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Persistence, Inertia, Adaptation and Life Cycle: Applying Urban Morphological Ideas to Conceptualise Sustainable City-Centre Change

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Abstract

Consideration of the speed and scale of change of urban forms has a long history in urban morphological thought. Buildings and forms that persist in the urban landscape through inertia or, more positively, deliberate decisions to retain them create character and – a more recent argument – contribute to sustainability not least in their embedded energy. This paper explores issues of the persistence and adaptation of some urban forms, focusing on the central business district of Birmingham, UK. Much of this is now protected as a conservation area, and some of its forms have persisted for centuries. Yet there have been periods of rapid change, and we examine the extent of change following Second World War bomb damage. This allows discussion of the dynamics of change and the agents and agencies responsible for producing new urban forms or

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retaining existing ones; and this informs exploration of the potential contribution of longevity of form to sustainability. The rapid recycling of some structures, after only a couple of decades, may be very unsustainable – impracticable and unaffordable – in an urban context.

INTRODUCTION

Cities are being continuously shaped and reshaped by economic forces, architectural tastes, planning ordinances, building controls, changing public fashions and a myriad of public-private regulations governing the form and use of space. In some cases, structural obsolescence, damage, war or disaster also provide opportunities for change. It is common, therefore, for urbanists to consider that cities are palimpsests of successive layers of redevelopment over time (Martin, 1968). But, despite the scale and speed of urban change, particular structures, landscapes and morphologies persist. The urban morphologist and chartered town planner M. R. G. Conzen, for example, highlighted the persistence of street patterns in comparison to the faster change of plot patterns and buildings (Conzen, 1962). There is a link here to ecosystems theory: "the dynamics of the system will be dominated by the slow components, with the rapid components simply following along" (O'Neill, Deangelis, Waide, Allen, & Allen, 1986).

Persistence is often linked to retention, although sheer inertia, resistance to change, may play a role. Retention is often linked to heritage and conservation. Decisions about what to retain, and the sorts of designs that should be variously encouraged and discouraged through preservation practices, are often enmeshed in judgements about the value and meaning of different aspects of the past, present and future (Edensor, 2019; Graham, Ashworth, & Tunbridge, 2000). Even places that are recognised (or even branded) as 'historic' and spatially or temporally 'fixed' are invariably assemblages of urban interventions over time.

Three-quarters of a century after the damage inflicted by the Second World War, these factors are affecting management of the post-war reconstruction. Indeed, urban managers in many cities have been eager to rapidly remove or remodel what remains of post-war planning, perceiving it as being out of fashion with current design ideas. Yet lobbying attempts have sought to retain aspects of the post-war physical fabric, hence selected modern buildings, structures and landscapes are also being preserved and brought into the remit of state protection (While & Short, 2011).[1] In some cases, they are being re-worked to nestle within wider narratives of regeneration, place-marketing and gentrification, while serving the needs of elite interests (Harwood, 2015; Lees,

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2003; While, 2006, 2007). Despite concerted efforts to revive 'lost' ideas of architectural authenticity, community and hope associated with the post-war modern urban environment (Harwood, 2015; Hopkins, 2017), many urban managers, landowners and residents often prefer new structures which, they feel, help create economically functioning, socially vibrant city spaces. The popular perception of the poor quality of modern rebuilding, when substantial areas were rebuilt in a very short period, using new styles and materials to produce buildings and areas, is difficult to shift (Kynaston, 2015). But while there is already considerable debate around the barriers facing the preservation of post-war heritage, one under-explored issue relates to how the concepts and dynamics of urban change and the persistence of particular forms might contribute to the contemporary priority of sustainability through minimising resource use.

Taking forward these ideas of change, preservation and sustainability, therefore, this paper explores how the modernist built environment of the 1950s, 1960s and 1970s is being situated within urban development policy frameworks. By focusing on the post-war buildings and design narratives we raise wider questions about how this built form is produced and reproduced – changed or retained – within localities. Here, analysis focuses primarily on the fundamental question: which buildings persist through periods of urban change and why are they privileged in local design terms? This analysis includes a consideration of how the post-war built form might be integrated within urban redevelopment schemes that promote sustainability.

We begin by exploring the forces that shape change in the built environment. It moves on to examine how selected architecture and planning remnants from the 1950s / 1960s have been treated following the global economic recession. The initial empirical analysis highlights a series of potential conflicts and complementarities between the post-war legacy and the dominant design frameworks of 'post-industrial design' that have been an important element of pro-growth regeneration strategies for many cities since the late 1980s / early 1990s.

SHAPING CHANGE IN THE BUILT ENVIRONMENT

In recent decades, much of what was once valorised as 'modern' is being steadily replaced to generate for new urban forms and images, new patterns of use and mobility. In many ways, the "stock of buildings in a city" can come to represent "an ageing and declining asset", with supplementary investment needed to avoid

both structural, economic and functional obsolescence (Larkham, 1996). Nevertheless, with the ebb and flow of urban change, traces of previous values, ways of life and material artefacts are embodied in official conservation and preservation efforts (Glendinning, 2013). Consequently, particular features may persist in urban landscapes for extended periods, sometimes as "relics" (Conzen, 1962) with little direct connection with contemporary values and meanings, as the city rapidly transforms (Edensor, 2019). This persistence may be through inertia, resistance to change, or through deliberate decisions to retain buildings and areas.

Of course, the protection or promotion of 'heritage' inevitably involves the selective (re)interpretation of certain aspects of the past, designed to suit "contemporary purposes, be that economic, cultural, political or social" (Graham, Ashworth, & Tunbridge, 2000). Nevertheless, despite recent detailed efforts to re-assess and celebrate aspects of everyday post-war modernist architecture (Harwood, 2015; Hopkins, 2017), many buildings and structures from this era evoke inaccessible architectural and cultural meanings that often conflict with the fast-paced, contemporary city, replete with its changing fashions, tastes and policy emphasis on sustainable urbanism (Benton-Short, Keeley, & Rowland, 2019). In some cases, the architectural and planning endeavours underpinning these buildings remain important concerns for certain groups and individuals. For example, with Goldfinger's Balfron Tower, Sheffield's Park Hill and other notable cases, some younger audiences warmly embrace planned attempts to revive post-war buildings: such structures offer a route to an unembellished and 'authentically honest' urban past (Harwood, 2015; Kynaston, 2015). And yet, concerted efforts to revive or promote goals and practices of post-war conservation / preservation in-line with an era of sustainable design face stiff challenges, despite a recent focus on low-carbon construction and developments that are resilient to climate change (Ministry of Housing, Communities & Local Government, 2018).

Indeed, notwithstanding attempts to resuscitate forgotten, over-looked and neglected urban histories of the post-war physical fabric, the public attitude, even among those who cannot directly recall the physical alteration of familiar landmarks and popular spaces, remains decidedly critical. Hence the spectre of lofty, yet ultimately 'failed' modern architectural ambitions continues to loom over many cities, often affecting strategies to demolish or remodel seemingly outmoded structures that might be repurposed in ways to minimize the impact on the built and natural environment. Similarly, there may not be a widespread

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rush to glamourize or revere the architectural intentions of post-war modernism, despite the best efforts of some (While, 2007). Regardless of changing tastes, styles, cultural values and a desire to 'move away' from the legacy of post-war rebuilding, elements of the modern physical fabric nevertheless persist. They may continue to shape the present-day everyday experiencing in unusual, unprovoked and sometimes positive ways that can align or collide with official renderings of the urban past (Adams & Larkham, 2019; Larkham, 1999). Being alert to how these traces continue to shape the everyday urban experience opens up important areas of inquiry relating not only to the possibility of assessing earlier, 'unreachable' socially progressive ideals attached to much post-war building, but they also offer a chance to look more carefully at how outmoded post-war structures might contribute to a wider sustainability discourse. In the following sections, these issues are explored through a case study of 1950s/1960s buildings and dominant heritage and design narratives in Birmingham, UK.

DYNAMICS OF URBAN CHANGE: THE LEGACY OF BIRMINGHAM'S POST-WAR HERITAGE

Birmingham is the country's "second city", located in the English Midlands about 110 miles north of London. It grew from a small local market town to be a world-class industrial centre during the nineteenth century. The city was badly bombed during the Second World War, with damage being scattered across the city, although there was a concentration in the city core. In the post-war period its fortunes have fluctuated as de-industrialisation removed much of its heavy industrial base. It now has a population of just over 1 million and still growing, with many young people and a strong policy emphasis on creating a thriving "post-industrial" city.

Birmingham began the process of post-war reconstruction very early (Adams & Larkham, 2019; Larkham, 2016). Its plans were well developed and, through the provisions of a private Act of Parliament in 1946 the relevant mechanisms were in place, before the majority of bomb-damaged towns. On several occasions, the City Engineer and Surveyor, Herbert Manzoni, asserted that Birmingham's redevelopment plans predated the wartime bombing raids and he felt that the relatively limited (in comparison to Germany, Italy and Japan) and scattered nature of the bomb damage ensured that there was no need for a city-wide reconstruction plan (Sutcliffe & Smith, 1974; Sutcliffe, 1967-9). Unlike the schemes that many other cities were producing at the

time, on Manzoni's advice the deliberate decision was taken in the early 1940s not to proceed with an overall city centre redevelopment plan. The Council itself already owned much property in the city centre and additional sites had been acquired along the line of the proposed inner ring road, thus allowing the local authority considerable control over how to shape the modern city (Manzoni, 1968) (Figure 1).

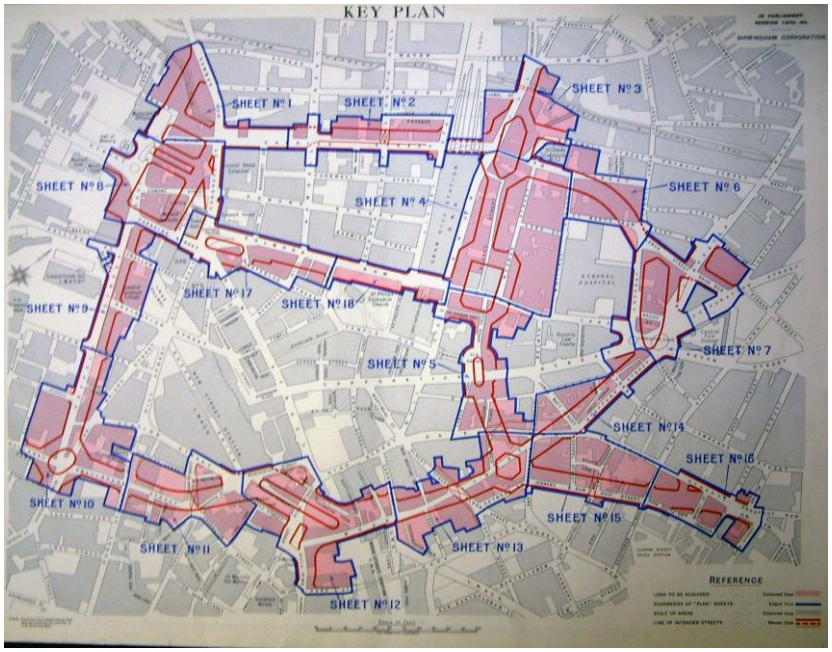

Figure 1. Inner Ring Road route and property to be purchased (darker shading) (Birmingham City Council).

Nevertheless, implementation was slow, owing largely to national governmental inability or unwillingness to sanction local expenditure or to allocate source materials (Larkham, 2016). From the early 1950s, however, there was a decade of significant activity, culminating in the Smallbrook Ringway (the first section of the ring road, a high-speed street though closely lined with shops and offices) and associated developments. From the election of the Conservative government in 1951 to the end of the office boom in the mid-1960s, however, the economy was de-regulated, building materials were no longer rationed from 1954-5, the 100% tax on land value increased by development ("betterment") was removed, and speculative developers forced the pace of change. This was certainly a period of intense development in the city and became prominently featured in the national and international press: "Birmingham's gleaming new buildings and roads ... its expressways, sprawling suburbs, tall buildings, and its air of hustle and bustle and enterprise make its Britain's most transatlantic city" (Sutcliffe & Smith, 1974). Despite the lack of an overall plan, with the ring road providing an armature the city's urban form changed very significantly in terms of street networks (Van Nes, 2001), plot patterns and building forms and uses (Figure 2).

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Figure 2. Post-war city-centre redevelopments (2A) including the Inner Ring Road (2B) (Base maps © Crown Copyright and Landmark Information Group Limited (2012). All rights reserved.

Development activity began to slow towards the end of the 1960s. By the early 1970s, substantial pockets of public anxiety emerged around the excesses and rate at which the comprehensive modernist redevelopments were taking place in the centre of the city (Adams, 2011). Foster, in a major architectural history of the city centre, suggests that the early 1970s public campaign against demolition of the Victorian Post Office on Victoria Square marked a significant change of attitudes, less supportive of the scale, pace and generally unsympathetic approach pursued during city's post-war development (Foster, 2005). Although some projects, including some very major ones such as the Central Library, were ongoing until the 1973 international oil crisis, development then virtually ceased (Larkham, 2016).

Parts of this story are familiar, of course, and resonate with wider arguments around the apparent failure of mid-twentieth century modernity. For Birmingham, though, the decline was felt particularly sharply: in the 1950s and 1960s the region underwent change on an unprecedented scale, as Birmingham reaped the benefits of manufacturing-related economic success. However, in retrospect, the specialized nature of the region made it increasingly susceptible to economic changes and so the protracted recession of the 1970s and 1980s had a dramatic effect on the region, with employment in the dominant manufacturing sector declining rapidly (Flynn & Taylor, 1986). Following the recession of the late 1970s and early 1980s, Birmingham City Council sought to engineer a new future for the city; one which carried the hallmarks of the modern, progressive ideals of the mid-twentieth century. Grand development projects and aggressive promotion initiatives emerged in an attempt to reverse the city's image of being centred on the primacy of the motor car

(for a more in-depth review, see Loftman & Nevin, 2003). Efforts also centred on reversing the negative associations attached to the radical physical transformation that occurred between 1947 and 1973, characterised by the modern redevelopment and overpowering highway schemes. For example, in 1988 Birmingham City Council sought to drastically change the inner ring road. This was in part due to the perceived disadvantage of the pedestrian; but, perhaps more importantly, also because of its functioning as "a physical and psychological barrier inhibiting growth" of the commercial core (Birmingham City Council, 1989). Furthermore, in a decisive rejection of the post-war architecture, the 1990 *Birmingham Urban Design Study*, produced by a then-prominent urban design practice, suggested ways in which the city could overturn its image of an unfathomable concrete jungle by making it cleaner, safer, and more legible, by prioritising the pedestrian over the motorcar (Tibbalds, Colbourne, Karski, & Williams, 1990).

Attempts to reverse the negative associations of the city's post-war physical landscape were also accompanied by a strident 'pro-growth' attitude designed to bolster the city's role in a changing global economy (Barber & Hall, 2008). Hence the emergence of polices designed to attract new forms of foreign investment, while creating attractive, well-designed spaces where affluent, youthful urbanites can live, work and socialize (Hall & Hubbard, 2014). Clearly, more consensual, less sweeping and more sensitive approaches to development and conservation have also emerged in recent years. Enhancing the city's "historic environment and sense of place" (Birmingham City Council, 2017) are important policy considerations in creating a new, vibrant city image, as elements of the city's physical heritage are celebrated, preserved and marketed in a range of media. Rather less official weight is given to the preservation and promotion of the city's post-war physical legacy. Indeed, despite Foster's sympathetic reappraisal (2005) and more recent high-profile cases, the material legacy of post-war (e.g. 1950s and 1960s) modernist redevelopment remains a largely unacknowledged part of Birmingham's heritage and design identity. And the city's post-war structures (from the 1950s to the 2000s) are routinely castigated in surveys of the city's – even the country's – ugliest buildings (for example, BBC, 2008).

It is understandable, therefore, that much recent policy emphasis continues to stress the need for new, resiliently designed, sustainable buildings and land uses that support shopping, business tourism and major cultural events (Birmingham City Council, 2017).

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Just as some contemporary architects saw the Second World War bombing as an opportunity, so can the demolition of the reconstruction-era buildings be seen today. Batty (2007), for instance, notes of the late 2000s rebuilding boom in London that "what is so interesting about this renewal is that it is not generated simply by the fact that buildings have outlived their usefulness ... perfectly serviceable and even attractive buildings are being removed and rebuilt". Moreover, this leads to the crucial question of whether, for all the difference in their respective rhetorics, the ideas that influenced post-war redevelopment and contemporary approaches to rebuilding the city, can produce significantly different outcomes or whether we are witnessing a new series of contradictions that a future generation of planners need to assuage in the future? In the following section we explore various ways in which the post-war legacy has begun to be re-shaped.

THE FATE OF BIRMINGHAM'S POST-WAR BUILDINGS

Rapidity of change[2]

For a wide range of reasons Birmingham's post-war buildings have been seen as problematic and, in some cases, ephemeral. Of those falling into the latter category, the Bristol and West Building Society's building at the corner of St Philip's Place and Temple Row is significant (Figure 3A). Opened in 1975, this building was carefully designed to fit a neighbour and also the design of the reconstruction-era Rackhams department store. It faced a major heritage asset, the cathedral and churchyard, and was within the central conservation area.[3] This was a robust, serviceable building, yet in 1999 the decision was taken to demolish and rebuild rather than to refurbish (planning application 1999/00671/PA). By then the original owner had been taken over by the Bank of Ireland. The reasons given included that the heating and ventilation were integral to the concrete structure and could not be replaced; the new extensively-glazed building has a slightly bulkier form, and the windows jetty out over the pavement by a couple of feet (Figure 3B). So there is increased lettable floorspace, and finance won. The lifespan of the 1970s building was 25 years.

Figure 3. Corner of St Philip's Place and Temple Row (A) after 1970s redevelopment (by Patricia Frost, from the Bristol and West's promotional booklet, 1975) (B) after 2000s redevelopment.

Another ephemeral building was 35 Newhall Street (Figure 4A). Again, within the central conservation area, in the early 1990s, conservation officers spent much time and effort in negotiating a striking design to turn this corner. However, by 2005 there were proposals for a major change, virtually a replacement building (Figure 4B), again extensively glazed and jettying out slightly over the pavement (application 2005/01612/PA, for "erection of additional storey and new elevations"). Once more there was a significant increase in lettable floorspace. The lifespan of the 1990s building was a mere 15 years.

Figure 4. 35 Newhall Street (A) after 1990s redevelopment (B) after 2000s redevelopment.

Neither of these buildings was functionally obsolescent. The first was, arguably, structurally obsolete in terms of the difficulty and expense of retro-fitting new services. But the key driver in replacing/reconstructing both buildings after such short lives was the ready availability of finance and the relative rental income from the highest-quality office floorspace. These buildings will soon suffer from the structural obsolescence of key components: for example, the industry-estimated life of double-glazed sealed units such as are used here is only about 15-20 years, and IT infrastructure probably rather less.

These rather ephemeral buildings can be contrasted with one of the icons of the city's post-war reconstruction era, the Rotunda. Designed by local architect James A. Roberts and built by 1964, it survived an IRA bomb in 1974 although large amounts of external gazing had to be replaced, and the unpopularity of its segment-shaped offices. By 1986 there were proposals to redevelop it with

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another 'landmark' office building; instead it was listed. As part of the Bullring redevelopment of 2000-3 it was stripped back to the concrete structural frame and re-clad (Figure 5), the design receiving the approval of the original architect as being closer to his original design than what was originally built! This support was helpful in making the developer's case for planning consents from the local authority and English Heritage.[4] The developer Urban Splash converted the bank, offices and unused restaurant into flats, which sold out within a couple of hours of going on to the market. Its lifespan so far has been 55 years, it is now protected, and is still functioning well. The robustness of its structural core is crucial to its successful refurbishment and survival. Its status as a local icon, appearing on book covers and a range of marketing products, was also helpful in generating wider public support.

Figure 5. The Rotunda, stripped for refurbishment in August 2006.

The Mailbox, formerly one of the largest Royal Mail sorting offices, dating from 1970, likewise became redundant and was sold to a developer for £3 million in 1998. Instead of demolition, it too was stripped to the steel frame and rebuilt as 15,850 sq. m (170,000 sq. ft) of office space with the BBC a major tenant, 9,290 sq. m (100,000 sq. ft) of highest-quality retail space, plus restaurants and a health club, and apartments above (Bryson, 2003). It seemed easier to get planning permission for a major reconstruction than for a wholly new building, notwithstanding the radical reshaping of the interior structure and striking

recladding of the exterior (Figure 6). This is part of a transition of this business/industrial urban quarter into a high-density residential area, with several new apartment blocks.

Figure 6. The Mailbox following conversion.

The Inner Ring Road itself is also an iconic morphological structure of this period. Its design spanned the period *c.*1944-71; its construction 1957-71. The detailed design was radically changed from a high-speed road lined with shops and offices to an urban motorway with tunnels, flyovers and extensive roundabouts. One of the cross-arms (see Figure 1) was never built, a casualty of the changing attitudes towards conservation by the early 1970s. But, as with other ring roads of the immediate post-war period, its route was extremely closely delineated around the CBD and it soon became known as a 'concrete collar', stifling outward business growth. It also hindered movement, especially of pedestrians, since the numerous pedestrian underpasses eventually became sites of graffiti and violence. Hence a series of campaigns from 1988 sought to 'break the concrete collar' at several points around the city core, filling underpasses, lowering the roadway, and giving priority to pedestrians (Figure 7). The road remains despite this surgery, still a major route around most of the city core: the radical new alignment and scale of the 1940s plan have persisted although elements of the built form have been equally radically changed.

However, work to the Inner Ring Road at one point (Figure 7) provided an opportunity to review another element of sustainability: the CO_2 cost of this redevelopment. Built between 1961-64, demolition of this raised section began in 2002: a lifespan of four decades. This part of the Ring Road redesign project alone cost £24.2 million (at 2002 prices) and involved

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recycling of 20,000 m^3 of concrete into 48,000 tonnes of construction aggregate: much was recycled on site, the lowest emissions option (Thomas, Lombardi, Hunt, & Gaterell, 2009). This example reinforces the wastefulness of the energy and CO_2 embodied in demolishing these large-scale structures after a short life.[5]

Figure 7. Radical change to the Ring Road at Masshouse Circus.

Conflict and contest: decision-making and urban form

In the UK, advocates for 1950s/1960s architecture – or post-war conservationists (While 2007) – have played a key role in promoting a reassessment of post-war modernism (Harwood, 2015). This includes national pressure groups such as the Twentieth Century Society, and individuals who write books and newspaper articles, stage exhibitions, organise study visits, make television programmes, oppose plans to redevelop important buildings, and generally lobby on behalf of post-war architecture. As a result of pressure the scope of national listed building protection in England was extended to cover the 1950s, 1960s and 1970s: the expansion of post-war listing offers a 'counterhegemonic' conservation approach in terms of its position within the national protection regime (While & Short, 2011). Searching questions regarding how the post-war heritage might be used are exposed when decisions are taken about whether to protect particular buildings and areas. The resulting battles are often hard-fought and time-consuming. It took years of pressure from Historic England and the Twentieth Century Society to persuade Plymouth City Council to designate its city core as a conservation area in 2019, although this is the most complete development of a key plan by the period's key planner, Professor Sir Patrick Abercrombie (Plymouth City Council, 2019).

In Birmingham there has also been some noticeable resistance to the recent rush to dispose of elements of the post-war city. Some of the city's leading post-war architects have been an important part of this lobbying movement – albeit that there is a degree of self-interest here, as they were campaigning for increased heritage validation for their own buildings. James Roberts's contribution to the Rotunda refurbishment has been mentioned, and John Madin was a passionate advocate for the protection of buildings such as Birmingham Central Library, one of the most startling examples of post-war architecture in the city (Figure 8). The Twentieth Century Society has played a key role in lobbying for protection for individual buildings, such as the Central Library. It is also noticeable that recent architectural histories, including several volumes on the publicly-unpopular "Brutalist" style (including Calder, 2016; Clement, 2018) have taken a mostly compassionate view of the 1950s and 1960s legacy, and Madin's own contributions have been subject to critical reappraisal even before his death (Clawley, 2011).

Figure 8. The Central Library, shortly before demolition

The saga of the Central Library exposes some key issues in the relationship between decision-making and urban form (Clawley, 2015; Larkham & Adams, 2016). Madin was asked in 1964 by the then City Architect J.R. Sheridan-Shedden to collaborate on a new civic centre master plan, combining an ensemble of civic buildings, including a new library, at the eastern end of Broad Street on the site known as Paradise Circus. Madin produced a large model, showing (amongst other buildings) the Town Hall of 1832-4 and the Hall of Memory war memorial, together with a bus station, student halls of residence, a concert hall and library. Madin's plans for Paradise Circus were approved by the council in 1968, and the original scheme was for a central library, with a bus

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terminus underneath, a school of music and physical sports institute – this was Madin's 'civic heart' of the city (Madin, 2009).

Construction of the library began in 1969 and the main shell of the building was completed in 1971. The outward form was simple and comprised a huge reference block and smaller lending block to its east, which also houses the first set of escalators leading to the upper floors of both libraries. Adopting a cantilevered design resulted in a distinctive inverted ziggurat form. It was adopted for civic purposes in the monumental Boston City Hall design by Kallmann, McKinnell and Knowles, in 1962 (also subject of very polarised views: Sirman, 2018). Madin's original vision of a building clad in Portland stone or travertine marble, set in landscaped gardens replete with fountains and waterfalls, was altered by the City Council for cost reasons, and pre-cast concrete with a stone aggregate was used instead, leading to some criticism that the library was a 'concrete monstrosity' (Foster, 2005; Gold, 2007; Parker & Long, 2004).

The Council also cited the failure of some of the concrete panels in 1999 as a reason to demolish the library and pass the site to a commercial developer – although the Council-appointed experts did not substantiate these claims (Dale, 2009). Despite some fresh visual attempts to understand and communicate the original architectural concepts to a wider audience – including a small photographic exhibition, 'Back to the Modern', held in 2006, which celebrated the library's history which weaved together a blend of archive and contemporary photographs – the City Council, and in particular its then Leader, decided to proceed with demolition to make way for a more commercial enterprise. Government Ministers supported the Council and overrode two recommendations from English Heritage that it should be listed. Writing for the *Birmingham Post*, Madin (2009) stridently argued that it is the definitive act of urban regeneration to take the library building and resuscitate it for a new life, all for a cost not dissimilar to that of a new building. Madin's library was demolished in 2015-6 and new offices are being constructed on its site; a replacement library costing approximately £190 million was opened nearby in 2013 (Mecanoo architecten, 2014).

In this case, efforts to protect the building faced stiff resistance from critics unwilling to see the value of preserving what was presented as an unpopular and dysfunctional building; a structure that for some became indelibly linked with the perceived failings of modern Birmingham. Of course, official protection does not necessarily guarantee protection in perpetuity, but it does

establish a strong presumption in favour of conservation. Lobbying efforts to revivify and preserve a semblance of original architectural integrity run the risk of imposing the interests of a narrow architectural elite on landowners, local authorities and local residents. Ideas of political obsolescence together with a push for new, shiny structures and land uses that fit a wider narrative of post-industrial growth trumps deeper concerns over any desire to repurpose functional, architecturally distinctive buildings to fit wider sustainability goals.

PERSISTENCE AND NEW SUSTAINABLE OPPORTUNITIES FOR BIRMINGHAM'S POST-WAR URBAN FORM

Certain structures, such as the Rotunda and Mailbox, manage to contribute efficiently alongside newer buildings. In many ways, these examples fit comfortably within the broader narrative of rapid post-industrial urban renaissance and sustainability ambitions.

Furthermore, protection through listing has emphatically not prevented a very substantial modification and upgrading of the Rotunda, with the decision to install more energy-efficient electrical systems and insulation: the building is, in some ways, more environmentally friendly as a result. In this case, listing has been sufficiently flexible to allow for change, despite concerns that the major refurbishment has damaged the character of the building (Foster, 2005).

The design principles of some of Birmingham's post-war architecture resonate well with the wider narrative of sustainability. This is perhaps most notable in terms of offering flexible floorplates for residential or office accommodation mixed with a certain urban coolness, as reflected in the transformation of structures such as the Mailbox and the Rotunda, where apartments sold out within hours. In the 1990s, the developer Urban Splash was actively buying up 1960s 'outmoded' office and industrial buildings in Birmingham and elsewhere (Allen & Blandy, 2004). While elements of the original design aesthetic are retained, the Urban Splash approach tends to involve an exterior makeover of recladding or repainting stained concrete, and design alterations such as new entrances, but where possible window and other original features are retained for economic as much as design reasons. The UK Urban Task Force (UTF)[6] (Urban Task Force, 1999) praised the Urban Splash approach in bringing empty commercial property back into residential use – and indeed most of the Rotunda had stood empty for some years. However, Lees (2003) sounds a note of caution: this might be sustainable re-

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use, but "for the most part, because of the limited space, it is only attractive to wealthy professional singles or couples without children. The UTF promotes the kinds of gentrified enclaves familiar from US rust-belt cities such as New York, Boston and Baltimore". Conversely, some of the more recent buildings – of the 1970s and even 1990s rather than 1950s or 1960s – have led very brief lives. They have been redeveloped for largely financial reasons, rather than structural or functional obsolescence. The Central Library, however, was condemned more by 'political obsolescence'. The radical changes to the Rotunda and Mailbox have proved what can be done, and in cost-effective ways. Demolishing such relatively new buildings cannot be sustainable.

CONCLUSIONS

Like many places, the urban form of Birmingham city centre is a constantly changing assemblage of architecture, planning interventions, changing tastes, fashions and experiences. This paper explores the factors that are shaping decisions about what remains of the 1950s/1960s legacy in that city, focusing particularly on the connection between post-war conservation and the ongoing programme of urban renewal. As a starting point for consideration, the products of 1950s/1960s urbanism have tended to be seen by later urban leaders as "relic features", an unwanted interruption to the more recent design narratives of post-industrial cities, even despite the recent focus on sustainability. Although there is some appreciation of the architectural qualities of post-war urbanism, we have tentatively sketched out the possibility for alternative ways of interpreting how this apparently unwanted heritage could make positive contribution to a wider sustainable discourse. Two main conclusions arise from the analysis, with specific implications for the legacy of post-war modernism and more general resonance for sustainability and urban form.

Buildings can be changed very quickly and/or have relatively short lives. In the contemporary city centre, structural obsolescence is much less an issue than finance and the imperative for more attractive post-industrial structures and lettable floorspace, notwithstanding the design quality of a building to be replaced. The short-term financial interests of land and building owners dominate. Land ownership can also trigger change and building replacement even of apparently sound structures especially when as in Birmingham, many sites are held on relatively short-term leases. Powerful memories, meanings, and values attached to buildings, structures and artefacts may

fade. But these memories also continue to hover in the background, ready to burst through the immediate context and provoking sometimes powerful, emotive and political responses among residents, developers, landowners and decision-makers (cf. Edensor, 2019). Hence political, rather than structural or financial, considerations may also trigger removal of buildings deemed unsightly, unpopular or in the way of development. More recently, awareness of the finite life of building components – glazing, roofing, services – as compared to the much longer life of steel or concrete frames has become an issue, while in the UK's system, retaining a frame might make the planning issues more straightforward. Consideration of sustainability costs and considerations – of embedded energy and CO_2, and of recycling - need to be more clearly incorporated in decision-making.

Emerging from this is the suggestion that the unloved ordinary buildings of the post-war reconstruction period need to be reappraised in the current concern for sustainable urban and built form. They can often be readily adapted to new uses; rebuilt or reclad. Extending their life promotes sustainability, especially considering the energy embedded in their original structure. The radical new urban forms proposed by some might be less of an issue if the best use is made of these under-appreciated assets. Rather than championing the importance of architectural integrity or authenticity, sustainable future urban forms should pay much greater heed to considerations of flexibility and adaptability of what currently exists, even of relatively unloved and vulnerable structures. A life of 15-40 years for major city-centre buildings or expensive infrastructure is not sustainable. This realisation will change the dominant dynamic of city-centre urban form in the industrial era: fast and large-scale change is unsustainable, unless caused by some catastrophe such as natural disaster or, in Birmingham's case, the destruction of war.

NOTES

1 A "Listed" building has been added to a Government list of buildings of special architectural or historic interest. Buildings are graded (I, II*, II) depending on their perceived architectural or historic importance.
2 Information for this section is sourced from Birmingham City Council archives and planning files, and from conversations with former professional planning staff.
3 A "conservation area" is designated by the local authority as "an area of special architectural or historic interest, the character or appearance of which it is desirable to preserve

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or enhance" (Planning [Listed Buildings and Conservation Areas] Act, 1990).

4 English Heritage was the Government's advisory body on heritage from 1983; in 2015 it was restructured and Historic England provides that function.

5 Producing a tonne of concrete liberates about a tonne of CO_2 and about 900 MJ of energy: the costs of concrete production are huge (Aïtcin & Minders, 2011), and thus the embodied costs of concrete structures are a serious consideration for sustainability.

6 The Urban Task Force was a Government initiative, chaired by the architect Lord Richard Rogers.

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Resume

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