with its alternating cream and black polished marble stairs and the cruciform balusters give a clue to the opulence and extravagance the principal rooms once contained.

The exterior gives almost no clue to the sensory

Fig 4 Early 18th-century style exterior: door detail

Fig 5 Interior: original staircase in an early 18th-century style

Fig 6 North House and Gayfere House, Gayfere Street, London

riot that was within. It consists of a sober, if rather over-stretched, Queen Anne elevation to Gayfere Street and Great Peter Street, with a Portland stone raised basement and red brick above, with a wide Portland stone 'plat band' above the raised ground floor. The building (actually four houses; two large and two smaller) has a long frontage to Gayfere Street, symmetrical about a curious double arched entrance (one is the entrance to Gayfere House, the other the entrance to North House which featured a car turn-table) with slightly broken forward penultimate bays which are topped by somewhat apologetic pediments. The list description records that Hill deliberately employed a Queen Anne/ Neo-Georgian style to ensure harmony with the existing Georgian and Edwardian buildings in the area[2], which is another topic that is perhaps deserving of greater investigation. It may explain why Hill showed such restraint externally but there were no such compromises within, where Hill was in control of every detail including the furniture for his wealthy, socialite clients.

Fig 7 Gayfere House, entrance hall, 1931

This building is listed Grade II, as one might expect given the architect, although the loss of so much of the interiors has certainly diminished the building's original significance.

20th-Century Exterior, Queen Anne Interior

Common in Mayfair and St James's, this type of building is typified by 12 Devonshire Street, London W1 where Donald Insall Associates is fortunate enough to be based. Designed in 1912 by Sydney J Tatchell (who was coincidentally also responsible for refurbishing 13 Queen Anne's Gate), the exterior of the building is two elongated storeys with a basement and an attic within the mansard behind a bottle-balustrade enriched with three stone urns which correspond to the three 'pilasters' below. The latter terminate somewhat abruptly mid-way up the second storey and are finished with urns and swags. The fourth bay, which has the entrance door and further windows, is recessed so that the Classical proportions are not too offended. The whole is in Portland Stone, and conjures something of an Empire flavour, with casement rather than sash windows and an oeil-de-boeuf window above the main door. The list description calls it '"Dixhuitieme" French pavilion design'. The building is rather remarkable in that it is entirely idiosyncratic yet instantly recognisable as an Edwardian Classical re-interpretation.

The interior is also surprising, but for different reasons. The ground floor and first floor rooms, which are largely in their original condition, are somewhat lumbering in their application of 'the right' Classical details (Fig 8). There is little of the flair and innovation seen in the elevation: the staircase for example, is a fairly faithful application of early 18th-century details, with its square-turned bottle balustrade and panelled underside. Elsewhere the rooms are rather prosaic – dentil cornices also inspired by the early 18th century (but lacking the verve and vigour of the real thing); chimneypieces which are polite and inoffensive; decorative plasterwork 'panels' applied to the walls in the manner beloved of the busy, chintzy style of the Edwardians. While not quite as mismatched as the Adam interior lurking in the Lloyds Building, the interior of 12 Devonshire Street does not live up to the promise of its exterior, which is not to say that it is not much valued by its current occupants.

Fig 8 No 12 Devonshire Street, London, front room

No 12 Devonshire Street is also listed Grade II, principally it would seem for its external appearance and the social history which led the freeholders, the Howard de Walden Estate, to redevelop this site on a residential rather than commercial scale.

'The Mixture'

These are the buildings which are perhaps the most interesting to me: a combination of a 'real' 18th-century building with 'real' (albeit imported) interiors, sometimes of an earlier vintage than the host building itself, with new elements made to match in the early 20th century. This is typified by a pair of listed buildings in Mayfair, Nos 7 and 8 Queen Street. Both were constructed in the mid-18th century as grand residences and both followed a similar downwards social trajectory during the course of the 19th century. One was 'Cubitt-ised' in the mid-19th century with the addition of architraves to the windows and a stucco façade. Both were refurbished in c1910 as Mayfair once again became fashionable, this time as company headquarters and board rooms (Fig 9).

In the first of these two buildings, the ground

Fig 9 No 7 Queen Street, Mayfair, London

Fig 10 Staircase at No 7 Queen Street

floor rooms and staircase are perhaps of the most interest. Refurbished and partly rebuilt by a speculative developer and builder, one John Garlick, the ground floor front room retains features which appear to be 'original' (mid-18th century) – the window shutters for example. The panelling which covers the walls – including the alterations to the room which were carried out by Garlick when he realigned the front room and the stair compartment – certainly seems authentic but cannot have originated in this building. It seems likely that it is a combination of 18th-century panelling brought in from another building and new panelling made in 1910 to match the imported panelling. The staircase is more curious still: the stair compartment was altered and rebuilt in 1910 so that it was set further back in the plan form and made bigger. The original stairs were demolished and new stairs were designed for the space. Their style is rather earlier 18th-century than the date of construction of the house in which they sit (Fig 10).

The second building is perhaps more odd. The ground floor front room provides another 'Mayfair boardroom' with exposed and varnished timber panelling, with original window shutters retained from the mid-18th century house and the same mixture of (perhaps) imported panelling, retained panelling and Edwardian panelling made up to match (Fig 11). Elsewhere in the house on the first floor a variety of styles has been employed – French boudoir and Robert Adam, for example – evidencing the Edwardian adherence to the appropriateness of the 'masculine' styles for some rooms, and 'feminine' styles for others, dependent upon their uses.

The buildings are both listed at Grade II, although neither of the characteristically brief descriptions mentions the interiors at all – this is perhaps not surprising given the dates of listing (1970 and 1986 respectively – with the building which has the more obvious Edwardian front door having been listed later).

The Salvage Trade

Philip Davies's book *Lost London* carries a number of illustrations relating to the salvage trade, including an advertisement for a catalogue of items to be sold by the auctioneers Fuller, Horsey, Sons and Cassell. This provides remarkable detail regarding what

Fig 11 Panelling in the Hall at No 8 Queen Street photographed in 1980

was considered both salvageable from a building scheduled to be demolished and also what was desirable for reuse in another building. The items listed are: 'Fixtures and Fittings comprising "Wren" wood doorways, Corinthian Portico, Doric and Ionic Doorways, with 8 and 10 panel doors and original door furniture, Early 18th Century Carved Staircases, Original "Adam" and Other Mantels, Early 18th Century Mantels and Overdoors, Sculptured Marble Mantel, Old Iron Railings etc'. The advertisement further records that these items were to be taken from the 'various buildings in Trinity Square, Crutched Friars, Seething Lane and Savage Gardens, now about to be demolished in order to clear the site for the new offices of the Port of London Authority'. The auction, with the items listed still attached to their host buildings, took place on Friday 31 January 1913 at 'Twelve O'clock precisely' and viewing of the items in situ prior to the auction could be arranged at set times by the auctioneer's house.

Within this list of architectural bric-a-brac, the name-checking of Wren and Adam (if only Wren and Adam style, as implied by the use of inverted commas in the document) is interesting as it suggests firstly an immediately recognisable style and secondly the clear desirability of 'authentic' pieces by big-name architects for reuse in the refurbishment projects of Mayfair, Queen Anne's Gate and other fashionable areas. It is likely that salvage merchants were the intended audience at the auction, as they would have had the ability to strip the items from the building and then remove them (in the case of a staircase this would have been no mean achievement). What I find extraordinary about this document is the extent to which buildings were stripped of fabric – a disaggregation which goes far beyond the chimneypieces and door-cases which one might have expected – and the extent to which, therefore, these items must have been used in other buildings. I wonder how many 'Old Iron Railings' and items of door furniture I have noted as being 'original' to their setting, which must, in fact, have been imported from demolished buildings. The second thing which is interesting is that wall panelling is not specifically mentioned, and this is the one feature which seems to have been ubiquitously moved around, and which is generally readily identifiable as having been 'cut to fit' its new location. Panelling and wall coverings had, of course, long been considered a chattel to be moved from house to house and bequeathed on the death of its owner, so perhaps it was taken for granted that if a building which was to be demolished had panelling, this was also for sale.

Another building which was demolished in the early 20th century was Harcourt House on Cavendish Square (Figs 1 and 12). Originally built by Thomas Archer in 1722 for Lord Bingley, it was rebuilt by Thomas Cundy after 1825 for the Duke of Portland, who won it in a hand of cards. In 1906 it was scheduled for demolition and photographs reproduced in *Lost London* show the front elevation with items to be salvaged marked up with white crosses (Fig 1). These include the front doors and the pediment above them (or possibly just the escutcheon within the pediment). Other items can be seen in the forecourt of the building which have already been removed – a quantity of raised and fielded panelling, similarly marked with white crosses, has been carefully leant against a wall while on the other side of the forecourt a jumble of unidentifiable items lies on the ground and a chimneypiece lies on its side against the balustrade.

A second photograph in the same book shows the interior of Harcourt House during the demolition

Fig 12 Harcourt House interior during demolition, 1906

process. The photograph appears to have been taken on the half-landing between ground and first floors, and shows the balustrade and handrail of the staircase already removed, and panelling partly removed (Fig 12).

When one considers the sheer amount of re-building in central (Georgian) London that occurred from 1900 onwards – the whole of Regent Street, swathes of Mayfair and Piccadilly, much of Cavendish, Berkeley and St James's Squares – one is struck by the sheer quantity of available salvaged architectural features. Where did it all go? Certainly some of it – generally whole grand rooms by named architects – went to museums both in London and America, as is comprehensively explored in John Harris' book *Moving Rooms*; some of it went to other institutions and some went to private houses. Mewès and Davis in their 1936 work to 20 and 21 St James's Square unusually (uniquely?) saved Robert Adam's 1770s masterpiece at No 20 by seamlessly extending its façade across the adjacent plot previously occupied by 21 St James's Square, and linking the buildings together on all levels. However, in order to do it, they did demolish the house which stood on the plot of No 21, which was built in 1795–6 by Robert Brettingham for the Duke and Duchess of Leeds, and altered shortly afterwards by John Soane. Both the act of demolishing this 18th-century building and the act of stretching the Adam façade across the adjacent plot would be unthinkable today (Fig 13).

The Question of Significance

The administration of the listed building consent regime revolves around identifying and analysing which parts of the building are 'significant'. While all of a building is protected by the listing designation, not all parts of a building are of 'special interest', to revert to the language of PPG15.

The primary construction is very likely to be of high significance. Later alterations may also contribute to significance, especially if these are themselves of some age and quality. A medieval house with 16th-, 17th- and 18th-century additions and alterations is a good example of a multi-phase building where all of the later phases are likely to be worthy of special protection and consideration.

The operation of the consent regime typically treats interiors which were created in the Edwardian period in a highly variable manner. In an 18th-century house such relatively recent interventions have often been overlooked, indeed their removal to 'reveal the significance' of the primary phase has been welcomed by decision-makers. And what of interiors which have already been moved from one (demolished) house and reused in another 100 years ago? The evidence for their being 'cut to fit' their new location is often very obvious and can result in some unsatisfactory detailing, which leads inevitably to the question: if it has already been moved, why not move it again? My own view is that the salvaged material is significant both in its own right as historic fabric but also as part of a later insertion which adds another layer of interest to the building overall.

However, until the trade in architectural salvage is better understood, both in terms of the physical nature of what was happening and where the salvages were being reused, and in terms of what the reuse of old fabric signified architecturally, it will continue to be hard to make value judgements. All of us who are involved in the conservation of old buildings should, I think, strive to be better educated about this subject.

Fig 13 Nos 20 and 21 St James's Square, London: left-hand four bays 1936 by Mewès and Davis, right-hand three bays 1771–5 by Robert Adam

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Notes

1 With the notable and important exception of John Harris in his 2007 book *Moving Rooms*, which focusses more on the importation of whole rooms to a museum context.

2 Influenced perhaps by the Dean and Chapter of Westminster Cathedral who, along with other persons of note, objected to proposals brought forward in 1898 which would have flattened many of the 18th-century streets around Smith Square.

Design and Conservation: Two Sides of the Same Coin

Colin Kerr

The premise of this article is that design and conservation are not antithetical, indeed that they are two sides of the same coin – but are different sides of the coin being studied by what now seem to be oppositional groups? In schools of architecture, history is now relegated to the fringe, whereas many in conservation see contemporary design as of little worth and seem incapable of bringing critical faculties to bear on buildings old or new.

It could be said that the conservation of historic buildings was 'invented' – in that it entered public consciousness – in the 1960s. But architects had always worked on historic buildings and existing structures, particularly those which the host culture designated important.

There is an obviousness about the status of buildings such as castles and cathedrals. At Chichester Cathedral in 1685, Christopher Wren made inspections of the cathedral, especially of the Norman tower and 14th-century spire, because of concerns about structural stability. He made a report and recommended work, devising a repair to stabilise the spire by hanging a great weighted pendulum from its apex. The pendulum in effect post-tensioned the masonry. Wren, the designer, had a design problem and he made a designer's solution. It is well known that the tower and spire at Chichester actually did collapse in 1861 but that was due to the disintegration and settling of the cores of the Norman support piers, which had stood their ground since the late 11th century, and the collapse had nothing to do with the spire itself.

Wren also extensively repaired Westminster Abbey, where he respected the Gothic forms but did not follow details slavishly. No doubt he would have repaired Old Saint Paul's Cathedral had the fire not given him the opportunity to propose an entirely new classical building. It is interesting to reflect on these repair projects and recollect that Wren is not remembered as a restorer or repairer but as the designer of new work, especially complete new buildings. For Wren, one endeavour informed the other.

Since that marriage of design and repair, we have

Fig 1 New cross (2010) by Jonathan Clarke at the shrine in Chichester Cathedral

proceeded through increasingly antagonistic battles in the late 19th and the 20th centuries, pitting design and conservation against each other, but can we again find common ground in the field of architecture? I suggest that one reason why design and conservation are set apart is the absence of an architectural syntax that serves architecture as a whole.

Buildings by their very existence allude to a society's values and culture, one aspect of which is antiquarian interest, an interest which is not isolated to this country. Michelangelo adapted the Roman baths of Diocletian to form the magisterial church of Santa Maria Degli Angeli; the Coliseum in Rome was repaired in the renaissance, the structure secured by carefully devised strengthening. The repair of defensive buildings such as forts was carried out regularly to maintain their purpose and as need arose – and sometimes with ideological purpose. At Pevensey Castle in Sussex (Fig 2), for example, one can see a reliance on the design of the past to stake the invader's claim. The Norman keep adopted, and the early twin-towered gatehouse reflected, the plan and form of the solid bastions of the Roman walls including the pair flanking the Roman west gate. They saw themselves as new Romans reintroducing a culture that had been lost. We continue to conspire with that interpretation by describing their buildings as 'Romanesque'.

From such examples we can see precursors of the conservation theory of today: minimal intervention (Wren at Chichester), reuse (Michelangelo) and identification of cultural significance (the Normans at Pevensey). All the buildings were dealt with by architect-designers. Indeed, until the 19th century, theory, if understood as such, was at the employ of architects and designers. However, in the 19th century things changed, ideas about 'character' [1] developed and the work of contemporary architects who were dealing with existing buildings was challenged in public as never before. This was not the challenge as presented by the patron but from a third party. A self-conscious approach to old

Fig 2 Norman inner bailey within the Roman fort at Pevensey Castle, Sussex: bastioned keep top centre, gatehouse right of bottom centre.

buildings, to what we now call conservation, arose in the late 19th century and of course that approach to old buildings is most associated in this country with William Morris and the rise of the Society for the Protection of Ancient Buildings (SPAB). The approach of Morris and then SPAB was self-conscious because underlying it was an appeal to morality applied to the building fabric itself. This was not the same at all as Pugin's moral architecture, but rather an idea of worth belonging to the ancient material by virtue of its existence. The SPAB approach was moral and secular but strongly attached to mysticism. SPAB invited the designer to step into the 'personality' of the building. The approach was essentially anthropomorphic and that basis has been little considered, let alone questioned. Both the ethical and anthropomorphic ideas remain strong in conservation.

Morris came rather late to the scene in demanding the stay of architects' hands. He went to GE Street's office in 1856 intent on becoming an architect. So one must assume that he had no quarrel with Street's work, but he stuck at architecture for only nine months and apparently found it difficult to draw mouldings. His Damascene conversion to a 'do nothing if you can' position took some time and the contradictions of his actions are often written out of the account. Morris was of course, first and foremost, a designer of objects and not of buildings, although he would have preferred to have been known as a literary man. His design output was for a luxury market (tapestries for Lord Carlisle, a fellow founder of SPAB, as late as 1881) but in the end he is best remembered for SPAB.

There is much that is contradictory about Morris. He was sentimental about the past but employed Philip Webb, the proto-modernist, to design his unsentimental house. He was a great and energetic publicist for ancient buildings, eschewing anything 'false' because it was not 'honest', but was determined to reproduce detailed craft techniques which had become or were becoming obsolete. He seems never to have admired classical buildings; he was a medievalist and romantic. He hated railways. All through his thinking there was strong moral persuasion, and later in life he campaigned seriously for a socialist reform of society. This high moral tenor makes his virulent attacks on Gilbert Scott difficult to comprehend, especially as he made money by designing glass to be put into the restorations for which he castigated Scott. He did later recant his part in restoring but it needs to be noted that he had made his money.

In the minds of many, Morris and Scott came to define oppositional stances of designer/architect and conserver/campaigner and although that simplistic position is no longer held by specialists, it persists even in architectural circles and is unfair not only to Scott but to many other architects and is too kind to Morris.

Morris and Scott overlapped (Morris 1834–1896, Scott 1811–1878). Morris, a generation younger, had the luxury of youth when Scott had to take on heavy responsibility.

Scott had an encyclopaedic knowledge of archaeology and historic buildings and architectural practice and was a great designer. He was in fact very much concerned with the preservation of original fabric. A good example is provided at Chichester Cathedral. When the tower and spire collapsed at Chichester in 1861, Scott was jointly appointed with William Slater (the Surveyor of the Fabric) for the reconstruction. There had been attempts to blame Slater for the disaster, but Scott would have nothing of it and insisted that they be joint architects. (Slater remained surveyor for many years after. Apart from Scott's immense architectural abilities, this says much about the calibre of the man and his determination for honesty.)

He had his son, George Gilbert Scott II, sort through the mountain of collapsed material to set aside all the ancient worked stone. Scott's scholarship then informed a correct reassembly and resetting of the crossing arches of the rebuilt tower and spire. New piers were built on sound new foundations and he identified all his new work with subtly recessed joints, so that it is clearly identifiable from the ancient. Scott did this 11 years before SPAB was even founded, so Scott was in the vanguard practising the honesty of expression that SPAB later preached. There are many examples of Scott's practice being at the forefront of developing conservation practice. For example, the structural reinforcement of the tower of Saint Nicholas Church, Newcastle (now the cathedral) with its lantern tower, and the repair of the round church in Northampton, which he enlarged while leaving the Norman work intact.

In Christ Church, Southgate (GG Scott, 1862) there is a small window designed, and thought to be made, by William Morris, incorporating a self-portrait (Fig 3). It is not very well drawn (Morris did not enjoy life drawing). Here is Morris, a designer of fittings, sitting under Scott's roof.

Cottingham, an architect from the previous generation, worked on many old buildings which were in a terrible structural state. Cottingham has a bad reputation for restoration. It is too often forgotten that large parts of buildings literally collapsed. His work includes the restoration of Armagh Cathedral from 1834–1837, and although the exterior was in effect re-clad in new stone, the plan and form of the building were fully retained so that its local character is preserved. Internally, looking beyond the later Tractarian reordering, one finds the medieval bones, including all the medieval intra-mural passages and internal tower walls. The building certainly retains the character of a church.

Conservative approaches to old buildings are evident in the work of many 19th-century architects, including those often thought of as being most radical. William Butterfield (1814–1900) learned his trade by the study of ancient buildings and said that he was thankful for having been able to study ancient buildings 'before they were restored'. He was clearly at one with Morris in being moved by ancient spaces but he took the reasonable view that 'architecture was made for man, not man for architecture' and so he designed and adapted buildings to be useful. He was good, too, with modern requirements such as services installations. The heating infrastructure he designed (this also applies to others such as Street and Blomfield) is still in full working order in many of his buildings and restorations.

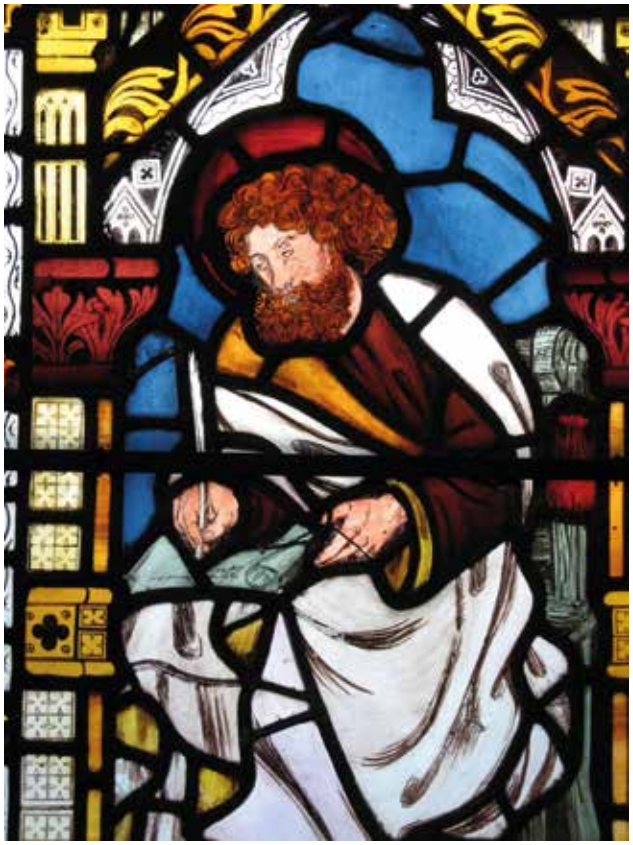

Fig 3 William Morris self-portrait in Christ Church, Southgate, London

Butterfield's conservative approach to fabric can be illustrated in as late a work as All Hallows, Tottenham from the late 1860s to early 1870s. Here he repaired and extended a medieval building, repairing work of several periods respecting earlier phases, even keeping Georgian repairs to the fabric of the medieval tower and Georgian wooden window tracery in the north aisle (still in place today). Medieval and Tudor parts were all kept and he extended over the eastern churchyard. He used diapered brick for the new elevations, modelling the new work on the design of the double-storey south porch which was the last phase of the medieval building. His work is profoundly contextual but not superficial mimicry.

As one studies the work of 19th-century restorer-architects, a picture emerges which reveals different approaches, different designers' sensitivities. It is a picture that relies less on interpreting their work through the notion of external 'influences', which is often the focus of the architectural historian, than on their own study of the fabrics on which they are working. The picture defies the popularised ideas of restorers set on arbitrary interference. For example, it is common to find that the Victorian restorer of traceried windows employed a 'halving' technique so that the medieval is retained inside. Such a discovery indicates two things: a) the restorer knew what he was dealing with and b) knew what had to be done to make a sound repair that saved the original as far as possible. Where we find it we have evidence of a sound decision as we still have the medieval model inside the building, a repair which has now lasted for much more than 100 years. Halving (cutting the mullion back to the glass line) is still a most useful technique.

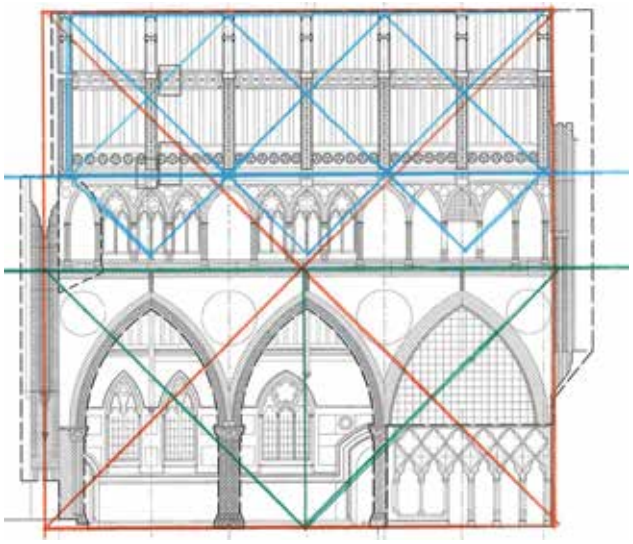

Fig 4 William Butterfield's All Saints, Margaret Street, London: long section of the nave, a virtual cube room equal in width, length and height

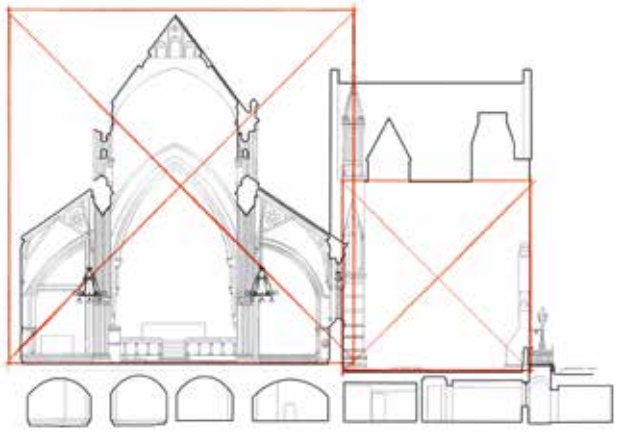

Fig 5 All Saints, Margaret Street: the ordering proportion principle extends to the house elevation

Scott and Butterfield were architects, not journalists or poets or political organisers like Morris. Their time was largely taken up with the design of buildings. As architects they dealt with materials less tractable than words and had to respect the force of gravity that makes things fall down. They also had to deal with the same problem as a contemporary architect engaged in conservation/restoration: to make the best long-term judgement for the building, rather than caving in to pressure to do too little. This may mean that work carried out to serve the next 100 years may take a decade or two to settle down and weather-in. New work will always look new.

Reaction is always against something, but simply because the reaction gains coverage (as with 'Victorian restoration') and becomes the dominant narrative, does not make the narrative reasonable. 'Restoration', largely through the influence of SPAB, became a term freighted with moral opprobrium to such an extent that until recently all one had to do to appear knowledgeable was observe that a building had 'suffered' a Victorian restoration. But pleasing decay does have its limitations when a building has to be maintained for use.

Morris's other bequest pointed in an entirely opposite and surprising direction. Could Morris have seen that his arts and crafts honesty was leading to modernism, and that allied in the 20th century with the theory of architectural development (brought to a wide audience and popularised through works by Sigfried Giedion and Nikolaus Pevsner), that reductionist, minimalist design would come to be seen as the inevitable moral summit of architectural development? By the late 1960s modernist architectural design theory had become entrenched orthodoxy. Only by the elimination of detail which could be remotely construed as decorative could an architect's integrity be proved. Beauty was a word unheard in these years because it was somehow assumed that if beauty existed, it was the concomitant of architectural commitment to minimalist progress. I remember this tail-end of modernism's heroic age from my first degree years at Manchester University in the early 1970s.

However, even in that period of minimalist simplification, it is a mistake to think that historic buildings were disrespected by the designers of new modern buildings. Those architects were simply and inevitably immersed in the 'honesty' of their time, struggling with the complexity of new technologies that demanded attention. They were children of their time, and of the doctrine of the secular Morris. They had no quarrel with the architecture of the past. It was clear to every student and architect, from reading Giedion and Pevsner, that earlier incarnations of architectural form were valid and splendid. However, those designs were understood as staging posts of progress, designs to which one could not return, and it was simply the case that there could be no architectural renaissance based on plunder from the past. Morris's honesty had been well learned. Then, in the late 1960s, just as modernism's hegemony was weakening, the first architectural conservation courses were

Fig 6 Hawksmoor's 'cube room' in St George's, Bloomsbury, London

opened – something which occurred in parallel with the international attention given to conservation through ICCROM (a branch-off from UNESCO).

'Conservation' was duly and officially invented. ('Heritage' came later and was popularised for the masses.) It was not hard for those who wished to simplify complex societal, cultural and design issues to represent architects and modern design as the problem, and indeed this proceeded to happen. Strangely, the role of planning was much less attacked.

The campaign against modernity had from the start a minority of the architecture profession on board. The attack against modernism was led mainly by popular critics, pundits, opinion formers and local amenity societies which were then forming. The high seriousness that previously attended government agencies, founded on specialist architectural and archaeological scholarship, and which dealt with historic buildings and ancient monuments, was softened so that in 1984 the Historic Buildings and Monuments Commission for England was branded 'English Heritage'. Language, as Morris knew, has its uses. The integrative approach of Morris, Giedion and Pevsner, once the orthodoxy, was weakened. The pursuit of specialisation in architecture was now under way and design and conservation were set apart – or grew apart – with consequences for both. Design was easily reduced to appearance and conservation thought of as an alternative to design, perhaps a purely scientific affair, a technical approach best suited to preservation.

The premise of this article is that design and conservation are not antithetical, indeed that they are two sides of the same coin – but that different sides of the coin are being studied by what seem to be oppositional groups. In schools of architecture, history is now relegated to the fringe and many in conservation see contemporary design as of little worth and are incapable of bringing critical faculties to bear on buildings old or new. Design, so understood, leaves judgement to subjective personal reaction. How is it that we now have well-developed conservation theories but no overarching syntax for architecture to inform study, discussion and judgement? It is now forgotten that it was usually the architectural profession or individual members of it who were instrumental in identifying what was important and what should be conserved in the first place. This was the case with listing and historic towns, both of which were the subject of conferences and publications by RIBA architects before legislation came forward. Meanwhile the context for what was to become known as scientific conservation was being shaped by the wider international community.

The first International Congress of Architects and Technicians of Historic Monuments convened in Athens and promulgated the *Athens Charter* 1932. The impetus was a by-product of the League of Nations, which was itself born out of the destruction caused by the First World War. It was this war which highlighted the vulnerability of monuments in European cities under bombardment. Those gathering at Athens represented public architecture where there was already a core of historic buildings specialists. In 1964 the Second International Congress of Architects and Technicians of Historic Monuments, again represented solely by the public side of architecture, drafted the *Venice Charter*, which has since become a significant conservation document across many countries. Indeed it is possibly the most significant of all the conservation documents. The cities of Athens and Venice, as the settings for the conferences, give the clue to the charters' purpose – they were concerned unproblematically with 'monuments', the term 'monument' understood as by an interested layman. The charters are relied on, are on the curricula of conservation courses, and various professional bodies (including the Institute of Historic Building Conservation) require assent to them. However, they have probably never been referred to in the course of a standard architectural education in this country. That is an issue. However, there are other matters to think on. For example, the *Venice Charter* has five articles dealing with 'Restoration', the reading of which can be broad. This puts Venice on a direct collision course with SPAB philosophy. (23 participants, mainly from Europe and all representative of the public sector, drafted the *Venice Charter*, with Harold Prenderleith, after a career at the British Museum, becoming the first director of the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), as the chairman.)

With Athens and Venice the scientific, specialist, high cultural nature of the preservation/restoration endeavour was made clear. Athens concerned itself with major monumental archaeology but this is expanded by Venice to include 'more modest works of the past which have acquired cultural significance with the passing of time'. Most significantly, Venice adds 'to safeguard them no less as *works of art* than as historical evidence'. This is the first direct reference to aesthetic or design content as opposed to the archaeological concept of evidence, which of itself is without aesthetic content.

These two charters were followed by the *Burra Charter*, now in a 2013 edition, but earlier editions are dated 1999, 1988 and 1981. It introduced the 'Concept of Place' (essentially supplanting 'monument'). The settlement of Burra is a row of miners' cabins, one-storey basic shelters (Fig 7). Burra is light years from Athens and Rome in terms of its cultural weight. However, Burra proposes a wider interpretation of the concept of cultural significance so that almost anything might qualify once identified and studied. Burra also goes on to redefine what is possible in terms of restoration and reconstruction under the charter. An explanatory note reads: 'Places with social or spiritual value may warrant reconstruction, even though very little may remain (eg only building footings or tree stumps following fire, flood or storm). The requirement for sufficient evidence to reproduce an earlier state still applies'. This is a very different approach. Greater and greater weight is being placed on finding things out, sometimes about not very much. The homeopathic approach to conservation?

Burra greatly expands the lexicon for those intent on writing guidance and framing legislation and much of the Burra process found its way into the English Heritage publication *Conservation Principles* (2008).

It is clear that the focus of the charters changes over time, indeed in reading the back-up guides to Burra one may wonder if there is now a focus at all.

In all the charters, there is an amazing omission: the word 'design' does not appear once. Yet it is design that made everything with which conservation is concerned. Design was either so self-evident as to go unremarked or those involved in drafting came from non-design backgrounds such as archaeology or museology or administration.

The development of post-World War II legislation in England and Wales flows in parallel with the charters, preceded of course by Morris's *Manifesto* (1877) and the *Ancient Monuments Act* 1882. Listed buildings legislation (prompted by war destruction and the LCC lists) came in 1947, while conservation area legislation in 1967 and planning acts in 1990 and 2008 consolidated the legislation. Although none of the charters refers to design, it should be noted that UK planning policy guidance does now include reference to design, and in an innovatory way. Design in the legislation can be understood as a means by which problems can be solved, including conservation problems.

New primary planning legislation and planning policy from 2008 onwards has developed a more integrative approach to the creation of national and local conservation policies and this is, I think, being reflected in the local plans that are now being produced.

There are now references to 'good design' scattered through planning policy documents, but what is good, who decides, and how to recognise it? And how to integrate this concept with what are now called 'historic assets'? To do this we need a syntax for architectural design that works for all, designers and statutory officers. Words such as 'rhythm' now appear in planning guidance documents but a working syntax, such as musicians

Fig 7 Miners' cabins in Burra, South Australia, home of the *Burra Charter*

Fig 8 Tower of the Denys Wilkinson Building, University of Oxford

Fig 9 Hawksmoor's St Mary Woolnoth in the City of London

have, is not there. We now have glossaries, which are helpful but the understanding of design can seem as far away as ever. There is a particular problem in that few, if any, in planning departments have ever designed a building or indeed conserved one.

Perhaps we have to start building a syntax from first principles; we need to identify what architecture actually is to start with.

Architects work with geometry and proportion, materials and light. By interaction, something beyond the physical is created which connects with us – that is architecture. Lutyens said that architecture starts when all the practical needs are satisfied. This emotive connection is the outcome of design but emotive connection cannot explain design. Although appreciation may be prompted by subjective response, design is not subjective choice but the result of work. Good design results from good work.

We can contrast the two buildings shown above (Figs 8 and 9); they are similarly powerful to our emotions. To understand how they work we would have to study drawings and find the geometry, the proportions, the internal relationships.

Design has to be understood as a process as well as an outcome and has much less to do with inspiration than careful working through. Morris, it should be noted, dismissed the notion of inspiration. If design is work, how then is design made and how can we understand the work? How to gain an architectural syntax for design to serve us and enable statutory officers and amenity officers as well as those directly engaged in the making?

This article can only begin to suggest how to embark upon such an endeavour and in what follows I give a few illustrations of what might be elements of a syntax; first, 'geometry'.

The use of geometry is easily perceived in classical architecture, but it is just as present in medieval gothic architecture, for the creation of which geometry was a prerequisite and one of the mysteries of the mason's lodge.

The designers of medieval buildings as much as classical ones used proportion and geometry as the process for construction. This was architecture largely without paper (or velum) or indeed anything that we would recognise as technical drawings. Design was by geometry and proportion, and execution was by use of geometry and proportion, set out with a line (a length of cord) a ruler, a level

Fig 10 Salisbury Cathedral west front: no matter how complex the appearance there is an underlying geometry which requires only simple instruments to construct.

and a plumb-bob. (For a succinct description of how such simple devices created great buildings, see the introductory section of Jacques Heyman's *The Stone Skeleton*.) Just as geometry was used to design, geometry can be used to analyse what has been designed. To do this we have to put plans, sections and elevations on a drawing board or screen and work out the relationships.

Great medieval churches were set out *ad quadratum* or *ad triangulatum*, giving a harmonious proportion through the entire structure. The same geometry was applied to plan, section and elevation. The façade of Notre Dame in Paris is clearly *ad quadratum*. Using very simple geometry, with line and rule the most complex of harmonious forms and shapes could be created, sometimes by inscribing a mortar bed. From that, stones could be set out and prepared for building into the structure. Without any drawings the designer knew that the geometry would work, constructionally, structurally and aesthetically. All that was needed on site was a nail and a cord to start from the foundations and work up to the roof.

The entire surface and plan of a great cathedral such as Salisbury (Fig 10) can be analysed to find the underlying proportional foundation of the design and how it was generated. One could go on then to set out all the detailed features of the building. Even complex tracery can be set out using these simple means. (Colin Dudley's theses on Peterborough and Canterbury Cathedrals are fascinating.)

The mysteries of the designs of the Middle Ages were eclipsed in the Renaissance but we can find echoes of the medieval approach in the designs of 19th-century revivalist architects which suggest how they originated their designs. The underlying structure of the design becomes a secret as the design evolves but it is there. The rigour of Barry's grid used for the façades of the Houses of Westminster is readily apparent to a designer but probably overlooked by most lay-people. If we approach Butterfield's work and analyse it on the drawing board, we find how he constructed his designs (Figs 4, 5 and 11). From analysis of a building one can move to using the geometry and proportion of a building to inform interventions. An obvious example is by adding a bay.

Street's church of St James, Sussex Gardens (1882) is based on the square which became apparent when his design was analysed on the drawing board. Street's discipline was taken into the design of the reordering carried out in 2002 (Figs 12 and 13). The result is an intervention which sits with Street's architecture and the new focus, the new altar, is entirely settled even though the nave sanctuary is entirely new.

Geometry is a fundamental of all design and the discovery of the underlying geometry of buildings is essential to gain an understanding of their design. Such an understanding can be taken forward into interventions whether they relate to a room, a building or a town. The scale or size of the place is irrelevant. If one is working out a design for a place, the essential starting point is a drawn analysis to find

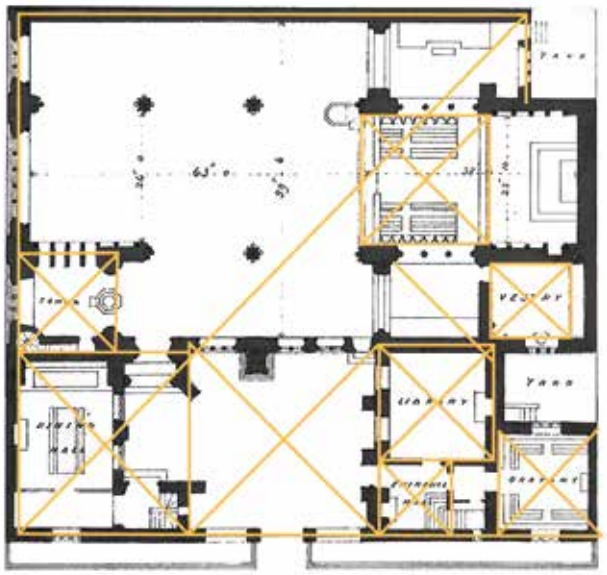

Fig 11 William Butterfield's 1849 plan of All Saints, Margaret Street, London

Fig 12 The new sanctuary in the reordered St James's Church, Sussex Gardens, London

Fig 13 St James's, Sussex Gardens: reordered with adherence to GE Street's proportional discipline

if there is an underlying structure to the design as found which is helpful in designing the new work.

It is unfortunate that design appreciation is most often relegated to written description, usually based on a historical analysis, when this does not approach what is required to appreciate design. Design is drawn not written. Yet practically no-one on the control side now draws, has designed buildings or done the making of buildings. This issue seems to have become more pointed with the complete separation since the late 1980s of public sector inputs, limited to the control side, without any balancing involvement in practice. Bodies such as the GLC historic buildings section and local authority architects departments at least ensured overlap in those organisations between control and implementation.

And the opposite is the case in that few designers

Fig 14 Chichester Cathedral east end: read across from the high level Kempe glass to Piper's early 1970s tapestry

are writers. Their work requires them to look, to understand through their eyes and to draw. When working with historic places, looking is the essential education and when working in a historic place good designers echo the past not by reproduction but by seeking to make sound interventions.

The following illustration indicates how generations of designers find that they are working together across time, respecting each other and what is found but also moving on.

In 1872 the medieval lady chapel of Chichester Cathedral was recreated, regained from its use since the 18th century as a library and burial vault. On the ribs of the chapel vault were traces of red, white and blue medieval paint decoration. Clayton & Bell were commissioned to glaze the windows for Slater's restoration and created a scheme in which the dominant colours are red and blue balanced by white. Near the end of the 19th century the east window of the retrochoir above the lady chapel was designed by CE Kempe and he took his pallet from Clayton & Bell. In 1972 the tapestry by John Piper (Fig 14) below Kempe's window was installed at the high altar; Piper taking his colours

from Kempe, but inverting the dominant colour from blue to red (a medieval device); and in 2008 the vault ribs' 14th-century colour of vermillion, white and blue was re-rediscovered by the present surveyor and reinstated. The result is coherence through the eastern parts of the building, each generation of designers finding the key for their input in what a predecessor designer had left. This kind of design information cannot be gained in any way other than by becoming immersed in the direct study and appreciation of the building. The recent restoration of the chapel interior reaches back to the aesthetics of the 14th century, via restorations of the 19th and 20th centuries. This series of relationships was discovered through the challenge of redesigning for the space from direct observation of the architecture.

Work of all periods can be successfully integrated in a space. New work is a way of invigorating the architecture and the use of the space. Traditionally, architects worked with and incorporated the work of artists and to do so remains one of the greatest privileges of an architect.

Figs 15 and 16 Hopton's Almshouses, Southwark, London, 1752 and below in their 2015 context

Fig 17 1960s model showing plans for the area around St Mary Magdalene's Church, Paddington which was totally cleared by demolition, leaving the church stranded

The demands of working with the detail of interiors may seem different to those required for working with exteriors but similar questions relating to setting and impact need to be addressed. One cannot see how the questions were asked in relation to Hopton's Almshouses, Southwark, London (Figs 15 and 16). One wonders what analysis was carried out.

But there are ways of approaching the scale problem in cities, and elegant solutions are possible but not in Paddington in the late 1960s. If the planners of the late 1960s had looked with the eyes of an artist would the proposal shown here in model form (Fig 17) ever have been built? Everything in the area apart from the listed church by GE Street was demolished. The proposal took nothing from its context. The area is still a site of running sores.

Recently, a carefully designed scheme to repair one of these sores, the demolition scar at the west end of the church, has gained approval but only after a Herculean battle by the designers against planners, heritage bodies and amenity groups. There seemed to be no architectural syntax on which an informed discussion could be based. Setting and proportion were two key contested matters.

Street's church was shoehorned into an impossible site but on that site it was a work of genius. Robbed of its setting by comprehensive redevelopment in the early 1970s the church looks most odd. The scarred west end of the church has

Fig 18 Dow Jones' carefully proportioned scheme for St Mary Magdalene, Paddington, from the west

been left exposed since the late 1960s. Biba Dow's little extension (Fig 18) solves many problems and has been very carefully considered. There was much concern on the part of regulators about the impact on the setting of the church. There was also concern that the extension was not in proportion when all the proportions are carefully derived from the host building.

Conservation of historic buildings allows us the privilege of studying and understanding the buildings and how they were and can be used. That study can equip us to design. We also need to look from the other side. If a new building works in its setting how has that solution been brought about? The absence of history of architecture from many architectural courses is scandalous, but likewise the limitation of conservation to keeping every ounce of old stuff irrespective of its worth or prominence is useless. The elements of and the syntax of design need to be re-identified. Perhaps more drawing analysis and visual work needs to be done, on the control side, so that architectural design becomes better understood and regulated. Design should not be divorced from conservation nor conservation from design.

Acknowledgements

This article originated as a lecture given to the Association on 12 April 2016. Figures 2 (Barbara van Cleve/Wikimedia Commons) and 7 (Denisbin/Flickr.com) are licensed for reuse under the Creative Commons Licence.

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Notes

1 The concept of 'character' first emerges in the 18th century as in the 'character of a castle' or the 'character of a house', with character residing in the type.

St Jude-on-the-Hill, Hampstead Garden Suburb: a Lutyens Masterpiece

Margaret Davies

When ASCHB held its AGM at St Jude-on-the-Hill (Sir Edwin Lutyens, 1909–1935) in March 2016, the church's parochial church council (PCC) was nervously awaiting a decision on an application for Heritage Lottery Funding for works to repair the church. The funding was also earmarked to improve provision for all visitors and to create a new learning hub in the lady chapel focussing on the history of Hampstead Garden Suburb. Unfortunately, that application proved unsuccessful, but a new application was submitted to the Heritage Lottery Fund in December 2016. The author was appointed inspecting architect to St Jude-on-the-Hill in 2006 and has carried out two quinquennial inspections since that time. She is also a member of the steering group involved in the preparation of the new application for Heritage Lottery Funding.

Whenever I come to St Jude-on-the-Hill I think of John Loughborough Pearson's remarks on his design for Truro Cathedral. He is reported to have said that he wished to create a building of such majesty that it would most quickly bring a man to his knees. St Jude-on-the-Hill could scarcely be more different from Truro, but nonetheless, its scale and awesome interior takes one's breath away in a similar manner.

The Architectural Vision

St Jude-on-the-Hill is a building which demands attention. It occupies a commanding position on the highest land in Hampstead Garden Suburb. Like a beacon, the spire can be seen for miles around.

Founded by Dame Henrietta Barnett at the turn of the 20th century, Hampstead Garden Suburb was intended to be a model community where people of all social classes could live together in practical and attractive housing in a semi-rural landscape. The suburb was laid out to designs prepared by Sir Raymond Unwin around a formal park which was to be surrounded by monumental architecture. Sir Edwin Lutyens was appointed as the consulting architect for this area, called Central Square, and the 'houses of worship and learning'.

His design included three dominant buildings, on the scale of his government buildings for New Delhi (c1912) rather than that of an English suburb: two major church buildings – The Free Church to the north side of the square and St Jude-on-the-Hill to the south – flanked by the Hampstead Garden Suburb Institute, which was built in a series of phases

Fig 1 St Jude's viewed from the south east

between 1908 and 1930. Henrietta Barnett School opened in the institute in 1920 and took over the whole building in the 1930s.

The two churches are of comparable scale but the spire of St Jude-on-the-Hill gives it a more imposing presence. Construction of the church started in 1909 and was largely completed, with the exception of the west end, by 1913. The church was consecrated in 1911. Further works were postponed following the outbreak of the First World War and it was not until 1935 that Lutyens' design was completed.

Despite its scale, the exterior of the church is comparatively modest. Built in purpose-made grey bricks with red brick dressings, its form and materials draw on Lutyens' experience designing country houses in the Arts and Crafts style. The nave is a single storey, notable for a series of four dormer windows to each aisle, with swept clay tiles matching those of the cat-slide roof and each enriched with ornamental leadwork. The chancel is flanked by the lady chapel to the north east and by St John's Chapel to the south east, both of which rise to second storey level, with tall, round-headed windows similar to those serving the north and south walls at the transepts. The spire, covered in chevron-patterned leadwork, rises to a height of 178 feet (54.25m).

The character and scale of the interior (Fig 2) owes something to the form of Nordic churches, where the timberwork is expressed without restraint, creating aisles of domestic scale in marked contrast to the great height of the barrel vaults and archivolts to the nave, the domed ceilings to the crossing and the chancel, and the apse to the sanctuary. The ceiling vaults are 40 feet (12.2m) at the central crossing, their highest point. The church is 122 feet (37.19m) from the west door to the chancel steps.

Fig 2 The completed church c1913 prior to the introduction of the murals by Walter Starmer

Fig 3 Walter Starmer murals in the lady chapel

Inside the church is a unique collection of 'spirit fresco' murals (Fig 3), initially conceived as a First World War memorial and painted by Walter Starmer in 1919–1930. The original concept was to decorate the lady chapel with pictures of angels. The dead would be remembered through images of women because (Starmer wrote in a parish paper of February 1921) 'through the cruel years of war it was upon the women of the Empire that the heaviest burden fell'. However, the theme was changed in favour of portraits of historical and near-contemporary women who, in the words of the church committee set up to raise funds for the scheme, 'have laboured and suffered… for the extension of righteousness among men'. The mural scheme was paid for by women of the congregation, reflecting the advanced views of many early residents of the suburb in relation to the campaigns for universal suffrage and against

vivisection. Murals on the ceiling vaults and in the sanctuary show scenes from the life of Christ, while those on the walls of the aisles illustrate the parables.

Although the murals are described as spirit frescoes, Walter Starmer's technique and his choice of materials and pigments changed over the 11 years between completion of the first and the final mural. In a detailed report commissioned by the PCC in 2015, Paine and Stewart Limited noted that 'in its original form "spirit fresco" was a technique developed by Gambier Parry in the 1860s, as a means of replicating the style and texture of 15th- and 16th-century Italian *buon fresco* painting so much admired by Victorian church decorators and artists'. In fact, Walter Starmer used a 'dry' method in which a mixture of resins, oils and wax was applied, both as a priming layer to the wall and as a binding agent for pigments. Paine and Stewart Limited describes the technique of melting together the resin and the wax, thoroughly soaking the wall surface. After a two-day drying period, a primer of white lead and gilder's whitening was laid on the surface. With a further application of white lead and gilder's whitening, this was reported to produce 'a perfect surface so white that the colours laid upon it have all the internal light of the "*buon fresco*" '. It is also believed that towards the end of the mural cycle Starmer was using a proprietary medium readily obtained from a colourist's merchant. This new material, together with a much freer form of painting is found in the later murals of the series.

Two books by Father Alan Walker (see References) describe the sequence of work in greater detail and include reflections on the artist's development and changing techniques as the work evolved.

St Jude's is home to many other special artefacts including the only altar known to have been designed by Sir Edwin Lutyens, the earliest church memorial to the horses of the First World War, the first public First World War memorial, the first memorial to evacuee children lost in the Second World War, 6th-century ironwork screens flanking the chancel, and a fine 'Father' Henry Willis organ which was given to the church by Dame Henrietta Barnett and her husband. Sadly, little is known about the various benefactors or the provenance of many of the artefacts, despite the fact that the church published a weekly magazine during the Reverend Basil Graham Bourchier's incumbency. The great and the good flocked to attend the church, and the records provide a fascinating social history with details of contemporary fashion, rather than information about artists or the provenance of historic artefacts.

Similarly, we have found no detailed information about the specification or construction of the church as none of Lutyens' original drawings or documentation of the work survive. For example, we can only surmise that the foundations consist of a simple rectangular footprint, built in common bricks, with two lines of posts to carry the four columns of each of the twin arcades, and a deeper excavation at the east end to form a limited crypt or under-croft. A narrow heating trench, built in rough brickwork, is located approximately 1.75m inside the perimeter walls. This trench is thought to have provided some local stiffening to the foundation structure.

It would appear that the church has suffered from movement in the clay throughout its life. Stress is evident in the fair-faced brickwork forming the bracing walls flanking the crossing, which are disfigured by diagonal cracking and open joints. These areas of weakness are thought to have suffered some further movement as a result of bomb damage during the Second World War.

Fig 4 Detail of the cornice to the aisle walls with minimal fall to shed rainwater

Challenging Conundrums

Lutyens re-profiled and levelled the area of high ground on which Central Square is located. In the process, he exposed a deep band of clay subsoil on which the church was subsequently built. The clay substrate has had a strong influence on the character and appearance of Central Square and on the condition of the surrounding buildings. It is not unusual to see the square turn into a duck pond after periods of heavy rainfall.

Sir Edwin Lutyens appears to have had a rather cavalier attitude to the disposal of rainwater from the church: good practice requires that rainwater should be removed from the fabric and environs of a building as soon as possible. At St Jude-on-the-Hill, however, Lutyens left the rainwater which falls on the cat-slide roof – a considerable area in itself – to find its own way down to ground level, via the (level) stone cornice (Fig 4) and then, hopefully, to drainage channels and soakaways. Currently the brick-lined perimeter drainage channels are in poor condition, with failed mortar joints. Rainwater inevitably seeps into the soils surrounding the foundations and into the building fabric, exacerbating the problems of saturation and water penetration. Similar idiosyncrasies exist at roof level, where the adjacent verges to the pitched roofs over the chancel and side chapels abut one another and leave no room for easy maintenance and gutter clearance (Fig 5).

The saturation of the ground surrounding the church has contributed to the deterioration of the brickwork and the failure of the mortar joints, particularly in the crypt where some of the lower walls are visible. The crypt contains the boiler room, a former oil tank room and lavatories. Its environment is humid with fluctuating temperatures depending on the use of the church. Joinery in these areas is constantly at risk of rot and rapid deterioration.

It is inevitable that the poor condition of the building envelope has affected the condition of finishes throughout the church. One problem arising from this situation is the distortion of the floor throughout the nave, particularly in the north aisle where large bulges and 'valleys' have developed – covering areas of 8–10 square metres and varying in height or depth by approximately 100mm.

Although detailed investigations have yet to be undertaken, it is assumed that the wood block

Fig 5 A difficult gutter to clean

floor finishes to the nave and aisles are laid on a comparatively thin layer (approximately 125mm thick) of fine-grained over-site lime-based concrete screed, laid directly on soil. The perimeter walls, the lines of the two arcades and the configuration of the heating trench mentioned above introduce lines of stiffness which can withstand water pressure, while the unrestrained intervening zones are vulnerable to movement. Similar stresses are experienced in the fine marble floors to the chancel, sanctuary and St John's Chapel, where movement has caused the fracture and distortion of finishes and introduced potential trip hazards (Fig 6).

Fig 6 St John's Chapel: water damage to wall and movement damage to paving

The heating installation also needs attention. The church is heated by low pressure hot water, currently supplied by an ancient gas-fired boiler located in the crypt, partly beneath the chancel. The boiler feeds imperial (4 inch) cast-iron pipework which is laid in a perimeter duct around the church and serves cast iron radiators set in bays in the external walls.

Typical problems include failed connections, rusting joints, broken junctions and accumulation of debris in the pipework. It is no longer possible to procure imperial size connections so special adaptations have to be made to form new joints between the old imperial pipework and the modern, metric pipework. Few of the radiators work.

All of these problems increase the strains on the boiler and limit its ability to function efficiently and economically. As a result, it becomes increasingly hard to maintain a comfortable environment either for worship or for the recording and recital activities which the church relies on to meet its financial commitments. In parallel, the PCC has to meet higher maintenance costs.

The coup de grace occurred in November 2015 when the weather vane fell from the top of the spire. For days the churchwardens thought that the copper cockerel and the fish had been lost forever, but with the help of drone-mounted cameras, both parts were found resting on the roofs of two of the dormer windows. No drawings of the original weather vane have been found, but preparations are in place to repair and reinstate it at the top of the spire on a new austenitic steel shaft.

Proposals for Remedial Works

There is an urgent need for careful remedial works to be undertaken to safeguard the fabric of St Jude-on-the-Hill which is currently on the Heritage at Risk Register.

Localised evidence of distress has been identified in the quinquennial inspections reports carried out in 2007 and 2013 and in the interim inspection undertaken in 2016. From studies undertaken over the last year it is clear that ground saturation and resulting heave in the clay substrate has exacerbated weaknesses and local failure in the building structure. This may be seen in the failure of mortar joints, the extension and enlargement of movement cracks in the brickwork, undulations in the floor and damage and distortion to the internal plaster finishes together with accelerating deterioration of their unique murals (Fig 7).

The prime requirement is to improve ground conditions and rainwater disposal to reduce movement and heave in the clay substrate. Work can then be undertaken to repair the damaged brickwork and marble finishes.

The current heating system is ineffective and is contributing to moisture in the fabric and internal environment, further damaging the building, its frescoes and the organ. The heating distribution pipework is all imperial-gauge cast iron and is corroded and leaking at all connections. The boiler is increasingly difficult to maintain and is nearing the end of its effective life.

The murals show signs of damage caused by soiling above the radiators, and by salt migration and crystallisation, damaging the plaster surface. Close inspection of the murals behind the high altar reveals paint peeling off the walls. Unless the heating system is rectified, damage to the murals will continue and increase.

Once these defects have been addressed, there is a need to improve access to all areas of the church and to provide better facilities for those who come to worship, play music, study and enjoy this special building and its marvellous acoustic.

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I am indebted to Paine and Stewart Limited for the detailed information presented in their report on the present condition of the murals. I would also like to thank David White for permission to use a number of his photographs.
Margaret Davies RIBA AABC FRSA *is a senior partner at MRDA Architects and Conservation Consultants.*

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Fig 7 Opposite page, damage to one of the Walter Starmer murals in the lady chapel

The Restoration and Remodelling of 12 Bedford Row, Holborn, London

Eleni Makri

This is an account of works of repair, restoration and remodelling carried out initially in 2008 and later in 2011–14, all under the same ownership and patronage. The restoration work sought to achieve exemplary standards and to return the façades of the listed building to their original Georgian finishes and elegance. Internally, works included extensive repairs to historic panelling, which was nurtured back to a healthy state. The underlying principle of all remodelling and refurbishment was to deliver contemporary services and standards in a manner that complemented the historic fabric and layouts. Thus the building's Grade II listing was never a hindrance to achieving the contemporary and the fashionable, but rather a stimulus for good design.*

No 12 Bedford Row forms part of the Grade II* listed terrace Nos 8–13, which is located in the Bloomsbury Conservation Area in the London Borough of Camden. The buildings and forecourt railings were first included in the statutory list in 1951, with the list entry last amended in 1999. The group dates from 1717–18 and is attributed to Robert Burford, carpenter. Specific references in the list identify the surviving tuck pointing of No 12, the characteristic door cases and flat hoods of both Nos 12 and 13, and the cast iron railings to the front of the terrace, which complete 'a fascinating and well-preserved group of houses of unusual richness which together form a group of exceptional quality'. Only two of the buildings, Nos 11 and 12, are in residential use today.

Envelope Repairs and Restoration

Comprehensive repair and restoration of the building envelope was carried out in 2008, based on in situ observations and detailed research.

The front façade

Significant areas of tuck pointing had best survived on the lower ground floor façade. At ground and first floor levels the tuck pointing was too fragmented or fragile to be left unrepaired. The areas associated with the second and third floors had largely been rebuilt c1900, as the facing bricks suggest, and this work detracted significantly from the overall appearance of the front (Fig 1). Further rebuilding of the top right hand corner (Fig 2), as part of a refurbishment by others in 2002, had used metric bricks and crude repointing in damaging cementitious mortars and was by no means the attempted like-for-like repair. This work had included hard mortar repointing of the flat arch of the nearby window, which had severely damaged the original red soft rubbers. A later black wash was poorly applied throughout, even over original tuck

Fig 1 The front façade in 2008 before work began

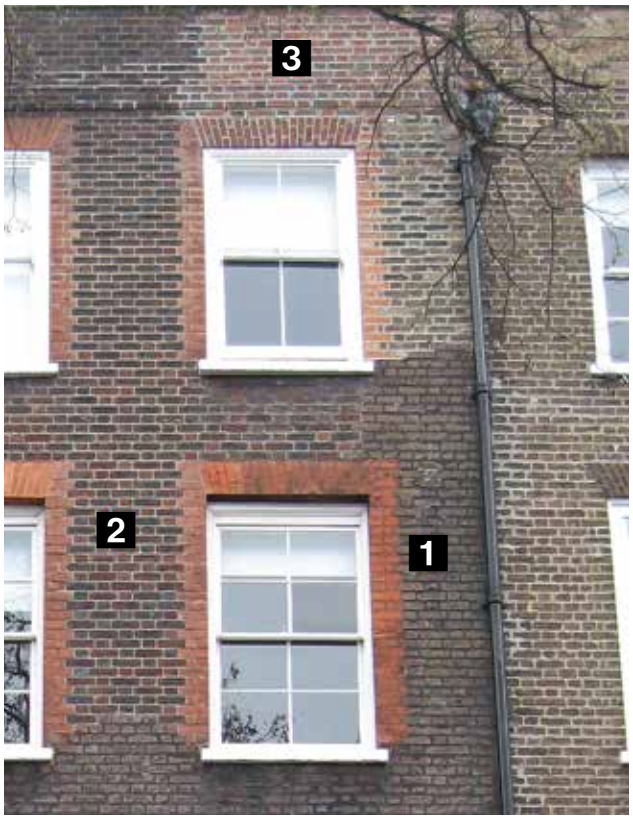

Fig 2 Detail of the unrestored front façade in 2008 showing original work (1), the 1900 resurfacing at second and third floor levels (2) and poor 2002 repair work which had used metric bricks and crude repointing in cementitious mortars (3)

pointing. A detail of the restored façade is shown in Figure 3, which dates from 2008. Figure 4 shows how the works had weathered by 2013.

As a first step in the 2008 façade repair and restoration works, all of the brickwork was cleaned using a water method (running water in combination with a non-ferrous brush) to remove the excessively black wash. The 2002 metric brickwork, which was also failing structurally, was replaced with new brickwork using matching reclaimed plum-coloured imperial size bricks of various shades and aligning joints of sizes similar to those adjoining. Similarly, the ailing flat arch was replaced in matching soft red rubbers. Next, a softer, more translucent blackish coat was applied throughout, with the exception of the lower ground floor where the cleaned tuck pointed brickwork was left as found. This coat provided a consistent background for the replacement of the tuck pointing where missing at ground, first, second and third floor levels. This work gave the brickwork a uniform appearance from a distance while ensuring that the original areas at lower ground floor level can, on closer inspection, easily be distinguished from those which are the result of restoration (Fig 3). Extensive samples of tuck pointing were carried out and the preferred approach was agreed with English Heritage and Camden's planning department, along with the new matching brick samples.

The c1900 rebuild had resulted in the loss of the internal window shutters at first floor level, and the 1900 fenestration had been set further back in the reveal than in the original. It was clear that the original fenestration here would have included shutters because all the windows to the rear at this level retained them. By contrast, there were no shutters at the front or rear at the top floor level or at lower ground floor level, which would be consistent with the ancillary use normally associated with these levels when the house was built. The rest of the shutters were found intact, with only one more pair missing at ground floor level to the rear.

None of the original sash windows had survived and the fenestration was a mishmash of replacements of various periods including the replacement of entire frames. Only one frame was found to be original, at the return elevation at rear ground floor level.

Fig 3 Detail of the restored front façade in 2008, showing original tuck pointing at lower ground floor level

Fig 4 The front façade in 2013, five years after it was restored

This provided evidence of the original detailing of the frames and of the architrave which concealed the joint between frame and brickwork and of the interface between joinery work and brickwork. It was reasonable to expect the original glazing bars to have been in ovolo sections. Their size was determined by referring to the surviving frame and to the salvage collection of Charles Brooking, which the author visited. Using this evidence, all fenestration was revisited and the original frames and six-pane double-hung sashes to the front and rear façades and the shutters of the three windows at first floor level to the front were all replaced as original. Interestingly, some of the original openings were deformed and the new joinery work simply followed the deformity without attempting to rectify it. Further, as the thickness of the external walls gradually diminished from lower to higher floor levels, the depth of the window frames and sashes diminished accordingly (see page 44 Internal joinery and Fig 11 New Glazing Bar section).

The replacement fenestration was in laminate glazing to provide some security. At the time, slim double glazing was not available and secondary glazing was too chunky to be fitted between the frames and the shutters. Both options would have been considered had the work been carried out more recently.

The fenestration throughout and the repaired front door were finished in Hardwick White from the Farrow and Ball range. This colour was established as being close to original during the restoration of the Grade II listed Nos 6–10 Queen's Road, Peckham (also 1715). Further, the Portland Stone cills were stripped of all paint, repaired and left exposed as they would have been originally.

At the front, repairs were also carried out to the fanlight over the entrance, the boot-scraper and the railings. The fanlight was carefully removed to the workshop for stripping, repairs and replacement of missing ornamentation and broken glazing sections. It was also finished in Hardwick White and the bronze sections, whether original or restored, were simply polished (Fig 5).

The forecourt railings incorporated different types of finial. On the return run all the finials were of the same type and were found to be in reasonable condition. However, the finials on the front run displayed a history of poorly executed attempts to copy elements which had worn out. Still, it was

Fig 5 Restored fanlight over the front door, 2008

Fig 6 Detail of the restored front façade and railings, 2008

clear that there were two alternating finial designs along the front. Based on the re-interpretation of surviving elements it was possible to produce designs which enabled the replacement of all the finials at the front. The underlying principle here was to provide necessary repairs weathered to match the original. The railings themselves were not entirely vertical, particularly at the front, but were left as found. The gate leading to the lower ground floor level was realigned so that the locking mechanism was restored. The whole ensemble including the boot-scraper was stripped back, repaired and refinished. The colour chosen for the restored railings was 'invisible green' and a two-pack paint system was used to achieve a durable finish. The overall impression given by the finished work is that the railings are clearly old and in imperfect condition but that they have been lovingly looked after (Figs 3, 6 and 7).

Fig 7 Detail of restored cast iron forecourt railings, tuck pointing, fenestration and window cill, 2008

At the rear

At the rear, a key issue was the unsightly proliferation of plastic wastepipes on the return elevation of the closet wing. These had leaked in the past causing salt contamination of the brickwork (Fig 8). The plastic pipes were duly replaced with three vertical stacks in steel, finished in black and located so that branches were avoided.

The resulting holes in the brickwork were repaired using new, matching plum bricks and inappropriate later hard repointing was selectively replaced. An earlier concrete lintel repair to the rear window at top floor level was replaced and a rubbed brick flat arch reinstated. The brickwork was cleaned using a water method (brushing with a non-ferrous brush was followed by running water to soften deposits which were then removed with the brush), followed by a light soot-wash to achieve a more uniform appearance.

The fenestration was replaced, frames and sashes alike, with the exception of the ground floor frame of the return elevation of the closet wing which was original and provided the basis for all replacements. Again, a Hardwick White colour scheme was applied.

Fig 8 Existing salt contamination and plant growth on the rear façade brickwork, 2008

Interior Repairs, Restoration and Remodelling

In 2008, extensive works of repair and restoration were carried out internally to all joinery work, including comprehensive repairs to panelling. Remodelling involved room use re-assignments at top, first and lower ground floor levels, the introduction of new services (air cooling and solar heating), display installations and the creation of a media room at first floor level. Remodelling in 2011–13 saw the introduction of an en suite guest bedroom and music library at first floor level and the conversion of a bedroom into a full bathroom and of a small bathroom into a walk-in wardrobe at second floor level. Key aspects of these works are explained below.

Internal joinery

The building retains all original softwood panelling at ground and second floor levels and partially (on two walls) in one room to the rear at top floor level, which was converted from a bathroom into a dressing room in 2008. In some rooms, such as at second floor level, original panelling has survived complete to full height including original skirting boards and elaborate ceiling cornices. This was very instructive in the way doors and fenestration detailing such as aprons, shutters and their housing recesses are incorporated and detailed.

Softwood panelling was found to be in a distressed condition throughout, displaying shrinkage, cracking and open joints. This had resulted from layers of paint accumulated over the years combined with exposure to rather high temperature levels from an insufficiently controlled underfloor heating system.

Accordingly, at the beginning of the 2008 project all internal joinery work was carefully stripped back to bare wood using a proprietary alkaline stripper and repaired with matching quality timber using specialist antique furniture repair techniques (Fig 9). This work took several months to complete (Fig 10).

The repaired softwood panelling was finished in eggshell paint over an alkaline barrier coat, from a period range by Farrow and Ball. As would have been the case originally, the same colour was applied to all joinery work in a room including walls, skirting and ceiling cornicing, so as to recover the original feel of the individual spaces and of the building as an entity. The effect is particularly instructive in the bedrooms at first floor level where the paint colour choice contrasts with the white ceilings.

Fig 9 Detail of existing panelling under repair, 2008

As noted, all window sashes and their boxes were replaced (Fig 11) with the exception of the original box frame in the closet wing room at ground floor level. Further, the missing shutters to the front rooms at second floor level were also reinstated with their design taking its cue from the surviving shutters to the rear and the existing layout of the panelling of the two rooms to the front. The shutters were painted Hardwick White on the surfaces which are visible from the street to match the frames and sashes. The surfaces which face the room when the shutters are in the closed position were painted to match the panelling and/or room colour.

Fig 10 Repaired internal joinery, 2008

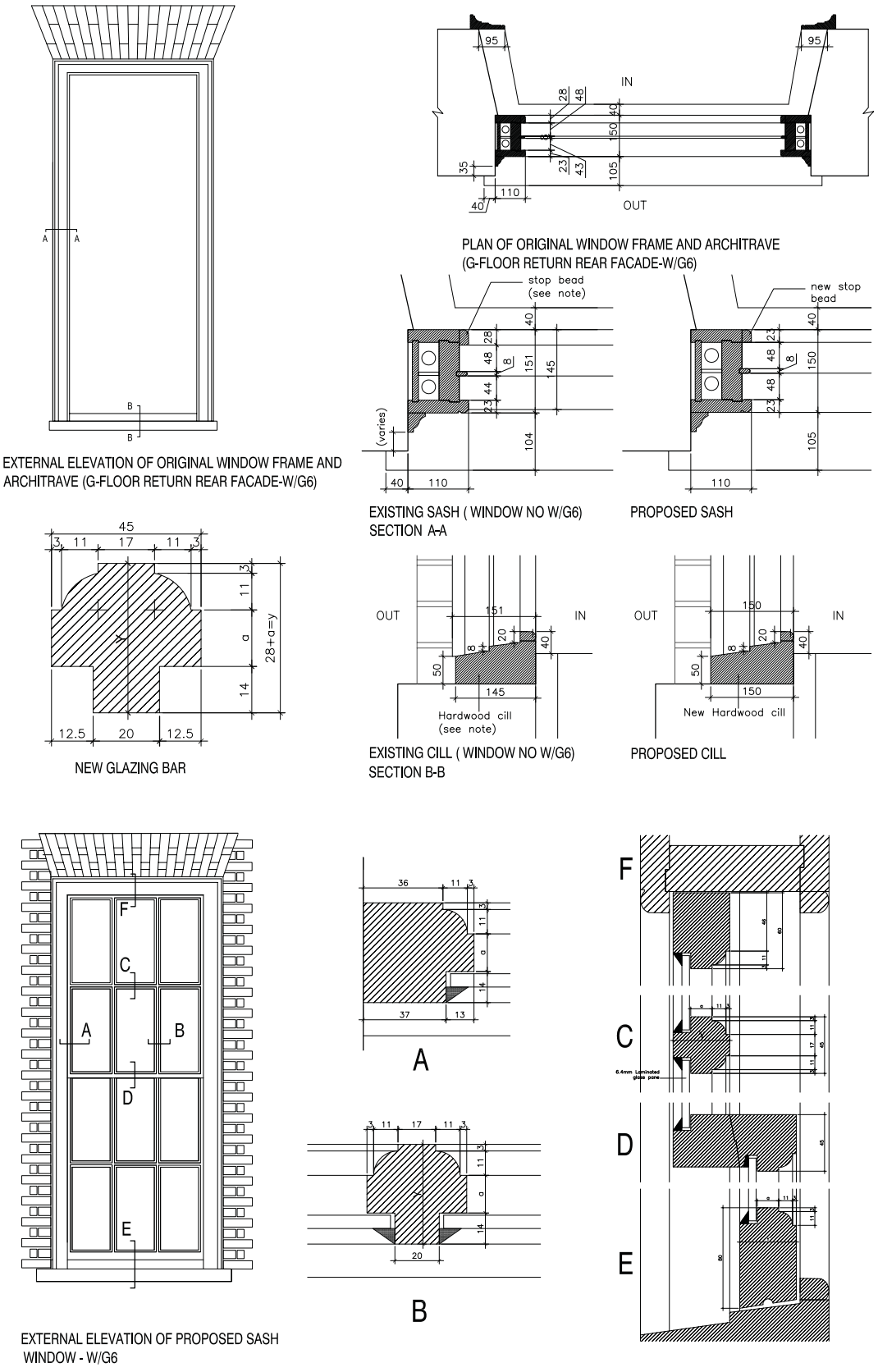

Fig 11 Drawings showing original box frame and architrave at ground floor level and proposed new sash window detailing throughout ('a' and 'Y' on the New Glazing Bar section refer to the diminishing thickness of the wall at higher levels which affected the depths of both glazing bars and box frames)

Fig 12 Oak staircase with dado height oak panelling exposed and restored, 2008

Stripping works uncovered oak panelling to dado rail height lining the walls of the open string oak stairs which lead from ground to first floor level. This staircase is noted in the statutory list entry for its 'decorative ends and twisted balusters', many of which were unstable. The oak panelling was fully repaired as were the oak balusters and stairs. The finished work was treated with beeswax to maintain the original colour and warmth of the oak (Fig 12).

The timber stairs from the first floor level to the top floor had their oak/mahogany mix handrail repaired and finished in mahogany French polish. The mix of decorated and thin square spindles were repaired, re-fixed where necessary and painted to match the panelled walls of the stairwell.

Floor strengthening

The repair works also included some structural strengthening, mainly to the floors. The need for this was demonstrated by the cracking present on the stone floors of the bathrooms – especially those on the first, second and third floors – which was both unsightly and worrying. The floor construction was investigated and works of flitching and the introduction of noggins were carried out with the advice of a specialist structural engineer.

All the bathrooms were completely stripped back to the original room envelope and either refurbished or relocated. To prevent cracking of the new stone flooring, a flexible waterproof membrane was introduced to allow the stone flooring to move with the building, an approach which has stood up well to the test of time.

Mechanical and electrical services

The 2008 works included the modification of existing services and the introduction of new ones.

The existing underfloor heating was found to be difficult to regulate and high temperatures had resulted in the build-up of high levels of residual heat. This had caused original early 18th-century softwood timber panelling to dry out to such a degree as to display extensive areas of severe shrinkage, opened joints, cracking and warping. An improved system was introduced that allowed better temperature control to prevent further damage to the historic fabric.

Air-conditioning units (cooling only) were introduced to the bedroom and new dressing room at third floor level, to all bedrooms at second floor level, to the new media room at first floor level and to the kitchen, wine store and front room at lower ground floor level.

Externally, this involved the installation of three condenser units on the roof to the rear which were discreetly located, one behind the low rear parapet and two further in, by the rear chimneystacks at the boundary with No 11. Another condenser unit for the kitchen was discreetly located within the lower ground floor open-air courtyard on a high-level ledge and was concealed behind a timber screen which allows access for maintenance.

All condenser locations were carefully chosen to ensure that the units were not visible either from within the building or from neighbouring properties. At a later stage, a health and safety review led to the installation of a Mansafe system behind the low roof parapet to the rear adjoining the condensers to provide safe access for maintenance while avoiding alterations to the historic building.

Internally, the air-conditioning units were incorporated in new fitted cupboards, which were designed so that they did not detract from the original character and finishes of each room (Fig 13).

Fig 13 Refurbished front room at first floor level, with new cabinetry incorporating a new cooling system, and reinstated missing shutters, 2008

At second floor level, where all the rooms are panelled, the new cupboards were designed to emulate the original panelling by replicating its design and detailing including the wall junction. In this way the needs of the family for additional storage space and the need for air-cooling provision were accommodated discreetly in a contextual and largely reversible manner which did not compromise the special interest of the listed building. Pipework was directed so that it did not interfere with cornices and was kept to a minimum.

The opportunity was also taken to introduce solar panels on the south facing internal slope of the 'M' roof, discreetly located on the existing artificial slate roof coverings and invisible from elsewhere. Since installation, these have consistently provided up to 50 per cent of the family's hot water consumption.

Existing Lutron and Creston Smart Home installations throughout were reviewed and enhanced to accommodate an extensive music collection and a new home cinema/media room.

Display installations

The display installations included the construction of a projection screen for the home cinema/media room at first floor level to the rear and the introduction of back-lit Perspex shelving in the front reception room at the same level.

The cinema screen was constructed as a stud wall which incorporated all associated installations such as speakers and was simply mounted onto the original wall. Similarly, the Perspex shelving display was constructed as a stud wall against the party wall of the building with a recess which allowed for a halo light (Fig 14). In 2013, when the two rooms were revisited and remodelled – the rear room into

Fig 14 Display wall with halo lighting in front room, first floor level, 2008 (see Figs 16–18 for 2013 remodelling of the same room)

Fig 15 Remodelled second floor bathroom retaining original panelling, 2013

an en suite guest bedroom and the front room into a music library – it was extremely easy to remove these installations, re-assign Smart Home services and simply make good the fixing holes.

2013 Remodelling: second floor

These two rooms were in use as a small bedroom and bathroom respectively prior to the 2008 refurbishment and were simply refurbished as such in 2008 when a fitted wardrobe was added to the bedroom, partly to house an air-cooling unit. This is a narrow room of the same size as the entrance hall at ground floor level. It is fully panelled and the missing shutters and original fenestration had been restored in 2008.

The client brief in 2013 was for a full bathroom with a combined bath and shower. As a first step, the fitted wardrobe and air-cooling unit were removed to reveal the repaired, original panelling behind.

It was felt that the new work should completely avoid any interference with the restored historic panelling (Fig 15). To this end a central island of cupboards was introduced, which provided the height for the fixed shower head and against which the bathtub was installed. The room was thus subdivided into two areas with the area nearer the door incorporating a base unit arrangement of cupboards housing an under-counter hand basin and supporting a wall-hung toilet. The mirror over the hand basin was hung from the picture rail, already trailing the perimeter of the room (an earlier installation throughout the house from 2008, painted the same colour as the panelled walls) and a pendant light was installed in front of it, ensuring that its installation avoided the ceiling cornice. The central island incorporated open shelving which allows direct light from the window to reach the other end of the room and provides a view of the street from the hand basin.

All services sit on top of the floor and within the new cabinetry, making the whole installation completely reversible and of minimum interference to the original fabric. Waste is directed to an existing soil and vent pipe housed within an accessible void on the party wall of the adjoining room which was remodelled from a bathroom into a walk-in wardrobe. The two rooms share fan ventilation which reuses that of the previous bathroom in this location. Similarly, the Sky connection to the former bedroom was dropped to the floor below to be used in the new music room.

2014: First floor bathroom

The remodelling of the previous home cinema/media room into an en suite guest bedroom involved the partitioning of the closet wing room and the introduction of a bathroom within it. The partitioning was designed to match the joinery work of the fenestration on the same wall and to avoid interfering with the surviving arched opening. It was felt that this was best achieved by introducing a fixed glazed section in the arched element over the pilasters. The client brief for the bathroom was to have a full bath with shower and shower screen.

There is no surviving panelling in this room but a key consideration of the design was to maintain the idea of a room hosting a bathroom rather than having the bathroom 'take over' the room. To achieve this effect, all the bathroom constituents were introduced

as individual objects. Accordingly, the hand basin ensemble (object 1) was designed as a base unit with a wash bowl placed on top and a wall-fitted mirror above. A pendant light hanging over the basin was carefully positioned to clear the original ceiling cornice. The WC and cistern fittings (object 2) were chosen from a historic reproduction range. The bath, splash-back and shower ensemble (object 3) incorporates a corner glass screen which only attaches to the splash-back, avoiding interference with the existing pilasters and new panelled partition.

All services were incorporated within (slightly projecting) stud walling: in the case of the hand basin, WC/cistern arrangements and heated handrail this was finished in the same colour as the room walls; in the case of the bathtub, the services were concealed behind a book-matched marble splash-back over the bathtub designed to resemble a thick marble slab. Wastes joined the external vertical downpipes installed in 2008, the one from the bath connecting with a run between the floor joists.

2013: First floor music library

This is probably one of the best new interiors in the house, reflecting the client's interest in music and the client brief for the safe storage and enjoyment of a large and ever-expanding collection of music.

The room occupies the full width of the house and was previously used as an informal reception room. It included the back-lit Perspex shelving installations described previously. There is no surviving panelling in this room, save for the window architraves, which extend to the floor and incorporate panelled aprons on three sides, the shutters and their housing units. There is a high skirting board and an elaborate ceiling cornice in plasterwork, both of which are early 19th century.

The library shelving installations are full height and incorporate a library ladder on a horizontal slider which enables easy full height access. They are fitted on three walls with the wall overlooking the street and its fenestration left as original (Fig 16). The music library is housed in 600mm-deep cabinetry on the boundary wall with No 13. A set of base units housing the music system projects forward to allow for ventilation of the electrical equipment. The counter, which is lit by LED pelmet lighting, incorporates a turntable pop-up section and provides space for the speakers. The surrounding cabinets

Fig 16–18 New music library at first floor level, 2013

house vertical pull-outs or horizontal drawers. All of the cabinet doors are fronted with antiqued mirrors, which reflect the room as a complete entity (Fig 17). The installation throughout sits on a skirting which replicates the original high skirting of the room and fronts additional drawers. Meeting the ceiling provided a challenge which was met with the replication of the ceiling cornice (the original remaining unaffected behind). This was carried out by a specialist plasterer.

Additional lighting is provided by three pendant lights made from reclaimed gramophone horns which replace previous ceiling lights and are complemented by floor lamps.

The rest of the library consists of mainly open movable bookshelves. On the long wall section nearest to the fireplace the shelves include a television and two-speaker recess with drawers underneath. Care was taken to have a level transition between the chimney breast and the fitted bookshelves in the alcoves which flank the fireplace and this was achieved using set-backs and projections (Fig 18). The design, colour scheme and finishes accord well with the ambience of the historic house while being easily identifiable as a contemporary intervention.

Principles of Intervention

The work has consistently sought to achieve a combination of scholarly restoration underpinned by in situ observation and detailed research, and new work which remained both contemporary and contextual. Underlying principles included minimum intervention to the original fabric, reversibility of all new work, and freeing the original from inappropriate earlier interventions. Remodelling work was guided by the character and historic finishes of each room to achieve both coherence and a clear distinction between old and new.

Working with listed buildings in projects such as this can be an extraordinary experience. It is also a challenge which requires a high level of technical expertise and understanding of significance and a willingness to work with the rules that listing imposes to create something unique to the building and to each of its rooms. This has to be achieved without diluting what is special about the building or resorting to unsympathetic compartmentation or intervention. The variety of tasks involved, from the design of rooms to the design of services and fitted furniture, is extremely diverse but very rewarding. The building's front façade remains as pristine and authentic today as at the end of its restoration in 2008, as Figure 4 (taken in 2013) testifies. Internally, the house looks better than ever, as it has been remodelled to best suit the needs of the family.

The importance of collaborating successfully with colleagues in statutory authorities cannot be stressed enough and I would like to thank Richard Parish at Historic England (then English Heritage) and Hannah Walker, then a conservation officer with Camden Council, for all their support.

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More images of the 2011–14 remodelling are available online at www.ajbuildingslibrary.co.uk/projects/display/id/7143

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Conservation of the Iron Bridge, Shropshire 1779–2018

JACQUELINE HEATH

The history, construction and conservation of the Iron Bridge, the world's first cast iron bridge, are remarkably well documented and make a broad and fascinating study. Throughout its 240-year life, it seems that each generation caring for the bridge has, perhaps unconsciously, been influenced by the engineering innovations and practices of its time. This has resulted in a chronology of distinct repair approaches and is the context in which the current programme of analysis and conservation should be viewed.

In this current phase, the development of a scheme of conservation works has been based on an understanding of the previous repairs, engineering analysis of the bridge and modern conservation philosophy. The programme comprises repairs to the ironwork, including interventions to cracked radials and repairs to the ends of deck plates (the elements causing most concern) as well as repainting and masonry repairs. Notwithstanding the great deal that is already understood about the bridge, new discoveries and interpretations continue to be made.

Fig 1 The Iron Bridge, Shropshire, upstream, west elevation

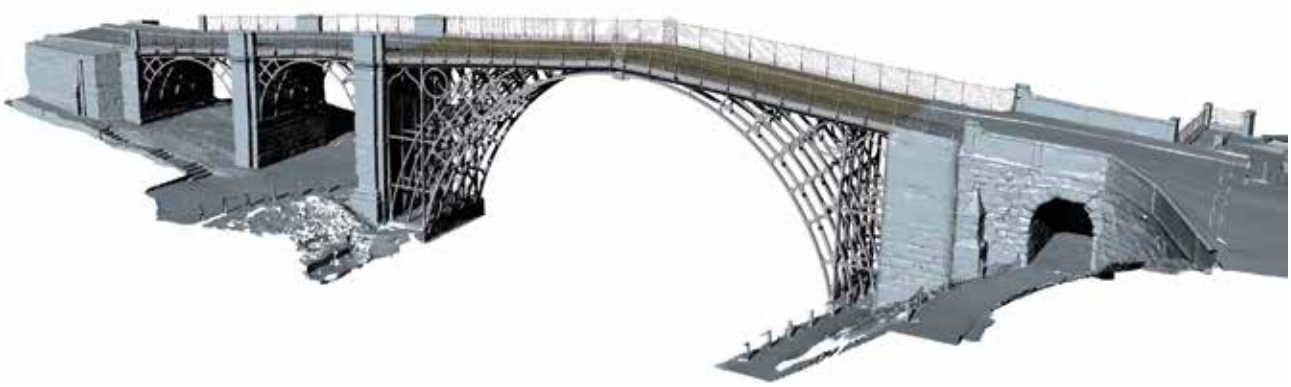

Fig 2 East elevation: originally the bridge was constructed with one river span, the southern two land spans were constructed in 1821–23

Introduction to the Iron Bridge

The first iron bridge was built to showcase the cast iron produced by Abraham Darby III. It was conceived in a letter written in 1773 by West Midlands architect Thomas Farnolls Pritchard but, when he died in 1777, it was up to the ironmaster Darby to deliver the project, at great cost. The ironwork was erected in 1779 and the completed bridge, with a road and abutments, was opened on New Year's Day, 1781 (Fig 1).

The bridge spans the River Severn in Shropshire, where the river flows eastwards, and the town of Ironbridge has grown up to the north of the bridge. Throughout the life of the bridge, gorge instability has caused movement of the valley slopes with consequent damage to the structure.

Today the bridge has a main river arch span, two land spans to the south and a masonry north abutment (Fig 2). James Phillips' engraving of 1782 describes the as-built bridge in some detail and notes a main span of 100 feet and six inches. The structure comprises five frames each with three principal arch ribs, separated by radials. The upper arch ribs and iron uprights support five deck bearer beams upon which cast iron deck plates span across the width of the deck.

The Iron Bridge was scheduled in 1934, Grade I listed by 1983 and inscribed in the Severn Gorge World Heritage Site in 1986.

It is now owned by Telford and Wrekin Council and held in guardianship by English Heritage. In 2011 David de Haan of the Ironbridge Institute produced a comprehensive conservation plan which formed the basis of the current understanding of the bridge and informed the development of specific conservation proposals.

A History of Construction and Conservation

A study of the engineering history of the bridge, charting its defects and repairs, was undertaken in 2013 to inform its structural modelling. Information for this assessment was provided by the conservation plan, other documents held either at English Heritage's Swindon Archive or the Ironbridge Gorge Museum, and site observations. The sequence of construction and conservation interventions can broadly be divided into phases, each defined by a distinct approach:

1777–1801	construction and early repairs
1802–1823	major reconstruction of south end
1824–1901	damage and repairs
1902–1939	inspection and repairs
1940–1971	monitoring and increasing concern
1972–1980	major structural intervention
1981–2011	research, investigation and study
2012–2018	developing and implementing the current phase of conservation based on the conservation plan and engineering analysis (see sections entitled 'Current Engineering Assessment' and 'Conservation Proposals' below).

In the 20th and 21st centuries significant interventions took place at intervals of several decades (1902, 1923–6, 1973–4, 2017–18).

1777–1801 Construction and Early Repairs

Our understanding of the method of the bridge's construction was changed as recently as 1997 by the discovery in a Stockholm museum of a small watercolour by a Swedish professor of art, Elias Martin ARA (1739–1818), who lived in Britain in 1770–82, touring and painting its landscapes.

Fig 3 The Iron Bridge during construction (Elias Martin, 1779)

It is the only known painting of the bridge under construction (Fig 3), with other evidence coming from day books recording construction, a half-size reconstruction by BBC TV *Timewatch* in 2001 based on the Martin painting, and observations and recording of the bridge itself. It seems that construction began with the inner uprights and main lower arch ribs for all five frames, followed by the addition of the middle and upper ribs with some radials before the deck bearer beams were added (Fig 4). The bottom section of the upper rib was not inserted until 1791, and ultrasound testing by the Ironbridge Gorge Museum in 1996 revealed that these members are the only hollow sections on the bridge.

Originally there was only a single arch (Fig 5) spanning the river with abutments, which were built in 1779–1780 to the north and south.

1802–1823 Major Reconstruction of South End

From as early as 1784 cracks were noted in the south abutment. In 1801 engineer Thomas Thomas[1] measured the main span (although how he measured it is not recorded) and reported that both abutments had moved and elements of the ironwork had cracked. In the same year the trustees of the Iron Bridge considered a proposal by Henry Williams[2] to insert an underwater timber strut to restrain the inward movement of the structure resulting from that of the gorge. On this occasion the idea was rejected on account of insurmountable difficulties

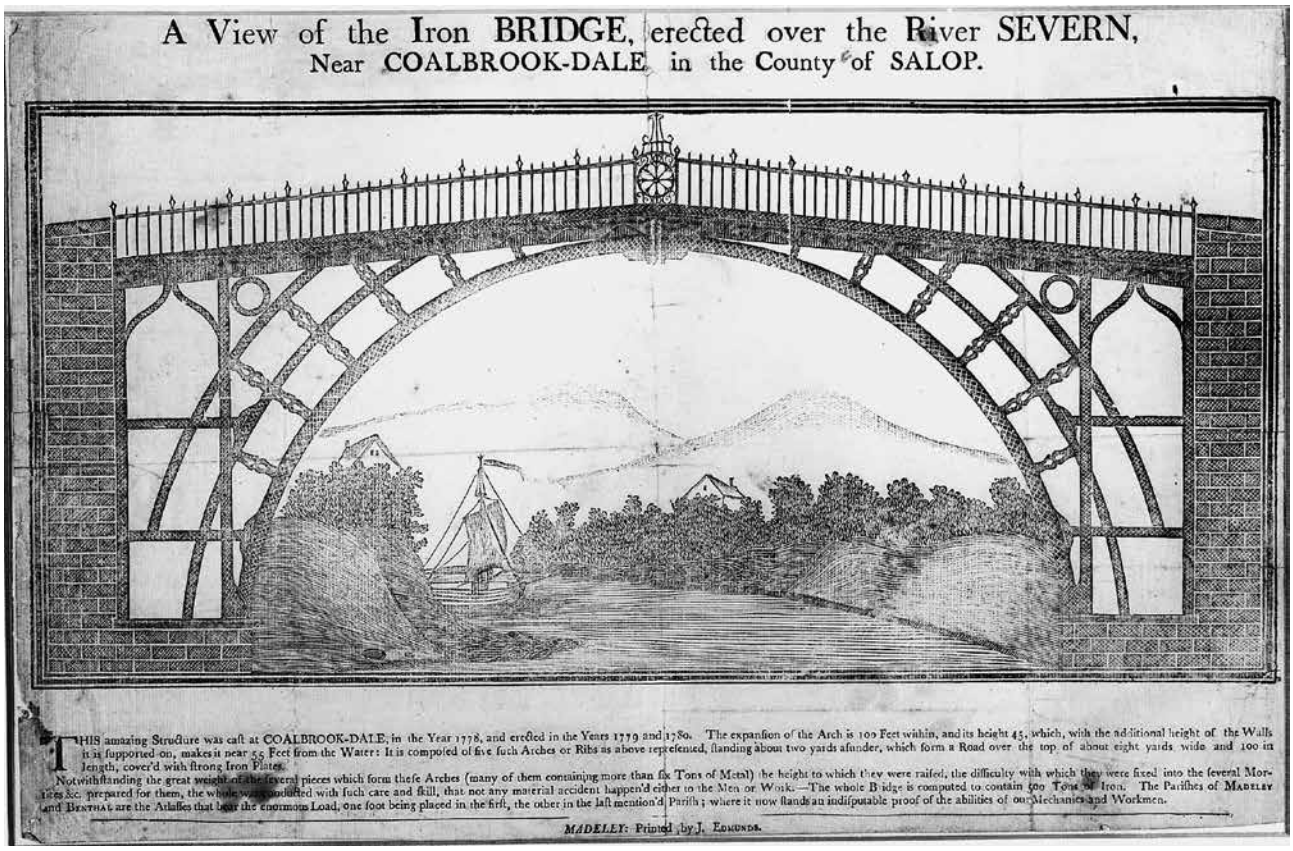

Fig 4 Woodcut by J Edmunds (1780): the missing bottom sections of the outer ribs were not added until 1791

Fig 5 William Williams' 1780 depiction (detail) of the east elevation, showing the original bridge and south abutment, before the two south arches were built

with the driving of timber piles and instead the south abutment was removed and replaced with two timber lattice beams spanning between masonry piers. By the time the masonry piers were built, the outer uprights of the main arch had already moved and the pier was built around the uprights which had become out-of-plumb. In 1821–23 the timber structure was replaced with the two existing cast iron arch spans.

1824–1901 Damage and Repairs

Throughout the 19th century there were a number of significant repairs, including insertion of plates and additional beams, to the southern land arches in 1845, 1861 and 1879. It appears that the south arches act as a fuse absorbing the effects of the ground movement and reducing damage to the south side of the main span. Photographs from later in the 19th century show damage to the main span, including cracking of radials on the north side of the river.

1902–1939 Inspection and Repairs

Documentation of inspection and repair of the bridge improved in the 20th century, starting in 1902 with the work of Sir Benjamin Baker KCB KCMG FRS FRSE (1840–1907) who, together with Sir John Fowler, had built the Metropolitan Railway in London in 1863 and the Forth Bridge in 1882. President of the Institution of Civil Engineers in 1895, Baker was already an eminent engineer when commissioned to survey the Iron Bridge. Although his report cannot be found, a drawing by the Coalbrookdale Company exists which shows the fabrication of steel straps and cast iron blocks to restrain the feet of the inner uprights. These additions, together with replacement ends to the deck plates and splints to the diagonal bracing of uprights on the south side of the river, were installed by the company in 1902 (Fig 6).

A generation later, Sir Basil Mott FRS (of Mott, Hay and Anderson) inspected the bridge. His report survives but refers to calculations which unfortunately do not. At this time the bridge was not painted but it was noted to be 'in excellent condition with very little rust'. However, the report continues:

The stresses in the cast iron girders and arches have been calculated and the result is unfortunately far from satisfactory, particularly in the two small spans forming the Southern Approach. Without any live load at all the tension in the cast iron is, in our opinion, dangerously high and there is some risk in using the bridge for any vehicular traffic in its

Fig 6 South bank showing horizontal strap just above the feet of the uprights and splint to diagonal bracing, both added following Sir Benjamin Baker's inspection in 1902

present condition. We are aware that the Bridge has been utilised for traffic for a long time and that no accident has happened so far, but the fact remains that it is not really safe.

Mott recognised the significance of the structure and concisely states his conservation strategy: 'It would be regrettable if anything were done in the way of strengthening and repairs which would depreciate the historic value of this interesting bridge'. He recommended that the bridge should be temporarily closed to traffic and crowds, that the thickness of the roadway fill should be reduced to one foot and that five-foot-wide footways should be built to reduce the road width (Fig 7). Traffic continued but raised kerbs and footways were installed later that year, 1923.

In 1926 Luther Griffiths, the bridge trustees' surveyor, carried out an inspection from a scaffold resulting in the installation of a number of ironwork repairs including saddles (Fig 8), which were added on the top of uprights to support fractured deck bearers, and additional straps to reinforce lateral bracing between the frames. He also measured the main span seven times between 1927 and 1934 and noted a ½ inch reduction on the upstream span and a ¼ inch reduction on the downstream span.

The bridge was finally closed to traffic in 1934 when there was concern about an increase in

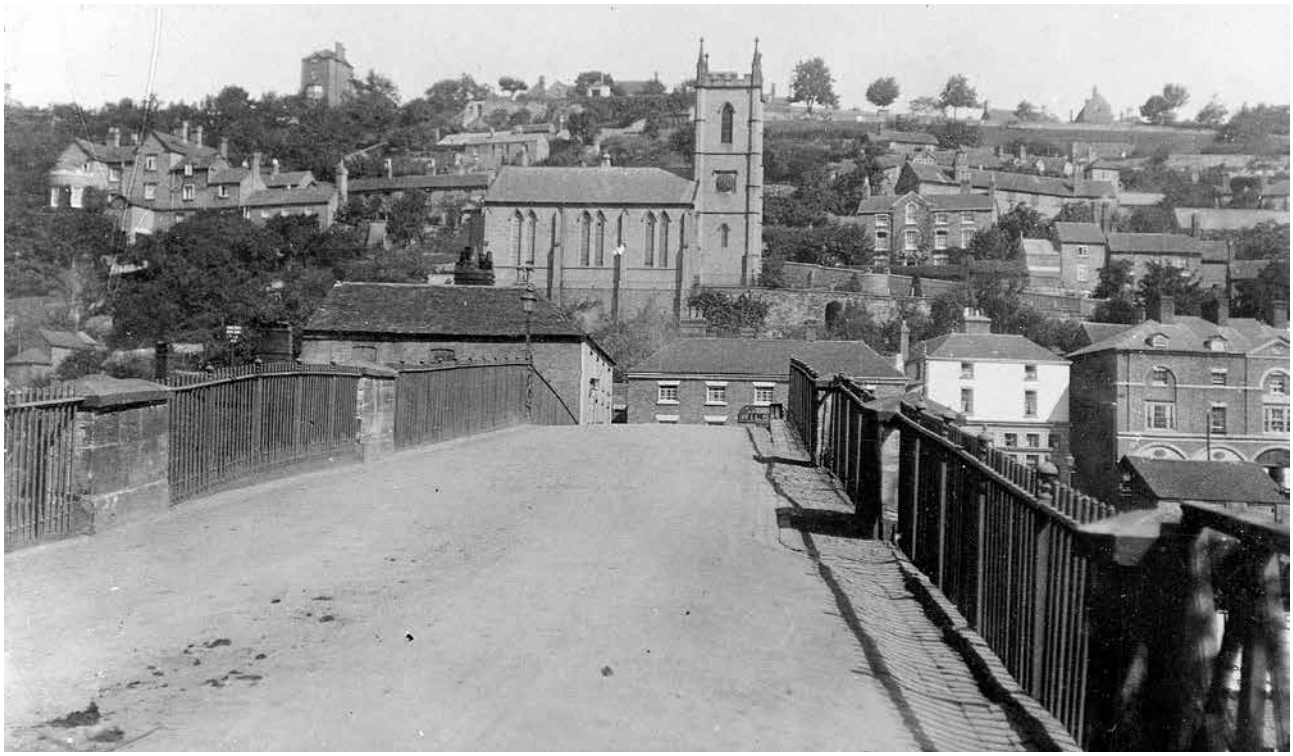

Fig 7 The roadway c1920 without footpath

Fig 8 Saddles added at the top of the uprights to support the cracked bearers in 1927, following recommendations by the bridge trustees' surveyor Luther Griffiths, and missing deck plate end

industrial vehicles crossing the bridge carrying roof tiles for homes built as part of a 1930s housing boom. In 1937 there was even the suggestion that a replacement steel bridge be built alongside the existing bridge for vehicles.

1940–1971 Monitoring and Increasing Concern

Throughout the 20th century monitoring of the main span was undertaken, starting with Griffiths and continuing from 1948 with annual measurements by Shropshire County Council, which involved stretching a tape across the span. They all showed continuous and considerable inward movement. Condition surveys were undertaken in 1948 and 1961 and the number of cracked radials increased throughout this period. There was much debate between the council and government departments about what should be done to mitigate the seemingly inevitable crushing of the bridge, either by resisting the earth pressures or by isolating the bridge from them. Anthony Blackwall[3] notes that at that time:

The precise analysis of the distribution of stress among the various members making up the arch would be a highly complex and time-consuming operation and rather beyond the resources available… Maybe one day it will be undertaken…

Engineers Sandford Fawcett, Wilton and Bell were appointed in the mid-1960s and explored a variety of potential solutions, all of which involved major interventions. Ideas included demolition of the south arches and reconstruction of the abutment, securing the abutments with ground anchors, freeing one of the arch springings or strutting the abutments apart.

1972–1980 Major Structural Intervention

This monitoring and mounting concern resulted in interventions in the 1970s. In 1972 the fill was removed from the north abutment, reducing dead weight and making the abutment hollow. Then in 1973 and 1974 (200 years after it was first suggested), a reinforced concrete slab was cast across the river

bed between the two bridge abutments with heavily reinforced facing walls rising up the face of the abutments, to resist the movement of the gorge landslides. This phase of work was completed in 1980 when Ian Hume, then Chief Engineer at English Heritage, oversaw the complete scaffolding of the bridge, wet sand blasting of the cast iron, photographing (as part of a condition survey and archaeological investigation), repairs to railings and other ironwork, and repainting (after 30 years) with five coats. These works are described in *Transactions* Volume 5.

1981–2011 Research, Investigation and Further Study

Since its bicentenary, further research and study of the bridge have continued. The start of the 21st century saw another repainting, strengthening of railings with carbon fibre, an underwater inspection of the concrete strut and photogrammetric recording of the bridge by English Heritage. It seemed that in 2009, when a roped access inspection was done, the cracking of radials had virtually ceased but the cracks were numerous and substantial. In 2011 investigation and replacement of iron wedges along the west side of the bridge, which secure the ribs laterally to the deck plates, were undertaken by English Heritage.

Current Engineering Assessment

In 2012 a laser scan was carried out by APR Services as a precursor to the engineering analysis. This survey was undertaken using a Faro Focus scanner from 162 positions to scan the bridge, and a Riegl VZ-400 laser scanner at 47 locations to scan the surroundings and capture 1.1 billion xyz cloud points to an accuracy of 3mm. Extending booms were used to gain good scan coverage under the bridge. Now, four years on, unmanned aerial vehicles (drones) may be used, and in the future other techniques are likely to be available. Generally, the scanning produced excellent results with just a little shadowing. The point cloud, dots in space, was then used to create a 3D surface or 'cloak' using software such as Rhinoceros and point tool plugins.

From this, a 3D solid finite element model was created. 3D solid element modelling was used instead of 3D line beams so that variation in properties across the depth of each cast iron member could be modelled. For example, some elements have a very porous surface where the air bubbled up through the molten iron during casting. The point cloud data allowed desktop inspection of elements that are difficult to see from the river bank, even with binoculars. It was used in combination with photographs of the bare metal taken in 1980 and historical records of previous repairs to model cracks, defects and repairs realistically by, for example, varying material stiffness. In this way an analysis model, accurately reflecting both the complex geometry of the deformation of the basic arch form due to the movement of the gorge and the actual condition of elements, was created and the bridge assessed for loads from vehicles, temperature variation and boat collision in flood conditions.

This advanced engineering analysis, which is far more detailed than traditional methods, has significantly enhanced our understanding of the engineering behaviours of this pioneering structure. The current phase of conservation work is distinguished from any previously possible by a combination of access to an accurate record of the structure's geometry, an unprecedented ability to model defects and material variability, and a resulting analytical confidence which enables minimum intervention.

The analysis concluded that a live load of 3kN/m^2 is permissible and, while it is not recommended to open the bridge to traffic, two cars or an occasional maintenance vehicle including a small underbridge unit on spreader plates, are permissible. This, together with the fact that the bridge is able to support a maintenance scaffold with further checks, gives English Heritage much greater scope for inspecting and maintaining the bridge without the need to erect a free-standing scaffold. The information was presented in a four-page illustrated loading guide written in plain English to supplement the detailed technical reports.

Another use for the point cloud and geometrical model is as a repository for information, a building information model. Historic England is carrying out further research to explore how this can best be implemented.

Radials and Geometry: Some Incidental Insights

The change in geometry of the bridge due to the ground movement was traditionally measured with

a tape, a chain or a theodolite and latterly with a Total Station. Accurate measurement of the span from examination of the point cloud data indicates that this dimension is currently 30.093m, the result of 540mm of movement from the original 100 feet and six inches (30.632m). In addition, it shows clearly that the south side of the arch remains a circular arc with its original radius, whereas the north side has deformed from a true circular arc to accommodate this movement. This movement has caused the cracking of radials on the north side.

Detailed study of the geometry of the radials has shown that radials that are nominally identical actually have different sizes and shapes (Fig 9). In conjunction with an archaeological study in 2002, which identified that some radials were open-cast and some were cast in a two-part, closed flask mould, this gives more evidence about the details of construction.

Conservation Proposals

Considerable work was required to take the recommendations from the conservation plan and the desk study, engineering analysis and assessment and develop them into options for repair, maintenance, inspection and monitoring for implementation as part of the ongoing management of the bridge. Although the bridge has adequate structural capacity, works are required to prevent loss of historic fabric, minimise damage from further corrosion and ensure continued integrity and durability.

A conservation strategy, based on (then) English Heritage's *Conservation Principles* (2008) was declared from the outset incorporating core principles of understanding, minimum intervention, durability and reversibility. Solutions, developed from an assessment of options, were to be honest yet subtle, sympathetic and of high quality. Any harm was to be identified and mitigated and, above all, the design and works were to be appropriately recorded at every stage.

Initially, recommendations were prioritised. Then, different repair options for each defect were assessed against the conservation criteria and site constraints and a recommendation was made with an outline scope and specification. The number of repairs was then considered by English Heritage which, as guardian of the asset, determined the extent of the works. The programme of conservation to be implemented in 2017/18 is described below.

Fig 9 Radials of varying shapes and sizes

Radials

The engineering assessment of the bridge in its current condition showed that it is not necessary to reinstate cracked radials, and indeed it could be harmful to secure them at both ends where they have cracked and released stress because the arch ribs have moved, particularly on the north bank. However, six radials in the north quadrant have cracked at both ends and are at risk of disconnecting and falling, so doing nothing was not a valid option and it was proposed to reconnect them at one end. This could be done by using cold stitching techniques, or using steel, spheroidal graphite (SG) iron or carbon fibre plates, or by inserting dowels, wire ties or netting, or even by using adhesive.

After review of the advantages and disadvantages of each option, it was recommended that trapezoidal SG iron plates (approximately 30mm thick) should be used to connect one end of a radial back to the arch rib. There are many precedents for using bolted plates to repair the bridge and modern SG iron is the preferred material as it closely matches Darby's cast iron but has high tensile strength, and casting will minimise the need for packing plates.

1902 Lower Strap Repair

The lower straps at the feet of the inner uprights comprise cast iron spacer blocks between each upright together with steel straps around the outside and U-shaped straps looping around the upstream and downstream uprights, fixed about 450mm above the base plates to restrain the feet of the inner verticals (Fig 10). Both square-headed and hex-headed bolts and nuts are used and there is a tapered cotter pin to tighten the arrangement. In situ inspection indicated that these cast iron elements were in reasonable condition and could be retained. However, considerable crevice corrosion had occurred to the steel straps, particularly at interfaces where water has become trapped and the consequent jacking has caused the straps to buckle.

A range of options was considered for the cast iron blocks: doing nothing; a light clean with a non-ferrous brush and water washing; a deep clean back to bare metal with ultra-high pressure cleaning; dry or wet blast cleaning with garnet or other non-ferrous aggregate; or even replacement of the cast iron blocks. For the steel elements the options considered were: retaining, cleaning and painting the existing straps; replacing the damaged ones with mild or stainless steel straps; or retaining the existing straps splinted with additional ones. Bolts could be reused or replaced with bolts of a similar age or new bespoke bolts could be fabricated to replicate the existing ones.

Fig 10 Photo of south bank steel straps and cast iron blocks installed after inspection by Sir Benjamin Baker in 1902 to restrain the feet of the uprights

The recommendation was to retain the cast iron blocks in situ with a light clean and paint, remove the steel straps and clean and inspect them prior to reuse where possible and replace the others with matching mild steel painted straps. Again the existing bolts will be reused where possible and otherwise replaced with new bespoke bolts.

Deck Plate Ends

Over the main span, there are 40 flat cast iron deck plates, each measuring 28 feet x 3 feet x 1½ inches. The deck plates span across the width of the bridge,

over the five deck bearer beams and then cantilever beyond the outer deck bearers to support the railings. Close to the end of each deck plate a vertical lobe, cast integrally with the plate, projects down from the plate and is visible adjacent to the outside face of the outer bearers. Each cantilevering deck plate end is supported by a cyma recta lower bracket which is socketed into the vertical downstand lobe (Fig 8).

Vertical wedges pass through the deck plates on each side of the internal deck bearer beams (and on one side of the outer beams) to restrain the deck bearers from lateral buckling.

The deck plates that span over the width of the two southern 1820s arches have a much simpler detail at their ends. Each deck plate has an upstand flange along its long edges, forming a U-shaped tray which cantilevers at the ends and negates the need for downstand lobes or brackets.

The deck plates over the main span were first recorded as having suffered from damage when a length of railings and plate ends broke off and fell into the river in 1902 after the excavation of a water main. Sir Benjamin Baker designed replacement plate ends that were bolted to the remaining plate in such a way that it is only possible to see the bolt heads from careful inspection under the bridge and from this identify which plates have been replaced. This is a good example of a sympathetic repair which is honest yet subtle.

A roped access inspection in 2009 recorded damage to the main span deck plate ends including plates that had cracked and broken off, broken downstand lobes and missing lower brackets. To define the scope and extent of repair works to the deck plate ends in more detail and reduce the risk to programme and method, another roped access inspection within touching distance of the plates was carried out as part of the current works in February 2016 by Vertical Technology Ltd (Fig 11). The ring of the metal was also checked to identify hidden cracks. This showed that the two land spans were in better condition than the main river span, that the upstream and downstream sides of the bridge were in similar condition and that many lobes had corroded and lost significant thickness. A detailed schedule and photographic record of the condition of each plate end were made.

From this record a repair schedule can be developed applying a variety of repair types to damaged plates. For example, where deck plate ends are missing they will be repaired using the same detail used in 1902 (Fig 12), which comprises a deck end plate and downstand lobe bolted back to the remaining plate. Similarly, where lobes have broken off they will be repaired in the same way as previous repairs by bolting a plate to the face of the bearer with a new lobe and socket for the cyma recta bracket fixed to it. In addition, corroded lobes will be jet washed clean and then repainted.

Fig 11 Roped access inspection being undertaken by Vertical Technology Ltd

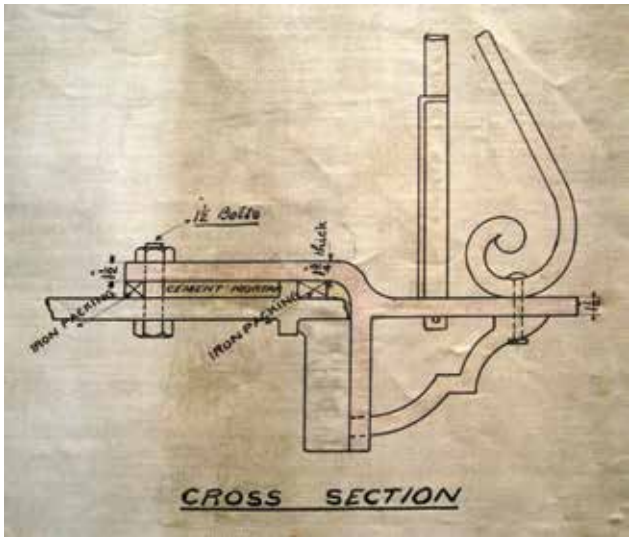

Fig 12 1902 deck plate end repair

Deck Plates

Seven trial holes (Fig 13) were excavated under close archaeological supervision in February 2016 to examine the condition of the deck plates, their waterproofing and the caulking between plates. Scheduled monument consent was applied for by English Heritage and approved by Historic England and the excavations were recorded by the Archaeological Unit of Ironbridge Gorge Museum Trust.

Fig 13 Trial hole investigations showing upstand to deck plates at right angles below the service pipes

The investigation revealed that the plates were generally in good condition. There had been concern about the risk of water ponding against the upstands along the edges of the deck plates over the south spans but these proved to be sound with little corrosion. By chance, at the area of one investigation, small notches (approximately 15mm square) were discovered on the vertical face of the upstands (Fig 14). It is thought that these may have been used for lifting the plates into place, a task which, given their length and weight, must have been challenging. The waterproofing of the plates, installed in 1975, was also in sound condition and there is no need to remove it; it needs only local patching. Between the plates the caulking was a black fine granular material, probably iron cement (a mixture of iron filings and ammonium chloride), which will be verified by testing. After careful consideration it was concluded that there is no advantage in removing this material.

Other Repairs

This paper cannot include all the proposed works, but some of the other repairs are worthy of mention. Two cast curved members, ogees, in the north quadrant adjacent to the circles, were replaced as part of the 1927 works with thin steel members and these

Fig 14 South span deck plate upstands with small notch, possibly for lifting plates into place

had buckled by 1972. It is proposed that these should be replaced with SG iron of the original dimensions.

The deck wedges either side of the deck bearers hold the deck plates in position and therefore enable the deck to provide restraints against the buckling of the deck bearers. However, many wedges have been found to be missing or ineffective. English Heritage replaced wedges for the upstream frame in 2011 and it is proposed that the method developed then should be applied again to replace ineffective wedges on the other four frames. Timber templates of each wedge should be prepared and then bespoke wedges will be forged on site by a blacksmith.

There are six original cast iron spacers between the main arch ribs at low, mid and high level on each side of the river. In 1926 further horizontal steel straps were added (Fig 15). Each strap is formed in two lengths of steel connected together at the middle frame with Whitworth bolts and nuts and clasped around the lower ribs on the outer frames and tensioned with threaded bolts. These are critical struts and straps to restrain the ribs against sideways buckling. If the bolts are missing the straps will be ineffective, so it is important that these bolts are checked and tightened or replaced if they are missing. Following this, all the bolts on the bridge should be checked.

The south span arches (Fig 16) will be inspected and the gusset plate repairs will be repaired where they have corroded, cracked or become ineffective.

To complete the proposed conservation works it will be necessary to provide access from a scaffold and this will enable a full repainting of the bridge (last done nearly 20 years ago). This is a major undertaking and the scaffold will require sophisticated design to allow access to all parts of the structure. Local masonry repairs will be carried out where scaffold access is possible.

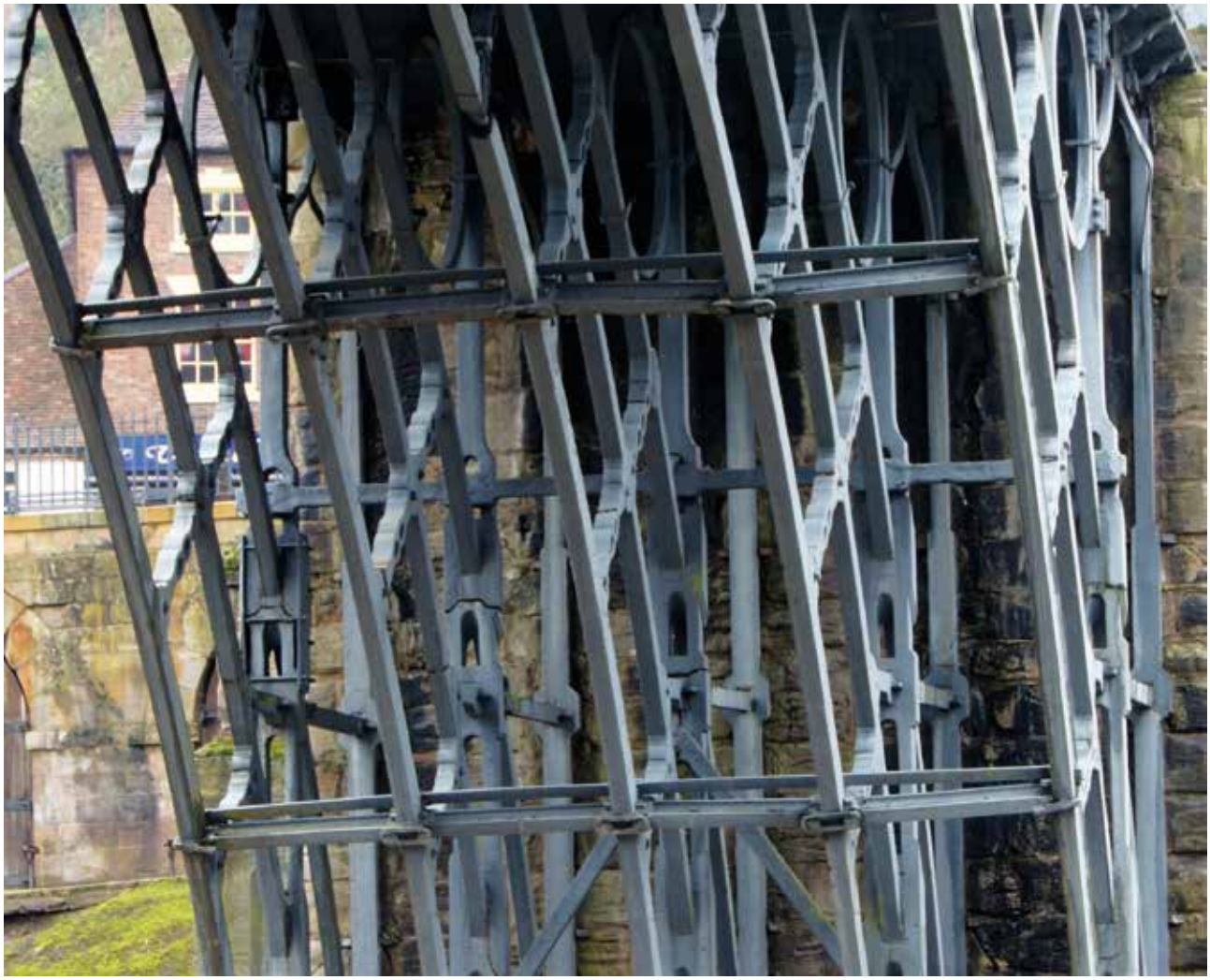

Fig 15 North bank rib bracing showing original cast iron spacers and 1926 steel straps

Fig 16 South span showing cracked ribs, gusset plates and inserted beams

Finally, it was decided not to relocate gas and water mains that cross the bridge in the footways because this is a major and costly undertaking. The raised footways, although not original, will be retained because they provide cover to the services. It is proposed, however, to replace the current golden bound gravel road surfacing with a more appropriate material to complete the works.

A regime of regular general, principal and special inspections and monitoring has been proposed to inform future phases of conservation.

Conclusion

Although iconic and in some ways very elegant, the bridge is fundamentally an engineering structure. From the start it was a pioneering structure on a difficult site. It had design flaws, its form being less than optimum, but it has redundancy (resilience due to extra members) which has proven vital in enabling the bridge to withstand substantial ground movement and major cracking.

One notable incidental benefit of the long-recognised importance of the bridge is the extent to which observations and interventions have been documented. When reviewed at a later time, many of the records tell us more than the writer or artist may have originally intended. There is an interesting parallel here with the principle that work to historic structures should be reversible in case future generations have better ideas: our records of work to historic structures should be thorough and detailed in case future generations can better interpret them.

There are distinct periods in the bridge's history that reflect the pre-eminence of particular technological innovations of the time: for example, early cast iron construction, or the workmanlike cast iron and steel repairs of the 19th century, which are nevertheless high quality, of sympathetic materials and honest yet subtle. Throughout the 20th century, inspection, monitoring, engineering assessment and concern about continuing gorge movement and cracking of radials were dominant themes. This led to major civil engineering works using heavy plant to install a concrete strut in the river and a concrete box in the north abutments.

Our current generation brings the ability to undertake detailed engineering analysis which is a powerful tool in conservation, minimising the need for intervention. In this case no major structural intervention is proposed, merely relatively minor work to retain fabric, prevent further damage and enhance durability – more good conservation maintenance than major intervention. This is appropriate given that we are just part of another phase in the life of this important bridge.

Acknowledgements

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The project was led by colleagues at Ramboll: James Miller, Gary Willis and Carl Brookes, with whom the work described in this paper was completed. Thanks to our client Ann Towers, National Project Manager at English Heritage and for valuable advice from Heather Sebire, Bill Klemperer, Stuart Ellis and Toby Murphy of Historic England. The author is grateful to David de Haan who generously shared his unrivalled knowledge of the bridge during this project.

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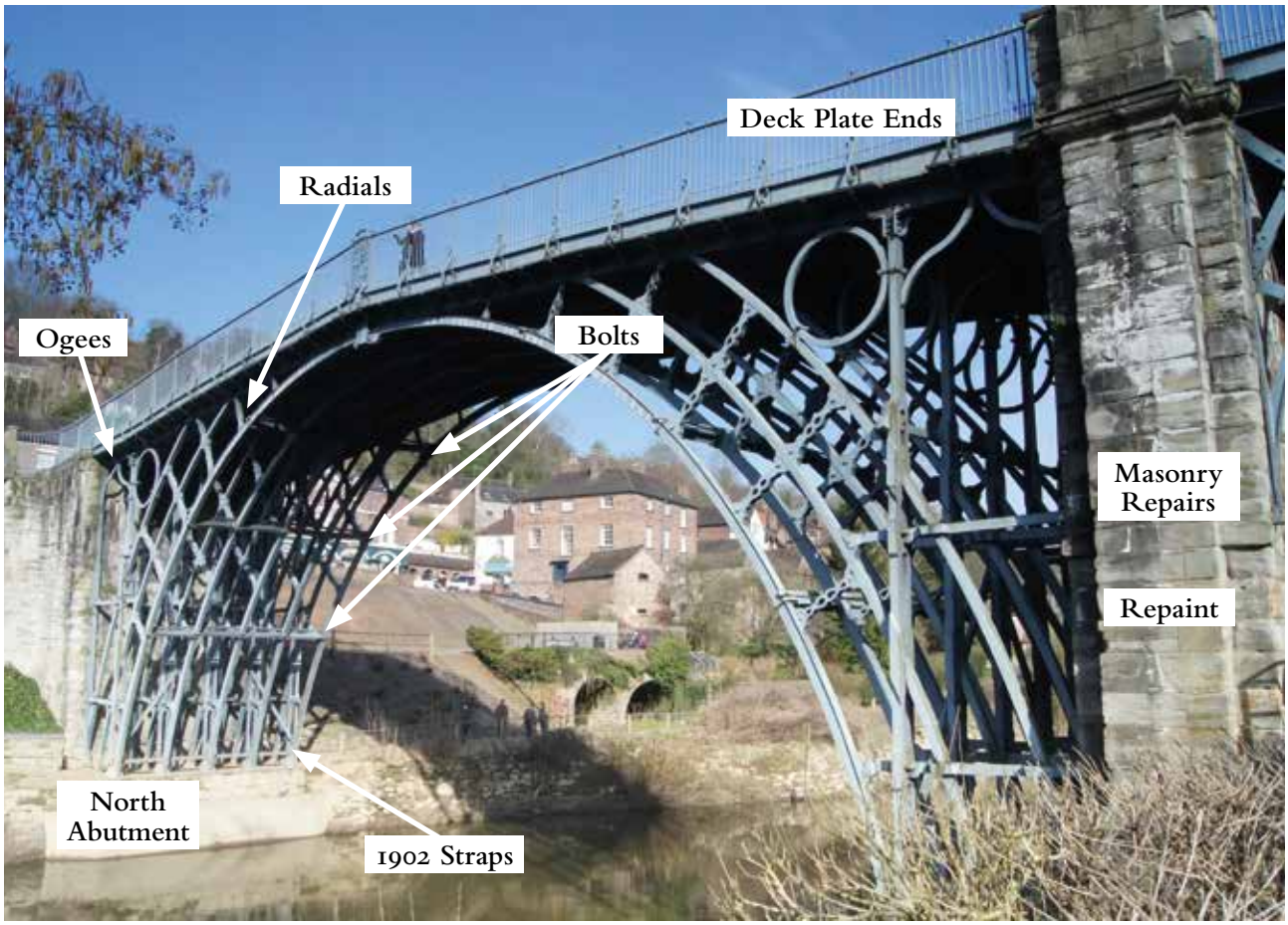

Fig 17 The scope of other proposed works to the main span, 2016–18

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Notes

1 Thomas was an engineer who probably designed the Swinney corn mill at Coalport (about two miles downstream from the bridge). In 1806 he also supervised the construction of two bridges designed by William Jessop for the Bristol Dock Company.

2 Henry Williams of Ketley was formerly a steam engine erector for Boulton and Watt. From 1794 to 1839 he was superintendent and agent for the Shropshire Canal, which was designed by William Reynolds and William Jessop and connected into the River Severn. William Reynolds was the son of Richard Reynolds to whom Abraham Darby III had been apprenticed before he took over the Coalbrookdale Foundry aged 18.

3 Anthony Blackwall, Head of Bridges at Shropshire County Council from 1955, records this period in detail in the appendix to his book *Historic Bridges of Shropshire*.

Jane Fawcett: Protector of Buildings and Landscapes

Roger France

On 21 May 2016 Jane Fawcett died aged 95. For some 40 years she was active in the conservation of historic buildings and sites in several ways. The following is an appreciation of her contribution in this realm, taken from an address given by the author at a memorial service on 30 July 2016 at Petersham, London.

Fig 1 Jane Fawcett at Bletchley Park in 2014 during a visit by HRH The Duchess of Cambridge

Some aspects of Jane Fawcett's early life have already appeared in books and newspapers. What might we speculate about their influences on her later life? From some press reports we learn that as a teenager at Miss Ironside's school she was trained in good manners: certainly, learning how to assimilate with others is an important skill in life, especially when dealing with difficult customers. Some will argue that she developed this to a considerable extent, ensuring that she got her own way: many will remember her for this.

Her father George was Clerk of the Goldsmith's Company for a time so she would have been familiar with Philip Hardwick's wonderfully rich interior of 1835. Here, in her 20s, she had a close acquaintance with Victorian architecture. She was educated privately before the war and spent a year in Switzerland learning German. Her wartime years were spent at the code-breaking centre Bletchley Park, after which she married Edward, a naval officer who later became Head of Membership at the National Trust.

After the war and with the children beyond their time in prams, a well-wisher suggested that Jane

might apply for the post of secretary of the recently formed Victorian Society. The society was then under the chairmanship of Sir Nikolaus Pevsner, and Jane believed that she was chosen because Pevsner felt that she would mix more easily in the realms of academia, government and the varied social structure of the time. It was at this moment that her life in architecture and landscapes began. It is a life that can best be understood as one of chapters: sometimes sequential, sometimes overlapping.

Chapter one starts in the year 1963. Just up the road from Pevsner's Bloomsbury office, the bulldozers had been knocking down an arch. Not any old arch, though: the Doric propylæum for Euston Station designed by none other than Philip Hardwick. What more poignant message could there have been for this new secretary of the society? A different kind of war was in progress and it would involve many battles.

Initially the society's office had to operate from the Fawcett family home. Later, Jane found some accommodation in Exhibition Road before the office moved to run-down premises in Bedford Park, its present home. Jane was the workhorse that enabled the society's membership to grow: she evolved an effective committee structure, and there was always the need to appeal for money. It was a role which required continual multi-tasking.

Casework on listed building consents grew spectacularly. Of the cases which became battles, two are particularly notable. First, St Pancras. By 1963 British Rail had announced its intention to redevelop the Midland Grand Hotel (Fig 2) and train shed at St Pancras. Jane spearheaded the society's arguments to the minister for upgrading the then Grade III listed building to Grade I. In 1967 this argument was accepted, and she regarded this as one of her most satisfying involvements. Second, in 1966 a public inquiry was held to test the validity of a gargantuan scheme of redevelopment along the north side of Parliament Square. Many fine buildings would have been lost, including the Foreign Office by George Gilbert Scott and Matthew Digby Wyatt. Jane presented the case for the Victorian Society. Mercifully, the proposals were abandoned.

Her time at the Victorian Society came to an end in 1976, at which point she was elected an Honorary Fellow of the Royal Institute of British Architects.

Fig 2 Interior detail showing the iron balustrades of the grand staircase in the Midland Grand Hotel, St Pancras Station, London (taken 1960–1972)

Chapter two concerns her life in publications. *The Future of the Past* appeared in May 1976. It is a compendium of essays by a range of interesting figures who were exploring attitudes to conservation – those underlying standpoints upon which we base our understanding and our reasons for action. (This was in the days when judgements on design relied on government circulars and before the issue of the British Standard.) Jane acted as co-ordinating editor and her own essay on changes to cathedrals in the 19th century accompanied Mark Girouard's on changes to country houses. This was her first published work and the footnotes reveal a considerable amount of searching into primary sources.

Also published in 1976, *Save the City* was a series of essays arguing for better protection of the character of London's 'square mile'. Jane contributed an essay on the Bow Lane and Queenhithe area. Here it is possible to detect her early appreciation of urban design: the shapes of spaces and the dynamics of townscape. Although she was only one member of the editing team, it was Jane who ensured that four national amenity societies were partners in the publication. *Seven Victorian Architects* appeared in January 1977. It is a collection of essays by distinguished contemporary scholars and is probably the first compendium of significant 19th-century architects that is both scholarly and readable as far as the general public is concerned. Here, Jane was co-ordinating editor.

A decade later came *The Village in History* (1988), authored jointly with Graham Nicholson. She wrote the short second part which is a gazetteer of some 130 villages, many of which the National Trust has some interest in. The book highlights the fact that villages are settlements that are complementary to the landscapes in which they are set, evolving out of the social and economic dynamics of their times. Her last and most illustrious edited publication was *Historic Floors* (1998), a work that took her a decade to compile. It is a beautiful volume, Sir Bernard Feilden observing that it was long overdue. It derives from her work at the UK branch of the International Council on Monuments and Sites (ICOMOS-UK) and she contributed two lengthy chapters herself, one on types of flooring and the other on public buildings. Where publications are concerned, Jane was more often the person who identified topics and talents and brought them together: in this sense she was a great enabler.

Chapter three in Jane's life in architecture is represented by her time as secretary of ICOMOS-UK from 1983 to 1992. As with many organisations in the British voluntary sector, it had an inauspicious beginning in a lecturer's tiny office at the Architectural Association (AA). Tina Murdoch – now Lady Feilden – helped out at the time and recalls how it started almost as a filing cabinet with worthies like Ian Bristow, Ted Fawcett (Jane's husband), Jane and Tina all coming in and out like characters in an Ayckbourn comedy. Jane sought out a proper office space in Barley Mow Passage, Chiswick. At ICOMOS-UK she helped to develop interest in the floors of cathedrals and authored its *Floor Damage Survey* of 1991 (leading to her *Historic Floors* book). She also developed the organisation's consultative role on world heritage sites. In this realm the relation of individual buildings to their landscape settings was crucial, and it is here that her interest in landscapes came to fruition.

The last chapter in Jane Fawcett's architectural life concerned education. Having completed her contribution for *Save the City* in 1975, she asked my opinion as to whether she should apply for a course in urban design. As I had some involvement with the Conference on Training in Architectural Conservation (COTAC) at that time, I advised her to apply for the new course just set up at the AA where Reg Wood, formerly Chief Architect to the Church Commissioners, was the course director. She applied and was accepted.

When she finished her two years of study, the post of second year tutor became vacant. She applied and the rest is history. It is possible to see her work here as the longest and perhaps the most creative period of her life in architecture, for she continued as a tutor there for 20 years and taught some 300 students.

In these varied activities Jane was rooted in the voluntary sector, which continues to be the instigator and monitor of environmental protection, sandwiched as it is between the crude commercialism that exists in the realm of property development and those bureaucracies that favour the narrowly economic over the social and environmental. Within this sector and over some 40 years she engaged her sense of the value of the past with a considerable determination to make protection effective. Without the benefit of a formal qualification in architectural history, she is probably unique in having been an executive who built up two significant organisations, the editor of several publications and a teacher.

Any account of her achievement would be incomplete without mention of her husband Ted who was well known in the realm of garden history. They travelled side by side in conservation and in the mutual support they showed for each other in their interests and in their private lives. It was a remarkable partnership, one to which these few words can scarcely do justice.

Jane died peacefully surrounded by her family. Her mental fight – to use William Blake's phrase – has now ceased. But her war continues: her example should be our inspiration.

Acknowledgements

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