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Infrastructure and the rebuilt city after the Second World War

Papers from a workshop held at Birmingham City University, March 2013

Edited by Peter J Larkham

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Edited by
Peter J Larkham
Professor of Planning
Birmingham School of the Built Environment, Birmingham City University

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Abstract

This is a collection of papers derived from a one-day workshop held at Birmingham City University in March 2013. The fourth in an occasional series covering aspects of post-war replanning and reconstruction, this focused on infrastructure. The majority of the papers here have a geographical focus on England and deal with transportation, particularly highways; although cycling and air transport provision are also included; as is a paper on specific commercial infrastructure projects in Japan.

Key words*: post-war replanning, reconstruction, infrastructure, planning history, twentieth century*

Acknowledgements

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The workshop papers generated interesting discussions, some of which have informed these amended papers; the editor and contributors are grateful to all workshop participants.

A full version of Simon Gunn's paper has already been published in *Social History* (May 2013).

Infrastructure and the rebuilt post-war city

Peter J Larkham
Birmingham School of the Built Environment, Birmingham City University, Millennium Point, Curzon Street, Birmingham B4 7XG

> "During the next quarter of a century the developments of the aeroplane and of air transport would have an almost revolutionary effect on the planning of new towns, and the replanning of parts of the older towns … what might be termed the 'mechanical transport era' had now been entered upon … [which] would result, in the central areas of large towns, and more particularly in such an area as central London, in complete traffic saturation which even the construction of ring and new roads, the widening of other roads, and the greater use of one-way streets would not entirely eliminate" (Tame, 1943, pp. 28-30).
>
> "The most important thing about a city is its infrastructure. The infrastructure of a city is infinitely more important than the individual buildings. Think of it as the urban glue which binds the buildings together" (Lord Norman Foster, 2013).

This Introduction sets the scene for a collection of papers from a one-day conference held at Birmingham City University in March 2013, the fourth in an occasional series of such workshops and associated publications (see Larkham and Nasr, 2004; Larkham and Yasuda, 2006). The theme for the present conference was the planning and development of infrastructure for the post-war city, as this has been under-explored in the boom of reconstruction literature in the last couple of decades. The intention was that contributions would cover a broad range from transportation, education, administration, health, services (such as water, power, sewerage) and even to the new provision of large-scale support for retail, in the form of shopping precincts, car parks etc. Many of these projects turned out to be innovative and large in scale: this becomes almost a history of civil engineering and architectural mega-structures – think of Cumbernauld New Town centre (Gold, 2006), Plymouth's Tricorn Centre (Clark and Cook, 2009), more locally Birmingham's central library and so on; many derided and currently suffering neglect, decay and demolition. Pertinent to this debate is the issue of, in Flyvbjerg's words, 'why the worst infrastructure gets built' (Flyvbjerg, 2009, although asked on a contemporary context); and with hindsight, although some of this infrastructure had a relatively short life considering the massive investment, whether it was actually "worst". In the event, transportation dominated the papers offered, delivered and published. Other infrastructures may for the basis for future meetings.

The context

The Second World War more closely involved more of the civilian population, specifically through air raids on cities and suburbs, than its predecessors: it was a 'total war' in many ways. Although less heavily damaged than cities elsewhere, especially later in the war, which suffered land warfare or firebombing, the scale of damage to British cities was without parallel in this country. Despite air raid precautions and some dispersal, many homes and factories were damaged or destroyed, and acres of city centres were badly damaged (Table 1).

Table 1: A sample of British bomb-damaged cities

Town	Number of raids*	Tons of high explosive dropped	Number of houses destroyed	Extent of damage (acres)
Liverpool/ Birkenhead	8	1,957	5,487 + 1,899	208 + 76
Birmingham	8	1,852	5,065	(data not known)
Plymouth/ Devonport	8	1,228	3,593	415**
Bristol/ Avonmouth	6	919	2,909	247**
Glasgow/ Clydeside	5	1,329	4,000	(data not known)
Southampton	4	647	4,136	145 / 261**
Portsmouth	3	687	4,393	182 / 430**
Hull	3	593	4,184	136/ 246**
Manchester	3	578	1,951	61 / 74**
Coventry	2	818	4,185	274**
Belfast	2	440	(data not known)	(data not known)

Notes: major air raids are defined as those where over 100 aircraft took part. Cities suffering only 1 raid are excluded here. The source of raid numbers and bomb tonnage is in National Archives [NA] AIR 41/17, Appendix IV; of houses destroyed NA CAB 87/11; of extent of damage NA HLG 71/34 (** equals government-agreed legal reconstruction area: NA HLG 71/2222).

The damage was also a morale issue, as was also recognized in the so-called “Baedeker raids” on specific historic cities in 1942 (Rothnie, 1992): “investigation seems to show that having one’s house demolished is most damaging to morale. People seem to mind it more than having their friends or even relatives killed” (Lord Cherwell, principal scientific adviser to Churchill, in report to Churchill, May 1942). In several of the worst-damaged cities (for example Coventry and Plymouth) many people left the centre each night, slept rough, and returned the following morning – the phenomenon of ‘trekking’ (Harrisson, 1975, pp. 61-131). Despite this physical and psychological damage, the bombing of cities, especially their centres, was often seized upon as an “opportunity” to replace slum housing and inadequate roads and services (eg Tubbs, 1942).

The immediate issue was one of clearance, by demolishing damaged buildings that under other circumstances might have been repairable – for example using the Pioneer Corps in London and setting up new administrative structures (Woolven, 2013). Once cleared, there was an immediate need to replan for the future – and this became dominant rhetoric of the time. Of course some of this was in train before the war, which is why Coventry was able to have a public exhibition, with model, even before its main catastrophic raid; and the well-known Bournville Village Trust study *When we build again* (1941), internationally circulated and influential in the context of replanning after the catastrophe of bombing, was actually begun with detailed survey work in the mid-1930s (Larkham, 2013). Neither the reconstruction planning itself, nor the major infrastructure projects so often proposed, were actually part of a new paradigm. Nevertheless they were spurred by the words of the then Minister, Lord Reith, to several bombed cities to "plan boldly". And some undamaged places rapidly jumped on to the replanning bandwagon: there was an element of place-promotion or place-marketing in this (Larkham and Lilley, 2003).

Even though the ideas were not new, the scale of their implementation was: generating radical change in urban form and radically new plan types. Several factors led to the retention of many parts of existing, traditional, street and block patterns, limiting the radical nature of most plans. Even where the general patterns were retained, seemingly modest alterations – such as the widening and straightening of streets – implied the removal of many of the buildings that survived actual bombing, and changed the nature of the urban form. An especially dramatic introduction was the large-scale imposition of ring roads, reflecting the emerging domination of planning by traffic solutions.

The footprints of new buildings were significantly larger than those they replaced, and their land coverage was lower. These buildings were, often narrow and linear, resulting in a plan form that was new in Britain at that time: the 'perimeter block'. The uses of the interiors of these new blocks were usually not specified. Many of these spaces came to function as vast parking reserves - often remaining so today.

The style of the new buildings was generally plain and modest, representing a recognizable idiom that has come to be referred to as '1950s architecture'. Within the reconstruction period, it is possible to identify a gradual shift from a 'stripped-down classicism' to a 'moderate modernism', and ultimately to a 'brutalist modernism' in the final rebuilding projects. Largely absent were any developments that deliberately followed vernacular and traditional forms.

In parallel to this progression in architectural styles was a growing introduction of new types of buildings and urban elements. Some, such as the 'flatted factories' and mechanized parking structures, did not catch on. Others, like the enclosed shopping centre, the parking garage, the 'subway' [pedestrian underpass system], and the grade-separated street crossings, became standard elements in British cities in later years; but it was in the reconstruction period that they were introduced into common usage.

Despite these and other innovations in town planning in this era, the overall appearance and silhouette of the replanned town was little different from its predecessor – especially when compared to the transformations brought about during the post-oil-crisis 'boom' era.

This collection of papers

The reconstruction period has generated considerable academic interest, although this has tended to focus on individual plans and planners, and individual towns and cities. The specific theme of infrastructure has been less well treated, and yet it – in one form or another – forms an 'armature' for the rebuilt city: whether that is a physical infrastructure of new transport structures,[1] power and water supplies, health and education facilities, or even housing estates, new shopping centres and administrative buildings. Indeed the 'civic centre' was very popular in the post-war plans, although even this was a continuation of pre-war trends (Larkham, 2004); the high-rise tower block has been well covered (Glendinning and Muthesius, 1994), and the London Barbican as an exemplar multi-use megastructure has been explicitly examined in the reconstruction context (Tsubaki, 2012).

Perhaps the infrastructure which was most immediate, most obvious to the public, and caused most disruption for the longest period was new road building; and especially new ring roads. It is no coincidence, although it is purely accidental, that many of the papers submitted for the workshop on which this publication is based focus on this issue. However, the development of technology during the war facilitated new ideas about movement, including air taxis and bringing helicopters into city centres. Cycling is also a much less well-studied element of movement, although its associated infrastructure can be complex and ideally should be designed in to urban structure and form from the start, as was possible in some of the post-war New Towns. Finally, some of these papers begin to touch upon issues wider than the planning, design and implementation of infrastructure: the meanings that these new features (principally, in this collection, of movement) facilitate for the city and its users/occupants; the assumptions of permanence (in terms of culture, behavior, and the need for infrastructure always to be 'there' and performing reliably); and yet, today, the evident short lifespan of some post-war infrastructure. Massive investments, implemented with significant disturbance to historic urban structures and residents, have often not lasted well. Structural, technological and even financial obsolescence are inevitably leading to actual or threatened demolition or significant adaptation (the Tricorn Centre, Princesshay shopping centre in Exeter, the Birmingham Bull Ring and library). Exploring the rationales for such structures, the consequences of their implementation and use, and their longevity (or lack of it) should provide food for thought for contemporary planning.

Although the majority of these papers focus on England, the concerns are, clearly, much more widely applicable. Again, although there is some previous work on infrastructure elsewhere – again, mostly roads (Diefendorf, 1989; Hasegawa, 2008; but see also Taverne, 1990, on a shopping centre) – the issue is (in the English language at least) not widely considered and it is helpful to have a contribution on two specific, and very unusual, Japanese examples of retail and service infrastructure in this collection.

[1] A notable exception is the exhibition and associated publication "Infra_MANC" (Brook and Dodge, 2012); albeit that it focuses solely on Manchester.

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Roundabouts and ring roads: infrastructure and reshaping urban form

Peter J. Larkham
Birmingham School of the Built Environment, Birmingham City University, Millennium Point, Curzon Street, Birmingham B4 7XG

Just before the Second World War, it was said that "[t]he foundation of all good town planning is to devise really good road schemes" (*Sheffield Telegraph*, 1937).[1] Shortly afterwards, in the aftermath of blitz damage, it was stressed that "in post-war planning the planning of roads should not be relegated as unimportant" (Tame, 1943a, p. 40). This paper explores road infrastructure and the reshaping of urban form in the reconstruction plans of the post-war period, focusing on the 'new' urban features of roundabouts and ring roads, and the impact of such large-scale changes on historic urban structures.

A new urban landscape emerged in many towns and cities after the end of the war: the landscape of cleared sites, some still piled with rubble, and used as playgrounds by children. Some bomb sites were quickly colonized for various uses, often temporarily, amongst which photographic evidence suggests that car parking was common – despite the relatively low numbers of cars on the road in the early post-war years. Sometimes – in fact often – sites could be left for years; and in some cases this seems even to have been favoured within the Ministry[2] – and there are even some such sites, low-quality surface car parks, surviving in some places even today. Some fortunes were made by buying, or leasing, bomb sites for car-park use.[3]

Urban landscapes faced more significant pressures for change during this period, as economies and societies changed: higher aspirations, a consumer society, higher disposable incomes, more leisure time, increasing personal mobility especially through the private motor car and so on. These were continuations of pre-war trends of course, with complaints of congestion in narrow, often medieval, urban streets becoming common in the 1930s as traffic volumes grew. Such factors had been identified in some towns at a very early date; Birmingham was thinking of widening radial roads and building a ring road at least by 1910 (Borg, 1973, p. 51). A proposal for a rather geometric ring, a "cobweb", was promoted by a member of the public a few years later, and dusted off and compared with the city's 1940s plan in 1944 with the interesting suggestion that "an aerodrome [should] be placed over the centre octagon … with one or two mile runways in all directions over the long distance roads …. The city that first provides an

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1 Thanks to Alan Lewis for highlighting this quotation in his recent paper on Sheffield's post-war restructuring (Lewis, 2013).

2 For example there is a "… suggestion about the areas in the centre of the City [of Coventry] being left unbuilt upon for a generation …" (National Archives [hereafter NA] HLG 79/127) (thanks to David Adams for this quotation).

3 For example Donald Gosling and Ronald Hobson founded Central Car Parks in 1948, investing £200 in a bombsite in Holborn, London. In 1959 Central Car Parks took over National Car Parks (NCP) (*The Times*, 2005). "Their story is the stuff that post-war British films were made of. Ron Hobson, a demobbed former seaman with a brain for business and nose for money-making ventures, saw the potential for developing bomb-stricken sites in London which led to a chance meeting with Don Gosling, in 1948 a trainee surveyor with Westminster City Council. After a dinner, the pair bought a bomb site in Red Lion Square, Holborn, for £200 and converted it to a car park" (Ramesh and Harrison, 1998).

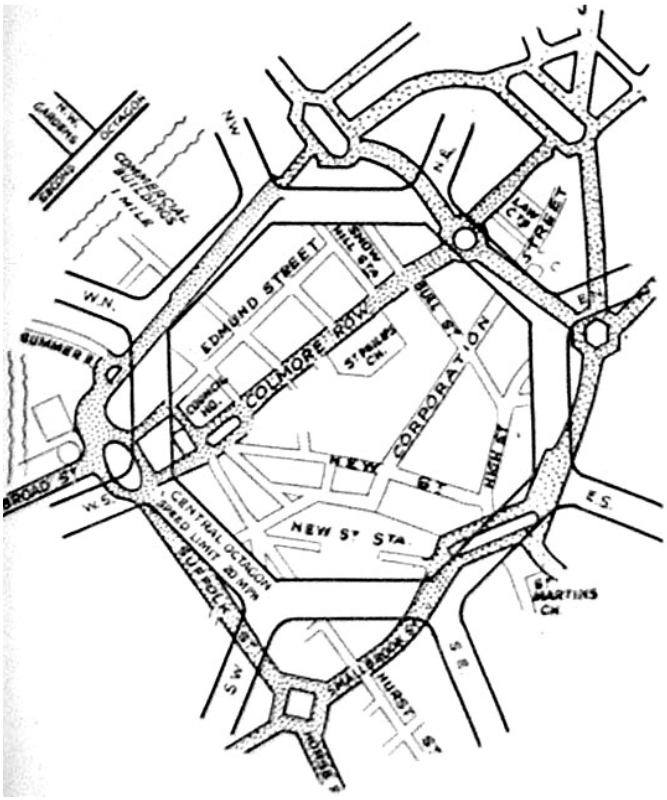


Figure 1. F.J. Pepper's "cobweb plan" and Birmingham's 1940s plans superimposed: *Birmingham Mail*, 10/5/1944.

aerodrome right in its centre will be the leading city of the world" (*Birmingham Mail* 10/5/1944) (Figure 1).

Although circular road junctions have been a feature in urban design for centuries – think of the Circus at Bath, for example, and in New York in 1869 the Commissioners of the Board of Central Park reported that this "open circular place was … laid out at the intersection of Fifty-ninth street, Eighth avenue, and Broadway," as a turnabout for horse-drawn vehicles, and this was the precursor of Columbus Circle (City of New York, 2013). However, the operating systems (carriageway design, right of way) differ from most contemporary circular junctions. The first UK roundabout appears to have been Sollershott Circus, Letchworth, designed by the original town planners Parker & Unwin in 1908: "Unwin referred to it as the Place d 'Etoile, rather than Sollershott Circus" (*The Comet*, 2006). Early circular junctions were often termed "traffic circles" or even "gyratories", and the term "roundabout" seems to have been a UK introduction from 1926. The earliest roundabouts seem to have been built in newly-developing areas such as Letchworth, or the sprawling suburbs of the inter-war period;[4] and many were large. In the UK, post-war research by the Transport Research Laboratory led to redefining and redesigning roundabouts, and the concept of the "modern roundabout" (Brown, 1995).

[4] However, Todd (1991) suggests that the idea arose separately and independently in Britain, France and the United States, citing in Britain's case a 1897 report for the London County Council discussing Ludgate Circus.

The standard history of highway planning is that these ideas were brought to the UK by a senior London policeman, Alker Tripp,[5] who visited the United States and wrote two influential books on traffic, roads and planning (Tripp, 1938, 1942). He also promoted other ideas such as the physical separation of pedestrians and traffic, and the division of existing urban areas into precincts. He did influence policy and advice, for example from 1942 to 1949 he was a member of the Royal Academy's Planning Committee established to set up a scheme for London's architectural reconstruction after the war; and he also was also a member of the Ministry of War Transport's Committee on Road Safety from 1943 to 1947. His books were widely cited: where Tripp led, others followed, and examples of this evident in post-war reconstruction plans are in the planning of ring roads, the segregation of vehicles and pedestrians, with the former often on first-floor walkways or platforms (Figure 2) and, slightly later, the planning of urban precincts that would separate functions and traffic types.

The spread of such ideas can be seen in many places including Bristol (Bristol Retail Traders' proposals, 1946 and Cannon's sketch for the civic centre, 1961, reproduced in Punter, 1990, pp.

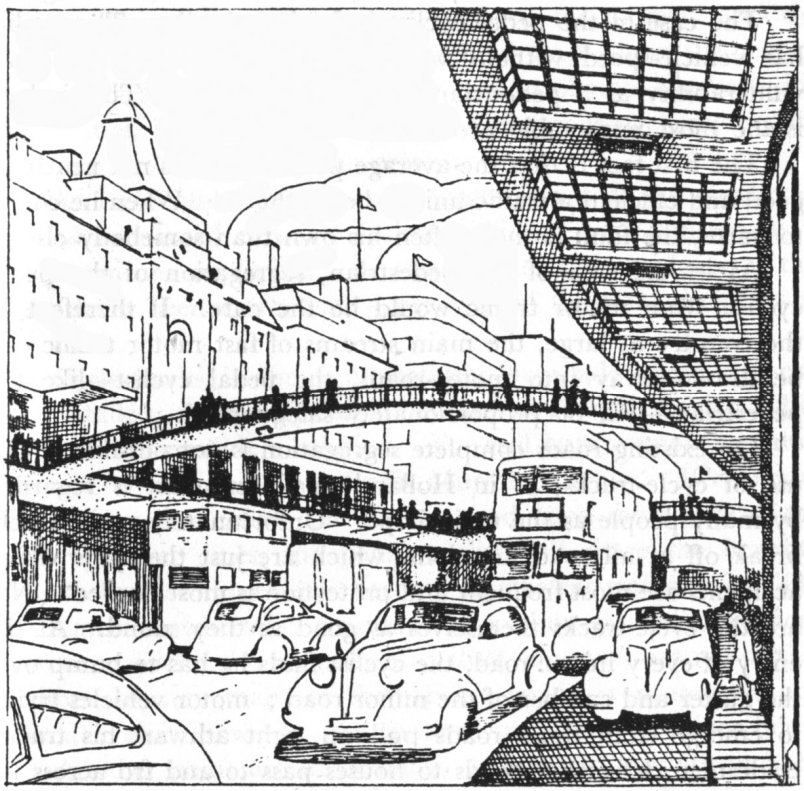


Figure 2.pedestrian/vehicle segregation (Tripp, 1942)

[5] H. Alker Tripp (Sir Herbert Alker Tripp CBE, 1883-1954) was an Assistant Commissioner of the London Metropolitan Police from 1932 to 1947. In 1932, although a member of Scotland Yard's civilian staff, Tripp was appointed Assistant Commissioner 'B', in charge of traffic, and held this post until 1947 (*The Times*, 1954). He visited the US in 1934/5 to study traffic conditions and control (NA MEPO 2/5937). Despite the wide dissemination amongst built environment professionals of his two books, he wrote principally for a police readership; see for example Tripp, 1941.

31 and 47) but were implemented in very few cases (such as the partial implementation in the Manchester Education Precinct plan of the 1970s: Joint Committee, 1974).

Government advice and guidance

As with so many things, road design led to the development of very specific official guidance and standards and, notwithstanding the Ministry of Transport's guidance memorandum of 1937 (described by Tame, 1943a, p. 14 as "a visionary, comprehensive and practical document"), the Ministry of War Transport convened an influential committee[6] in 1943 "to consider the design and layout most appropriate to various types of roads in built-up areas, with due regard to safety, the free flow of road traffic, economy and the requirements of town planning" (MoWT, 1946, p. ii). Its report, *Design and layout of roads in built-up areas,* was published in 1946 and led directly to subsequent generations of "guidance" which was, in reality, "regulation".

For example, its diagram of a standard urban T-junction (Figure 3) shows set dimensions of distances, turning radii, and setbacks for building lines, all of which were widely and quickly adopted across the country. These latter are interesting as they picked up on an earlier architectural fashion: the chamfered corner. These became much more common in post-war reconstruction architecture – not so much a fashion, as a necessity of Ministry compliance. The pervasive influence of these guidelines is discussed elsewhere in this collection of papers.

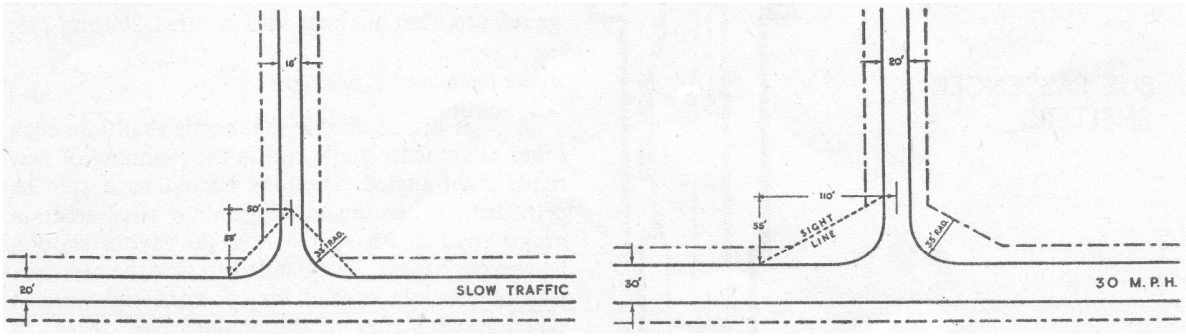


Figure 3. Specification of T junctions (MoWT, 1946, p. 51)

The report also gave the context of this push for more and bigger roads: the increase in vehicle numbers and road-related deaths (Figure 4). In fact the latter increased enormously during the wartime black-out and this concern must have influenced contemporary policy responses. Pictorial evidence of congestion was common in many plans and reconstruction-related publications (for example in the Plymouth plan used a photograph of congested pavements with pedestrians spilling out onto the highway: Paton Watson and Abercrombie, 1943, p. 4).

6 Its members were: Sir Frederick Cook (Chair), Major H. Aldington (MoWT), S.L.G. Beaufoy (Ministry of Town & Country Planning); Col. W. Cameron (City Engineer, Leeds), W. Davidge (PPTPI), Major C. Godfrey (Chief Constable, Salford), R. Kidd (County Surveyor, Nottinghamshire), W. Macartney (City Engineer, Edinburgh), A. McIntosh (Chief Constable, Dunbartonshire), H. Manzoni (City Engineer, Birmingham), R. Matthew (Department of Health, Scotland) and T. Newcomen (MoWT).

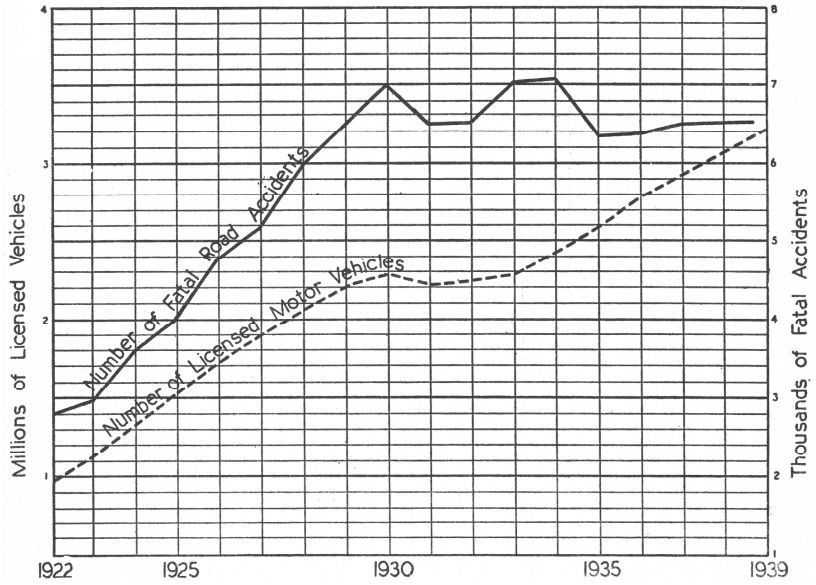


Figure 4. Number of fatal road accidents and growth of licenced road vehicles (MoWT, 1946, p. 7)

However, some road improvement proposals conflicted with other policies. In Chichester, for example, the Ministry standards for carriageway and pavement widths as applied to the historic core would have led to the loss of several buildings recently Listed by another Ministry! This conflict led to some awkward pseudo-Georgian designs to the new set-back building line and would, if implemented, have led to the incremental loss of almost all of the historic street frontages (Larkham, 2009). Bristol was criticised for proposing "the pointless destruction of valuable buildings merely to produce 100 foot wide streets" (quoted in Punter, 1990, p. 39).

Ring roads

But it is the ring road that had arguably the most significant single impact on urban form and functioning, and on how individuals experienced the changing post-war city. They were very popular in reconstruction plans and contemporary professional discourse (eg Tame, 1943a; Rayfield, 1956) but the idea did meet with some opposition. Escritt, for example, suggested that they were a “craze”, often proposed “where there is no sound reason for their adoption” – giving the example of Leeds. In reporting his paper to the Association for Planning and Regional reconstruction, *The Builder* (1945) felt that “the ring road within an occupied area has usually a definite value” but was more doubtful about such roads “outside the probable range of development” (p. 519). Marsland, in a more measured critique than Escritt,

> “had subscribed to the ring road idea, but … was not so sure now that it was a good one. There was nothing so fine as a ring road for cutting off development, separating an urban from an agricultural area. Statistics showed that where a ring road existed the through traffic still preferred to take the road through the town, and [I] did not see how that was to be stopped. Each town should have a good road driven through it, preferably from east to west, and another from north to south, and [it is hoped that] the

Figure 5. Liverpool ring road proposal and bomb-damaged property (Post-War Redevelopment Advisory (Special) Committee, 1946).

opportunity for that would not be missed when the replanning of bombed areas was under consideration" (Marsland, 1943, p. 35).

The demolition for ring roads was inevitably substantial even if some, as in Birmingham and Liverpool (Figure 5), threaded its ring road route around a number of bomb sites – these could, perhaps, be purchased more cheaply. Most others implied considerable demolition, in some cases of prominent public buildings (such as Wolverhampton's Public Library of 1900-2). The scale was substantial, even if a number of original plans were very tightly drawn around the city core, such as in Wolverhampton. In most such cases, when eventually built the road was significantly further out, and thus significantly more expensive (Figure 6). The engineering was also significant, with large-scale off-site fabrication as well as on-site casting of concrete for raised structures, bridges etc. – a number of these roads have in effect changed what is perceived as ground level.

The detailed design of ring roads was heavily influenced by Ministry of Transport standards, especially as the Ministry's sanction was needed for either grants of permission to borrow funding on the money market, particularly in the earlier post-war years of economic crisis. Hence the change from Birmingham's earliest design (1944 design and 1957 first section) to its later segregated high-speed sections (1960s-70s). Hence, too, the domination of the high-speed dual carriageway or "urban motorway", which brought additional technical requirements

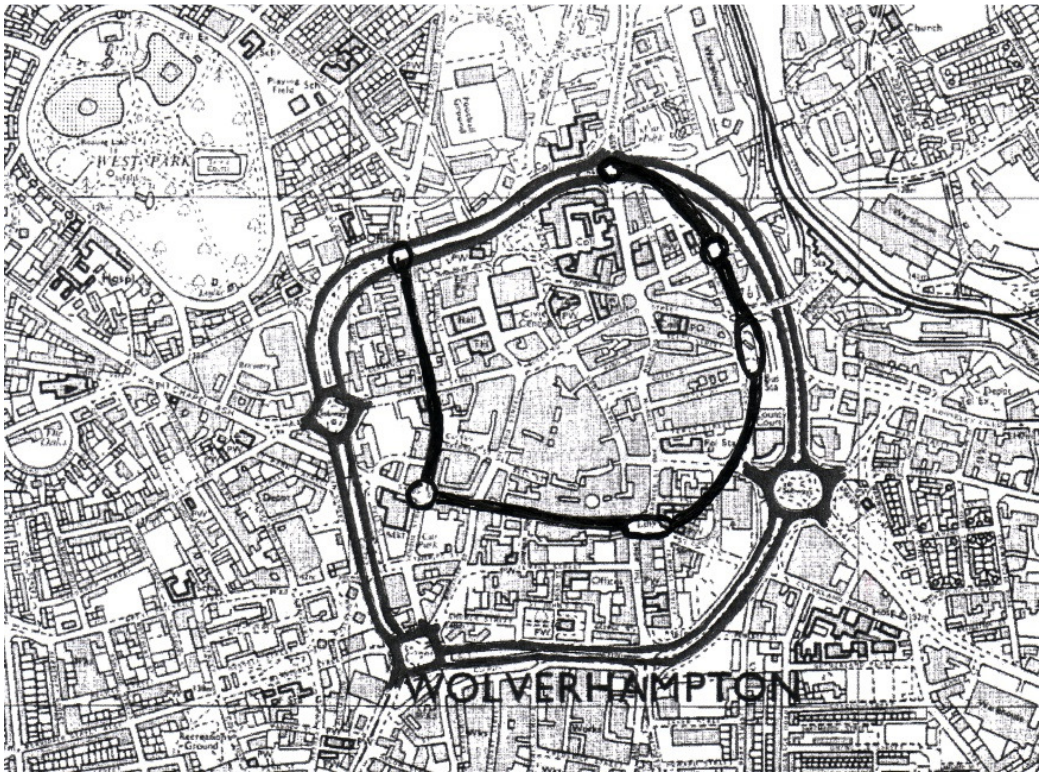


Figure 6. Wolverhampton: ring road as proposed in 1944 (inner) and as built (1970s-2000s) (outer) (base map © Crown Copyright/database right 2013. An Ordnance Survey/EDINA supplied service).

in terms of carriageway widths, turning radii and gradients. The protracted timescale of such projects also led to design changes, for example in Wolverhampton from central reservation car parking (with tunnel access) to heavy landscaping to, in the most recent section, just a barrier. In Norwich the sheer scale of this element of the 1945 proposal, a massive river bridge running along the rook of a series of factory / warehouses, meant that it was swiftly written off as unaffordable (Figure 7). Both of these examples lead us to consider the scale, expense and heavily-engineered nature of these proposals.

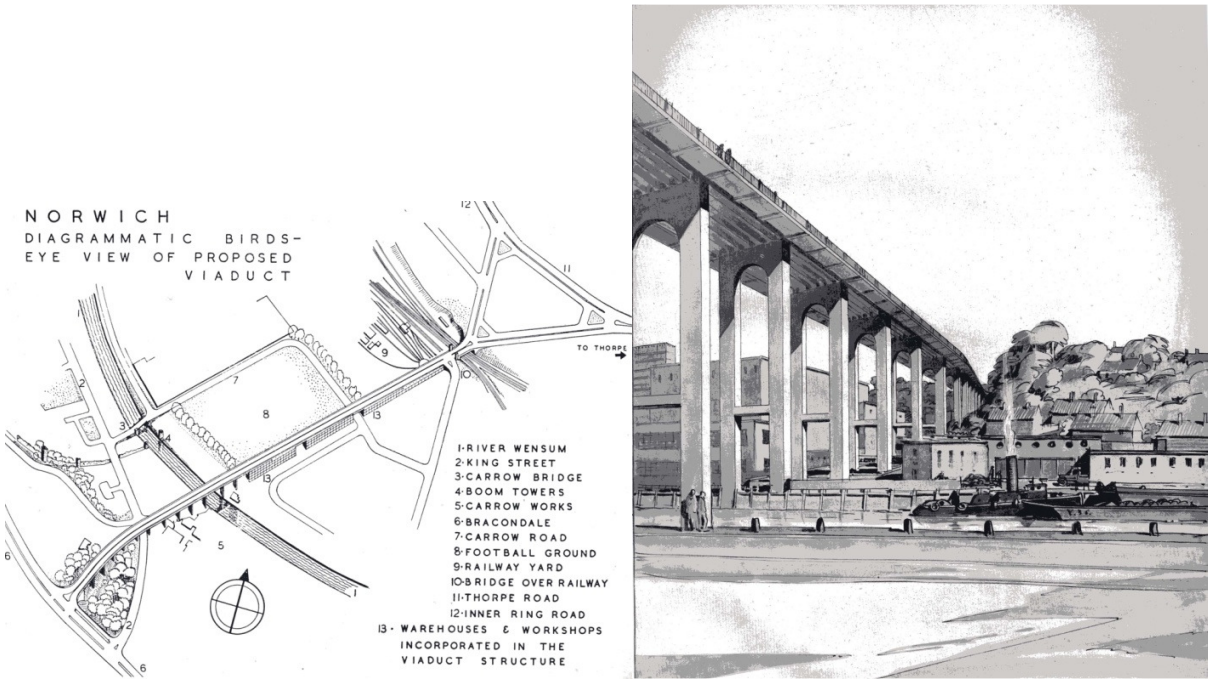


Figure 7. Plan and sketch of bridge section of proposed Norwich ring road, from James *et al*., 1945.

But ring roads were adopted not just by bomb-damaged towns and by larger industrial cities, but also by smaller historic towns such as Chichester (Figure 8); although the eminent consultant planner Thomas Sharp[7] always preferred to call such roads "relief roads" rather than ring roads. The function would be the same, the junctions were equally served with large and complex roundabouts, but the scale of the road was smaller than the high-speed dual carriageways that became common. In fact "ring roads" and "relief roads" often seem indistinguishable. York, too, had a staggeringly large-scale proposal for clearance immediately outside the walls, with a largely dual-carriageway ring road; the 'green belt' would contain institutional buildings and leisure facilities, and the historic walls would be exposed as a monument (Adshead *et al*., 1948) (Figure 9):[8] something of a return to the cleared *glacis* for the defenders' field of fire. Despite this new belt, both of these roads were very closely drawn around the historic core. In more recent years a major problem with roads of this type that were actually built was that they stifled further expansion of core business districts and, as with Birmingham, became known as "concrete collars".

7 Sharp was a prolific author of reconstruction-era plans especially for historic cities: his ideas are reviewed in a theme issue of *Planning Perspectives* (vol. 24 no. 1, 2009).

8 These plans for York have been called "the most radical ever formulated for York" but were not implemented. In 1956 a much less ambitious upgrade of existing roads to form an inner ring was begun, and an £18 million outer ring constructed in 1984-88 (King, 1989).

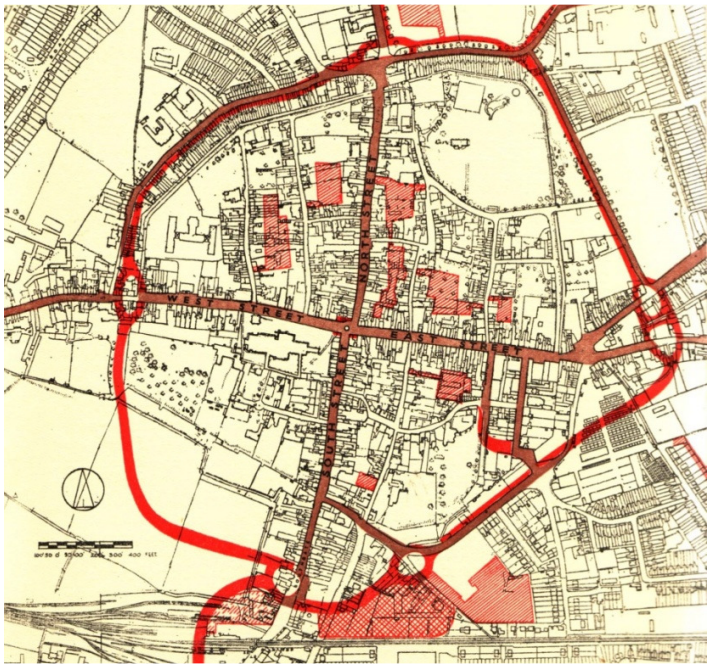


Figure 8. Sharp's "relief road" for Chichester (Sharp, 1949)

Figure 9. clearance for an inner ring road around York's walls (Adshead *et al.*, 1948)

Yet, for a variety of reasons, it proved difficult or even inappropriate in some towns to create a true ring road, and Exeter's plan, again by Sharp (1946), generated more of a network. Central London, of course, proved much the same despite the opportunity of the extensive bomb damaged and cleared sites. The consultants Holden and Holford did suggest extensive road widening and a form of "bypass" (if not a complete ring, largely owing to the river) (Holden and Holford, 1947). Each of these proposed new roads created the same problems in miniature as did an entire ring road; with clearance blighting property – and some of these road improvement lines persisted for decades.

Again, some so-called "ring roads" were not circuits, not true "rings". A number of place-specific reasons influenced this in some cases, including the structure of the existing road network and traffic flows, or physical features such as rivers (as in Hull) (Figure 10). In other cases it has just been that the project has lasted so long, passing through multiple political regimes, economic cycles and so on. Needs might have been reassessed; the road redesigned, as already discussed, or just completed very belatedly.

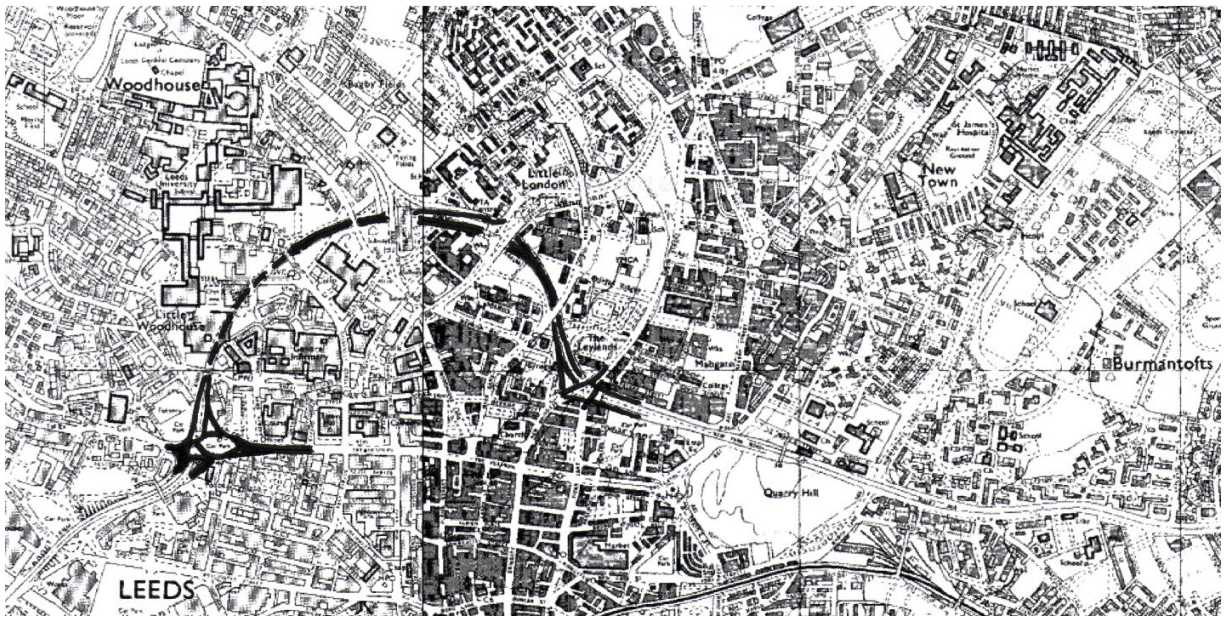


Figure 10. Post-war road improvements in Leeds: not quite a ring (base map © Crown Copyright/database right 2013. An Ordnance Survey/EDINA supplied service).

In fact the protracted gestation of some of these, admittedly large, projects is a continuing theme. This became a problem for the places concerned: the "bomb site" appearance persisted via clearance sites, slowly-progressing construction, and so on. David Adams's work in Birmingham has shown how problematic the perpetual change could be to local residents and road users (Adams, 2011; Adams, this volume; Adams and Larkham, 2013). Yet the grand visions were rarely completed as originally designed. Perhaps the ultimate "grand vision" for urban infrastructure was Plymouth's planned new city centre (Paton Watson and Abercrombie, 1943). The original *beaux-arts* plan is very familiar, indeed (to use an over-used work) an iconic image of planning at this time (Figure 11); but what was eventually built had significant

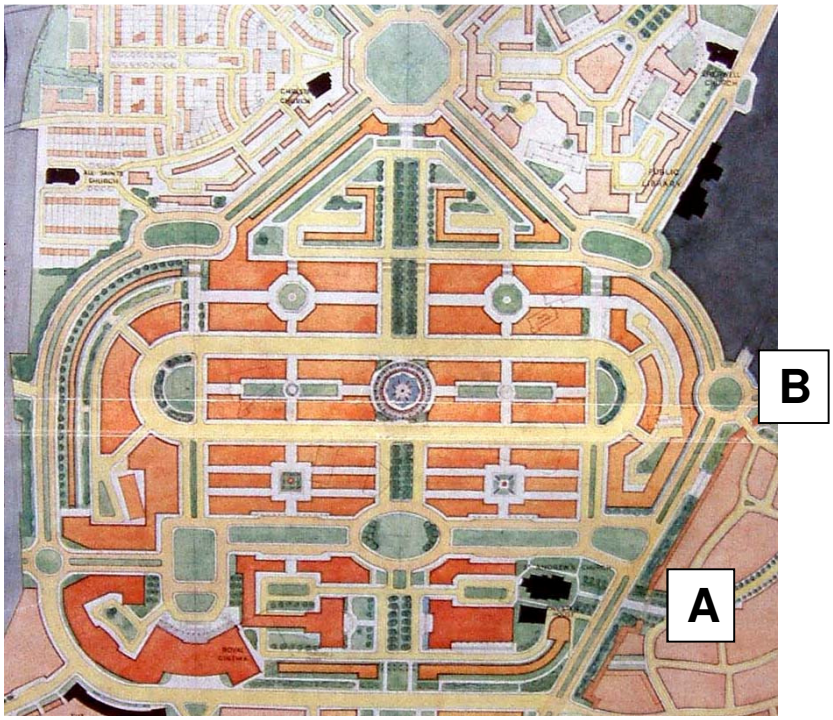


Figure 11. Original layout of Plymouth city centre and its ring road (Paton Watson and Abercrombie, 1943, reproduced with the permission of Plymouth City Council).

Figure 12. Charles Church ruins, Plymouth: on ring road roundabout (see Figure 10B) (author's photograph).

differences and the ring was not completed (Figure 11A) (Chalkley and Goodridge, 1991; Essex and Brayshay, 2008). There is also one further interesting change: the original planned location of one roundabout was changed to incorporate the bombed shell of a church, which now stands as a memorial, isolated, difficult of access and incongruous on the roundabout (Figure 11B; Figure 12).

Roundabouts

The Ministry's 1946 guidance gave a real example of roundabout design, seeking to match predicted traffic capacity, provide space for a technical measure called "weave angle" (ie the angle at which vehicles could be expected safely to join or leave the junction; see Tripp, 1942; Wardrop, 1957), the cost of land acquisition, and "satisfactory architectural treatment" (MoWT, 1946, Appendix 5). Clearly this was a complex and iterative process (Figure 13) and it is interesting to see that the early stages in this idealized process were indeed *round*abouts, while the final product was not. Whichever design was selected, the impact on existing urban form, on traffic and travel patterns, was substantial and often prolonged. There has been little systematic work on the impact on urban form or the disturbance to residents and other users.

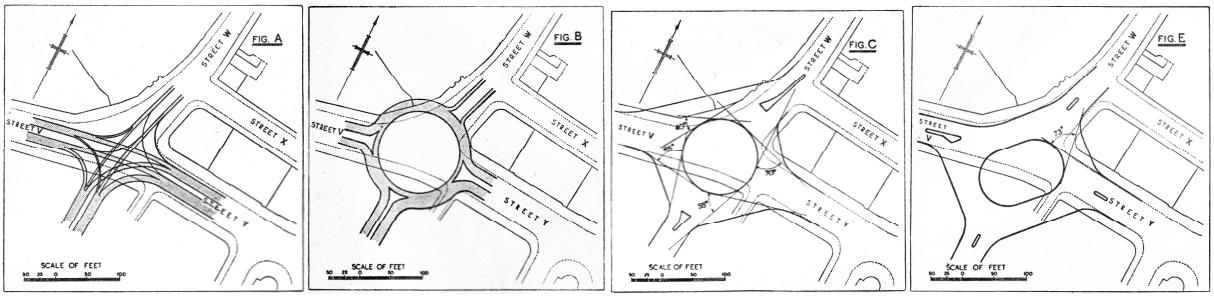


Figure 13. Stages in the roundabout design process (MoWT, 1946).

Many roundabouts of this period were in fact far from round, as the MoWT design process example showed. Weave angles led to distance requirements (Figure 14). Some highway engineers preferred sharp corners which forced traffic to slow down, rather than the sweeping curves we commonly think of today. Hence the *County of London Plan* (Forshaw and Abercrombie, 1943) showed many of London's major junctions with a large and "spiky and unique angular roundabout" (Figure 15). This is also seen in unofficial plans. The opportunity to reshape existing built-up areas, especially (but not solely) following bomb damage, helped to introduce the roundabout more widely. The popularity of roundabouts, despite the land cost, was that in cleared areas or new urban extensions (and the post-war New Town programme) the costs would be minimized, and this would be a clear response to rising vehicle use. This increased enormously after the First World War as surplus military vehicles were sold; despite rationing the same might happen after 1945.

The land take and cost were significant issues, especially in already built-up areas. Sharp (1940) calculated that a simple elliptical roundabout would need about 0.5-1 acre and cost £250-650, whereas a major clover-leaf junction for a fast road could cost between £54,500 and £90,500, requiring between 12 and 77 acres. These costs did not include purchase of neighbouring buildings, and demonstrate the scale of this activity.

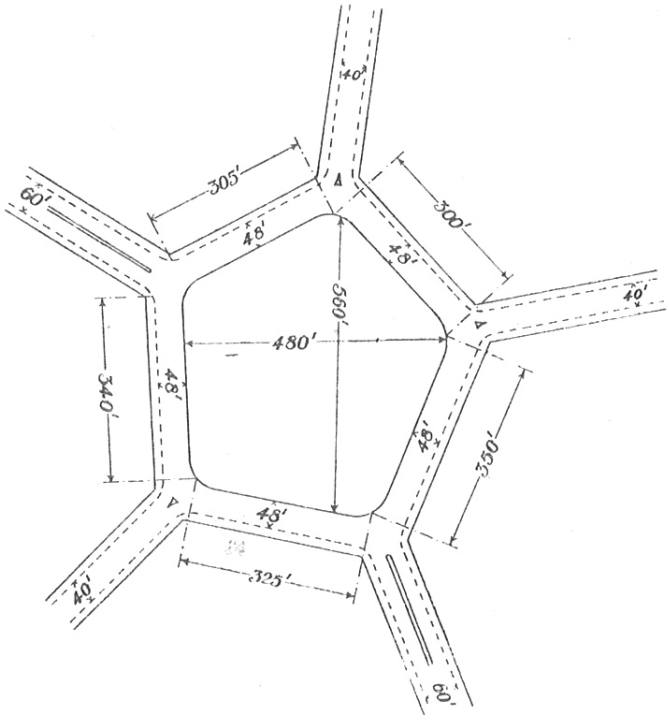


Figure 14. Dimensions for a 5-way roundabout, taking weave angles and traffic flows into account and producing an angular – not round – design (Tripp, 1942).

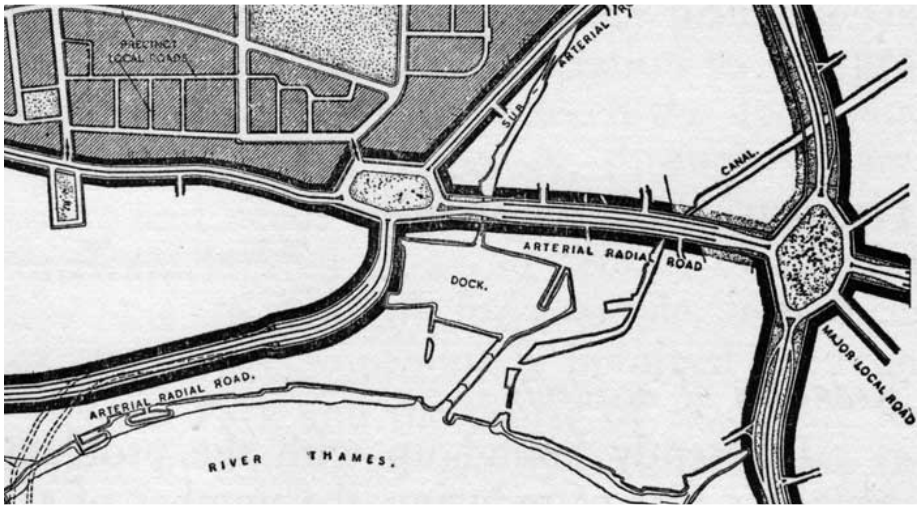


Figure 15. Angular roundabouts to control traffic speed (Forshaw and Abercrombie, 1943).

Some roundabouts, whether round or angular, had other functions. They could be components in an urban design (Plymouth), focal points for public arts or monuments (Charles Church, Plymouth), green places in which to relax (Birmingham, Wolverhampton) or locations for shops or public buildings (Birmingham: Figure 16). This design is interesting for its mix of building

Figure 16. Unbuilt roundabout design with public buildings, Birmingham (drawn by Reginald Edgcombe, © Birmingham Museums Trust, author's photograph).

functions, its public art,[9] its landscaping, and the provision of on-roundabout car parking. All these make a very large roundabout: not very pedestrian-friendly despite the provision of arcades (very common in reconstruction-era building design) as pedestrians have to go a long way around, crossing all of the axial roads, rather than across.

This leads to a consideration of more complex road junctions and the grade-separated interchange. As vehicles speeds rose and traffic became heavier, this type of junction became common on new freeways and highways,[10] for example in the United States in the inter-war period. It allows a more gradual joining and leaving, thus giving greater acceleration and deceleration distance; and allows traffic on the main road to flow more freely.

> "Obviously it was contrary to all laws of planning and traffic development that unimportant and local traffic … should be allowed to impede the large volumes of heavy important through traffic. Naturally such schemes would, in the majority of cases, mean both large demolitions and high initial expenditures, but against such costs should be set the monetary losses caused by the traffic hold-ups and delays, quite apart from the annoyance and inconvenience to the public" (Tame, 1943b, p. 29).

9 The location for this design has not yet been traced; but the fighter aircraft as public art suggests a connection with the city's Spitfire factory at Castle Bromwich.

10 That is, major and long-distance roads: in the UK context, many trunk roads and the motorway network which was being discussed in the early 1940s.

Again, therefore, they became common on new ring road and later motorway projects. A depiction in the 1944 Royal Academy proposals for London, in association with a sizeable square roundabout, shows the input of key highway engineers into this process (Royal Academy, 1944). Both Alker Tripp and the engineer Sir Charles Bressey, co-author of a pre-war report on London traffic, were members of the committee producing this plan. The Ministry guidance was again specific in terms of design and dimensions for such junctions. One of the first to be completed in this country was in Perry Barr, Birmingham (1962) (Figure 17). Just a decade later it was described as "its dimensions were niggardly by present practice, and reflected the reluctance to acquire more than the barest minimum of property for demolition" (Macmorran, 1973, p. 120). Although the official guidance had specified maximum gradients for these designs, the direct move here from underpass to flyover led to concern that, in icy weather, vehicles would not be able to master the long incline; and innovative (and expensive) sub-surface electrical heating was supplied (City of Birmingham, 1965). In fact it was rarely used and subsequent resurfacing has probably destroyed it.

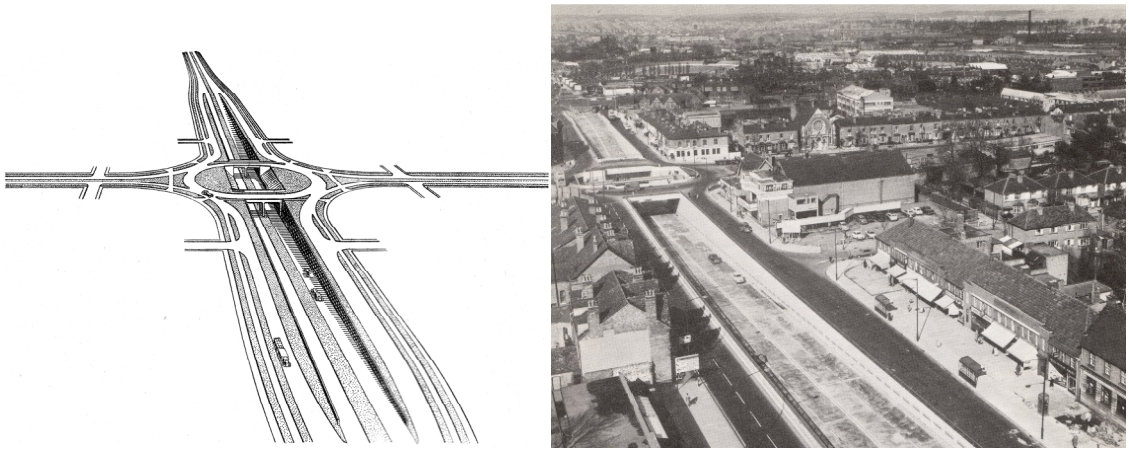
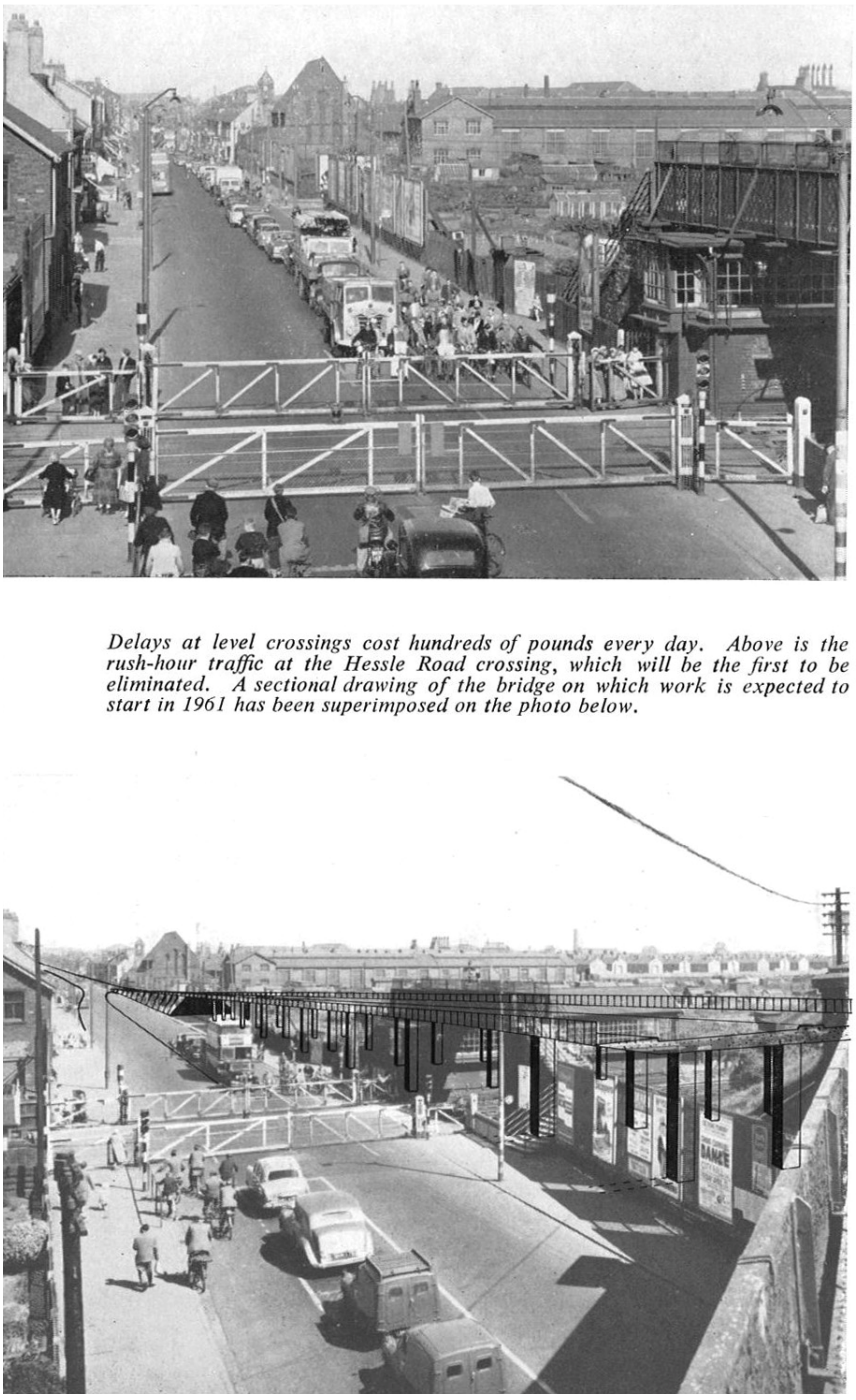


Figure 17. Underpass/flyover systems: (left) the ideal in MoWT, 1946 (image 'flipped' to align with next) (right) Perry Barr example (Macmorran, 1973).

Related to the vehicle underpass/overpass were infrastructure proposals where new roads crossed rivers, canals, railways and other obstructions. The Norwich river crossing has already been mentioned, but the series of road 'flyovers' for the numerous rail level crossings in Hull provided a particular problem for the initial plan (Lutyens and Abercrombie, 1945), its reception by Ministry officials and local politicians (Jones, 1998) and eventual implementation planned for 1961 (City Council of Kingston upon Hull, undated) but not carried out in this form (Figure 18).

There was not only a desire to control vehicles, but also pedestrians. Tripp's vertical segregation has been mentioned; but much more common in the UK was the pedestrian underpass. "Cyclists and pedestrians should, at roundabouts, pass under the carriageways by specially designed subways … there could be no doubt that roundabouts of that character should become general practice" (Tame, 1943b, p. 29). In London, however, such subways were unpopular and Tame (1943a, p. 24) suggested "that the Ministry of Transport might consider installing escalators at suitable subways as an experiment, and make their use compulsory (barriers for a distance on the curbs should be erected to prevent surface crossing)". Once ubiquitous, they were often originally well lit, brightly coloured often using



Delays at level crossings cost hundreds of pounds every day. Above is the rush-hour traffic at the Hessle Road crossing, which will be the first to be eliminated. A sectional drawing of the bridge on which work is expected to start in 1961 has been superimposed on the photo below.

Figure 18. Proposed road bridge over level crossing, one of five necessary under revised plans (City Council of Kingston upon Hull, undated, p. 28).

public art, and larger ones – for example in Birmingham – often had small shops providing activity and surveillance. A large roundabout could be designed and heavily landscaped to provide a sort of green oasis, if now noisy. Here, pedestrians could be well below the vehicular

Figure 19. Large roundabout between Plymouth railway station and city centre (author's photograph).

carriageway and sheltered from both noise and wind. Plymouth has an example of an extremely large roundabout, again below carriageway height, well landscaped and heavily used (Figure 19). But in recent years the underpasses have become unpopular, shops have long gone as shopping habits and the retail economy has changed, they are foci for violence and other antisocial behaviour, and they are being infilled. Birmingham, for example, has retained only a handful of its original underpasses in the city centre.

The second common way of controlling pedestrians was the pavement-edge barrier. These were coming into use in the 1930s, and the contemporary view was very much one of controlling 'unruly' pedestrians to minimize accidents and facilitate the uninterrupted free flow of vehicular traffic: "the safety of the highway was a very big problem … the only way to prevent accidents to pedestrians was to make it a punishable offence to cross the road except at recognized crossing-points" (Morgan, 1943, p. 32; see also Tame, 1943a, quoted above). However there was a counter-argument: the Retailers' Advisory Committee on Town Planning (1944) was "opposed to … devices to restrict opportunities for pedestrians to cross streets. Such restrictions are unpopular with the public and when crossing is this made particularly difficult one side of the street tends to lose its popularity". Such barriers appeared in the Ministry guidance with several design alternatives drawn by Gordon Cullen, later to become a

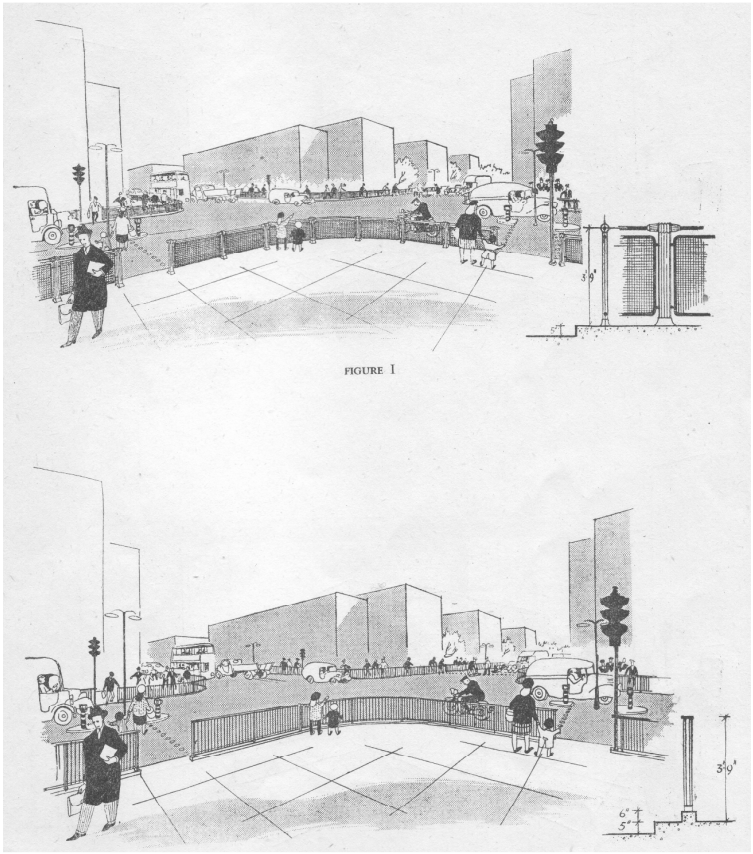


Figure 20. Design options for pedestrian restraining barriers (MoWT, 1946).

famous urban designer (MoWT, 1946; Figure 20). With this recommendation they became, and still are, ubiquitous, and often resented or just ignored (see Adams, this volume). As with roundabout underpasses, contemporary behavior and use have significantly changed the use and usefulness of these features.

The discussion about controlling pedestrian behavior, and the prioritizing of vehicle movement that was sometimes explicit but often implicit in this rhetoric, is given by Birmingham's City Surveyor and Engineer, Herbert Manzoni, reflecting on the provisions of the Birmingham Corporation Act (1946) that, in essence, gave planning permission for the city's inner ring road:

> "There are no special powers in the Corporation Act nor, of course, in general legislation to prevent people from walking across the ring road … It became necessary, therefore, to consider the substitution of attraction for compulsion in order to achieve, as far as possible, a carriageway free from pedestrians, in addition to the pedestrian subways at main crossing places it became necessary, therefore, to include numerous subways as an inducement, by safety and convenience, for pedestrians to avoid the carriageway" (Manzoni, 1961, p. 271).[11]

[11] The debate about movement and control in the rebuilt post-war city, especially Birmingham, is explored further in Adams (2013).

Conclusions

This introductory overview has only been able to explore a tiny part of the development of new infrastructure envisaged in the large volume of post-war urban reconstruction plans; only a small part of which was ever implemented as originally envisaged. The vision for the new vehicle-prioritised city was vastly different to its pre-war predecessor (Figure 21). I have not even touched on the massive new road infrastructure that connected towns and cities – the motorway network:[12] I have focused instead on more urban-scale work. Here, there is a view that projects became large and ever larger: the "opportunity" of bomb damage in some locations could encourage this *tabula rasa* treatment, although much infrastructure usually remained reasonably intact below ground, one reason why in the normal course of events new road schemes are expensive and relatively rare. Ring road projects in particular took years, often decades, to complete.[13] When projects were eventually completed, municipalities were proud of their investment in high-speed traffic-prioritised circulation.

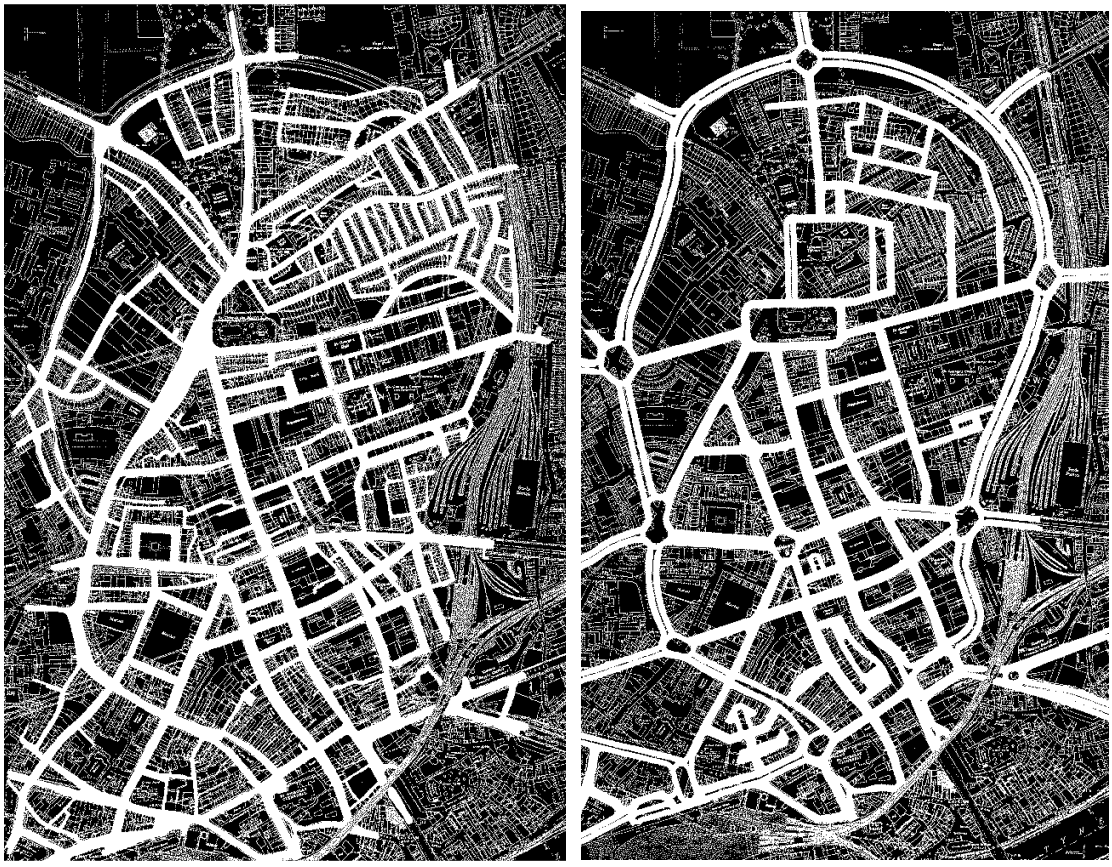


Figure 21. Newcastle upon Tyne: before the war and as proposed in the 1945 plan (Parr, 1945).

12 The inter-urban highway and motorway infrastructure has received critical attention, with Starkie (1982) being a helpful and early critical overview.

13 Of course delayed and even uncompleted highway projects are not unique to the UK: see Gardon (2009) for the French equivalent.

The impact of such projects on urban structure is, perhaps surprisingly, little explored. Van Nes (2002) gives a rare exploration of how post-war ring roads in Birmingham, Bristol, Coventry and Wolverhampton affected the configuration of the urban street network and the movement of people and traffic. In particular, the distribution of shopping functions can be changed especially as linear retail streets are severed. Yet the existent fact of a ring road need not have an adverse impact; this depends on the detailed design of links between the city core and the ring – yet, clearly, this was not well understood when many of these rings were designed. It is also pertinent to re-emphasise that these large-scale infrastructure projects did not actually deliver a solution to the problem of urban traffic: although the influential Buchanan Report (Buchanan, 1963)) proposed yet more radical and large-scale approaches, as Gunn's recent re-appraisal noted, by the middle 1970s,[14] "what had previously been acknowledged by traffic planners now became widely acknowledged by politicians: that new roads had the tendency to generate more traffic and thus potentially to worsen rather than alleviate the problem of congestion. There would be no engineering solution to the traffic problem" (Gunn, 2011, p. 541).

And yet, no matter how carefully designed, how closely adhering to official design guidance, some of these roads have fallen out of favour within little more than a couple of decades, despite the massive investment and disturbance that their planning and construction imposed. The fate of Birmingham's "concrete collar" is a case in point, with the loss of the raised Masshouse Circus junction; but is the ground-level multi-lane highway any better (Figure 22)? Although technology and use patterns do change, this scale of urban change surely needs to be conceptualized with a much longer timeline in mind. All urban users need to be considered, not just those using motor vehicles, as seemed to be the case in the early post-war period at least.

The nature of contemporary debate on these issues would merit further investigation, given more recent experiences of the medium-term consequences of this rush of enthusiasm for major infrastructure projects.

Figure 22. Replacement of Masshouse Circus, Birmingham inner ring road, with wide open multi-lane ground-level highway (author's photograph).

[14] That is, the end of the post-war reconstruction/rebuilding era which closed with the Middle East war and oil crisis.

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The impact of the automobile on post-war city centre plans

Catherine Flinn
Bodleian Library, Oxford

Introduction

From the end of hostilities in 1945, blitzed cities faced seemingly endless obstacles to reconstruction, in particular to the implementation of new city-centre plans. Although the period after 1945 is often seen as the high point of social democracy, in that it witnessed the vast growth of the British welfare state, the landscape of British cities presents a very different picture. Here, post-war economic history plays out in modernist developments, built within the construct of a new government that was socialist in name, but with intensely capitalist origins. But the framework around which most of these redevelopments – or reconstructions – was built was road infrastructure. The automobile had risen enormously in popularity before the Second World War, and was made and purchased in unprecedented numbers after the war. At the same time, thinking about post-war city centres even during the war, almost all planners began to incorporate road redesign as the predominant feature of the "ideal" new, modern, city centre. Cities would remake themselves with 'modern' amenities such as wider streets for cars and 'modern' buildings using steel, glass and concrete, removing cramped and winding medieval thoroughfares and outdated shops and offices. Such ideology runs throughout the contemporary rhetoric of post-war planning and is discussed in much recent work: see Pendlebury (2003, 2004). This paper will examine post-war reconstruction planning and its focus on the automobile as the backbone to a significant number of city plans.

Wartime reconstruction planning took many forms, both locally and within central government. Various bodies for overseeing postwar city plans came and went with government reorganization. Initially mainly under Lord Reith, then Lord Portal and finally William Morrison, the infrastructure for a national oversight of urban plans gradually came together (see Flinn, 2011, Chapter 2). Eventually planning oversight in central government had its own ministry, although this was short-lived as an independent body. Under Morrison's leadership an advisory group for blitzed cities was formed (similar to a body that had briefly been gathered under Reith). The Advisory Panel on Redevelopment of City Centres was appointed in May 1943 (The National Archives [hereafter TNA] HLG 88/8; see also Hasegawa, 1992, pp. 13-16). The Panel spent most of 1944 surveying seven cities selected as examples for postwar reconstruction and producing a report. Importantly for the current discussion, a technical planning section – moved from the Ministry of Health and working side-by-side with the Redevelopment Panel's activities under the new planning ministry – had begun work on an advisory publication. Although most of the work was apparently completed in wartime it was not actually published until 1947 (Ministry of Town and Country Planning, 1947).

A glimpse at this handbook immediately shows that the circulation of automobile traffic was strongly emphasized. It contained diagrams on the "growth of road traffic" and discussed in the aims of redevelopment the "provision for the convenient circulation of pedestrian and vehicular traffic" (Ministry of Town and Country Planning, 1947, pp. 6-7

and Figs 12, 13). In describing plans to be made it claimed there were three main decisions to be taken: types of use areas, amount and distribution of floor space and land for each, and "the layout of the main streets" (Ministry of Town and Country Planning, 1947, p. 24). Further, in detailed sections the handbook also stated that planning authorities should consider

> "[t]he existing road pattern, and information concerning traffic flow, congestion, accidents and car parking provision and demand. It is of the first importance that the plan should provide for the smooth flow of all traffic that needs to enter the central area, and should make generous provision for car parking" (Ministry of Town and Country Planning, 1947, pp. 31-32).

In setting these priorities, it is interesting to note that it was assumed that street layouts would change (If they were to redevelop or rebuild on the old street patterns, there would be no need to discuss road layouts at all). It is additionally important to note that the text assumes a "need" to "enter the central area" and to have ample car parking. Not only was it taken for granted that vehicles should take such precedence that old street patterns would be laid out anew, but there was also an assumption that people would enter city centres by car and park in the centre. Planning ideals were far from being either environmentally or – in today's terms – aesthetically friendly at this wartime and early post-war stage. The specific advice given in the planning ministry's handbook might not always have been heeded, but it is certainly evident from examining reconstruction and redevelopment plans that vehicle circulation was of the utmost importance to local authorities and businesspeople.

Furthermore, it is important to be aware that beyond the planning ministry's suggestions (and eventual central control of planning in Britain), control of appearance could also be partially invested in the transport ministry. The Ministry of Transport provided grants for road building and so had jurisdiction over final road designs. Conflicts could arise on either front based on the planned infrastructure, particularly where cities had "planned boldly" (as Lord Reith phrased it) – attempting to make significant changes to city centre layouts. In the post-war period this became a key issue because of the increasingly car-centered approach to planning and design (see Punter, 1986, p. 186; the developed guidance in Ministry of Housing and Local Government, 1962; and Larkham, 2009, for an example of conflict). This paper will examine a number of plans, with particular focus on a few plans dominated by road layouts in their wartime and postwar planning stages.

The cities

Pendlebury (2003, p. 371) noted that "[c]ollectively the plans are known for their uncompromising vision and self-belief in creating better, more functional places, despite the difficulties that might be encountered in achieving these goals. Existing British cities were held not to be working efficiently". Studying numerous city plans of the 1940s, Pendlebury's further statement that one of the key priorities appeared to be "the need to improve access and circulation (for both people and traffic)" absolutely rings true.

Liverpool

By the start of the war, plans were under way for the improvement of roads in the central area alongside the ongoing battle for housing provision in Liverpool, as well as the whole Merseyside region. A plan specifically for the central area of Liverpool was created in late 1941. It was presented by Alderman and local architect Alfred Shennan, who claimed to be making the presentation "as an interested citizen" rather than a political leader (LSE BLPES HD7/324, pp. 3-4).[1] In outlining the plan, Shennan stressed that "I am not going to propound some grandiose scheme which could be carried out only by first laying waste the present city and starting afresh. The plans for such a scheme might look very pretty on paper but they would quickly meet with the reception they deserve" (LSE BLPES HD7/324, pp. 3, 5). However, the plan involved a new layout for a proposed inner ring road, which would remove significant areas of historic city-centre streets. This was certainly a more drastic plan than Shennan's rhetoric suggested, due to the fairly major changes to the historic street pattern of the city centre (Figure 1).

Liverpool – like other blitzed cities – continued planning through the war and was unable to begin reconstruction for several years after the war's end. By 1946 the original ring road plan had been modified. In March 1946, the Post-War Redevelopment Advisory Special Committee (PWRASC) members approved a plan which showed a greatly modified inner ring road, wide but cutting across or removing fewer of the larger roads (PWRASC, 1946) [2] (see Figure 2). While the road plan was less drastic than the 1941 version, the plans also proposed applying for a Declaratory Order (DO) of over 1,500 acres. Theoretically, city officials wanted to be able to plan freely within these boundaries, but made it clear that they did not intend to redevelop the entire area, which included areas also designated as "blight" (PWRASC, 1946, p. 36).

The PWRASC soon discovered the difficulty of negotiating to acquire sites, to procure definite developers or companies to build, and at the same time felt that they were receiving the short end of the planning ministry's treatment, having received no steel allocations to allow for city-centre work when the first such announcement was made in 1949. Due to the pressure to get moving on any kind of rebuilding, the redevelopment committee approved a joint report by the City Engineer and City Architect which stated that "in light of experience gained since the first proposals for postwar redevelopment were prepared" the future proposals should incorporate existing street lines, "rather than attempt to impose a new street pattern" (PWRSC Minutes, 2 September 1949, Liverpool Record Office [hereafter LRO]). The reason given was, unsurprisingly, the reduction of cost – a savings in both the headache of negotiating to purchase sites as well as a savings in laying out new services (i.e. drainage, etc). Further, the city officials recommended a new layout that would provide increased open spaces and car parking. Grandiose roadway redesign therefore was set aside. However, significant changes were still made to the fabric of the centre, and almost all of these involved new street layouts.

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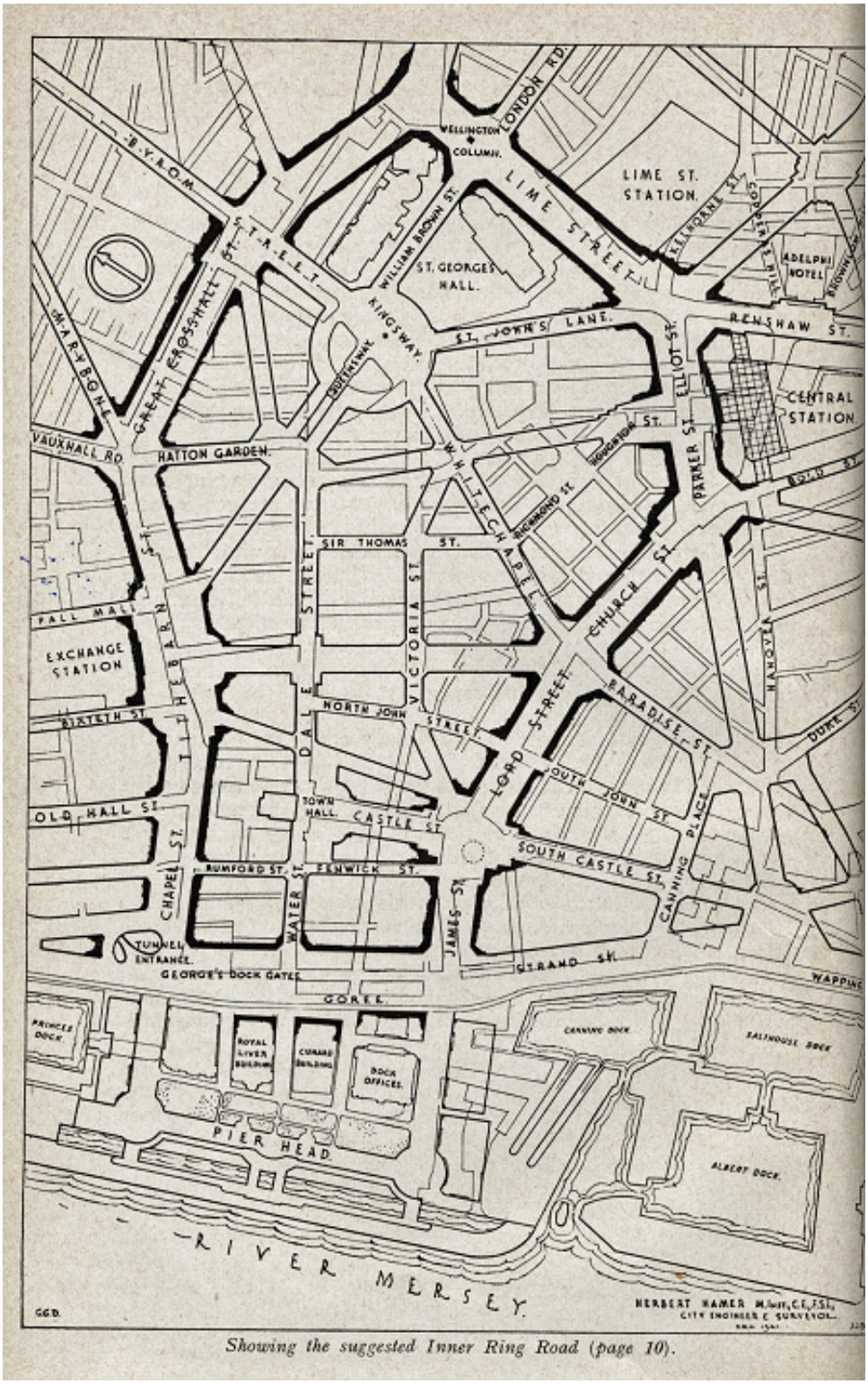
1 London School of Economics Archives [hereafter LSE]: BLPES [British Library of Political and Economic Science] HD7/324 "The post-war reconstruction of Liverpool".

2 The Committee Minutes do not discuss a public exhibition but it seems that the model pictured with the report was made for public viewing. Note of the impending plans was made in the national press: *The Times*, 29 March 1946, p 2.



Showing the suggested Inner Ring Road (page 10).

Figure 1. Liverpool: Inner ring road plan, 1941

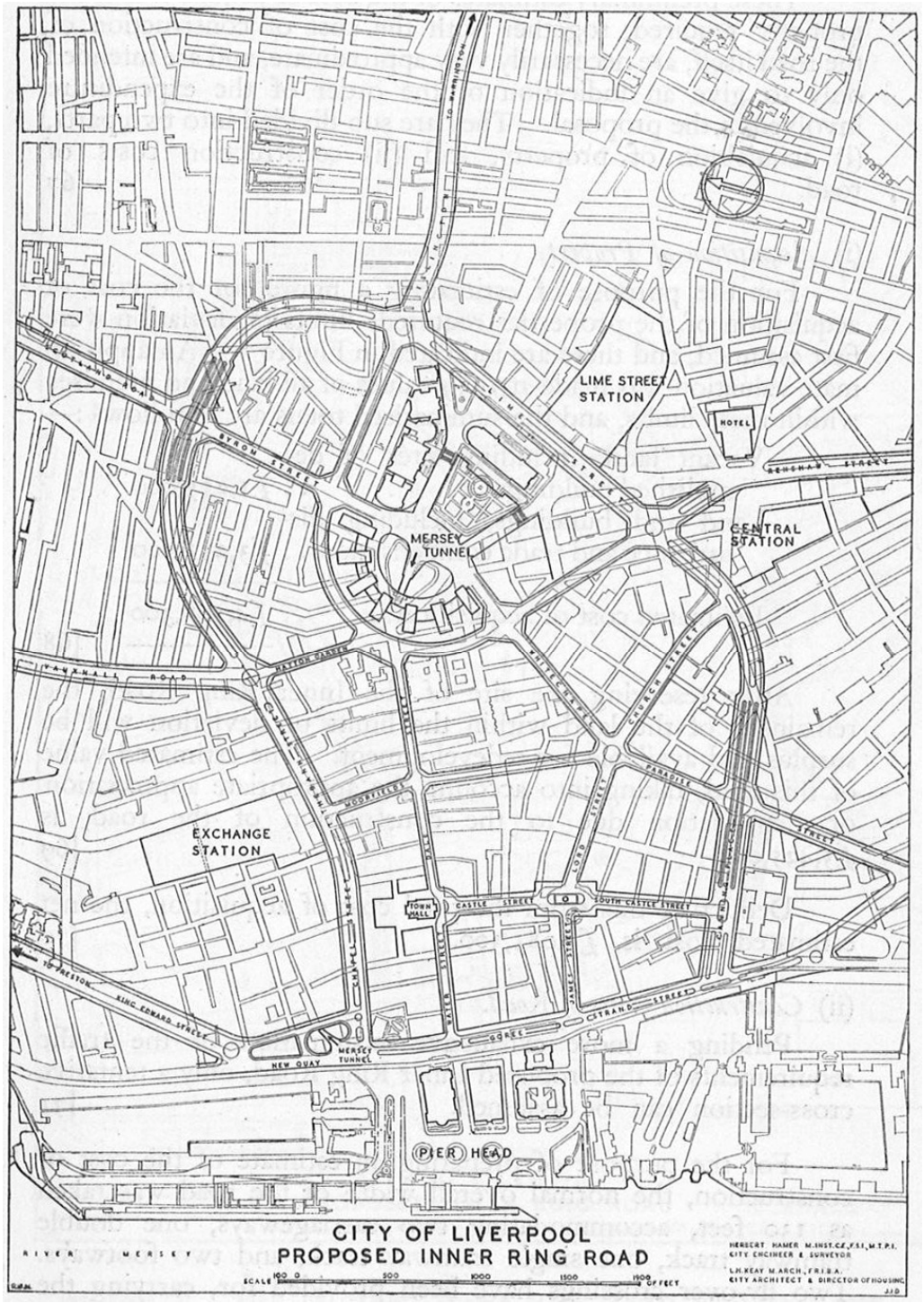


Figure 2. Liverpool: proposed inner ring road as of 1946 (PWRASC, 1946, p. 21).

Additionally, as happened in many other cities, input from local businesses seems to have helped determine the final policy of the city on much of the actual redevelopment. By 1950 the City Engineer was suggesting that no new roads be planned for the city centre. He also noted that an amended inner ring road was in progress, since the prior plan "would have seriously affected the business and commercial development in the area" (PWRSC Minutes, 24 October 1950). This may have been beneficial to local property owners, but it slowed progress on the intended relief of traffic congestion in the centre. Traffic soon became a major topic of discussion within the committee and the city council in 1950 and 1951, with surveys on car parking being drawn up to help plan for some relief (PWRSC Minutes, 24 October 1950 and throughout 1951).[3] No road solution was actually ever agreed, and the council eventually decided to make additional car parking a responsibility of developers/owners of new shops.[4] Liverpool's authorities had begun their wartime planning with big ideas for organizing new road patterns in the city centre, but by the late 1950s they had been unable to fully implement these ideas due to both cost and local resistance. The most striking aspect of Liverpool's city centre plans, however, is that they were from the start solely based around road redesign, not zones of usage, and incorporated few – if any – major planning suggestions beyond the roads.

Exeter

Attempting to get ahead in the planning game, and secure early planning ministry approvals to get reconstruction started, the city of Exeter hired the prominent planner Thomas Sharp in 1943 (Flinn, 2008). Sharp stood firmly against rebuilding on old lines in Exeter, calling it a "dreadful mistake", although he stated that the city's "character" should be preserved (Sharp, 1946, pp. 9-10). His plans included drastic changes to vehicular circulation in the city. To be fair, however, city officials had been hoping to solve the dilemma of their biggest traffic problem: a single bridge through the centre over the River Exe.

Though the single bridge problem was not resolved in the immediate post-war reconstruction process, the "relief roads" planned by Sharp were subsequently modified severely by both the local authority and by the planning and transport ministries which wanted significant input (especially the Ministry of Transport).[5] In the end, much of the reconstruction of Exeter involved new road layouts, including the destruction of Georgian and other historic architecture – such as Dix's Fields – that the planning ministry had asked be preserved, while at the same time very little of Sharp's published plan was actually implemented. Princesshay, the one portion of *Exeter Phoenix* that was implemented, brought a noticeable change to the pre-war street layout, involving a view of the cathedral and a new pedestrianised shopping precinct, but it was quite a small

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3 LRO: LVCCM 3 January 1951 also mentions negotiations with railways to build an underground system, which did eventually get built.

4 LRO: PWRSC, 'Car Parking, Central Area', September 1951 and 'Report of the PWRSC on Car Parking', 30 November 1951. Some of this was incorporated into the 'Report and Recommendations of the Housing Committee on Slum Clearance and Central Area Redevelopment' dated 2 December 1951.
See *Express and Echo* 18 February 1949, noted in *The Municipal Journal* 11 March 1949; also TNA HLG 71/1284 and Flinn (2088, p. 116).

part of the city centre itself (for more on Sharp's legacy in Exeter see While and Tait, 2008).

Nearby Eastgate – the intersection of two important roads – was a major focus of the disagreement and contention between the city, the planning ministry, the transport ministry and local businesses. Further, Sharp had intended it as a focal point of the newly redeveloped shopping precinct, with the relief road – or inner ring – to be further away to the north side of the centre (Figure 3). After Sharp's involvement ended with the publication of the plan and attendance at a public inquiry in 1946, city officials shifted the relief road to the south which would run it right through the Eastgate intersection.

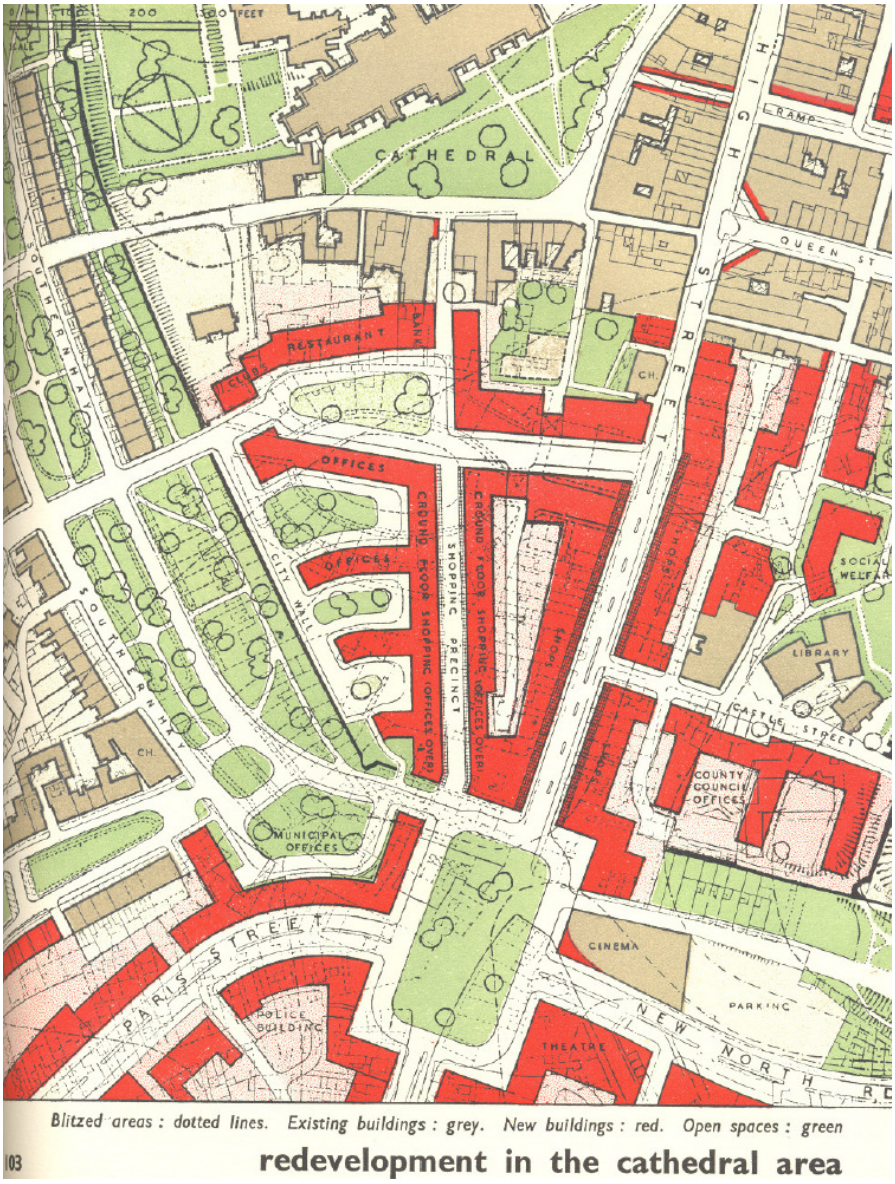

Figure 3. Eastgate Square, Exeter (at bottom) (Sharp, 1946, p. 103)

So contentious and difficult, the Eastgate intersection was still in the planning stages in August 1952 when the *Architects' Journal* reviewed Exeter's reconstruction efforts (Rigby Childs, 1952), and still had not been realized in 1954 when Exeter's plans were published in the *RIBA Journal* and the *Journal of the Town Planning Institute* (*RIBA Journal*, 1954; Gayton, 1954, 1958) . In the end, the Ministry of Transport had its way, no major changes were made to the busy intersection and Exeter simply ended up with another surface traffic light-controlled junction (see While and Tait, 2008, pp. 90-91). Still, along the way the High Street had been widened and the city centre – at the time – was open to increased traffic, as noted in a positive review by the editor of the *RIBA Journal* in 1954: "The narrow, cosy, traffic-congested medieval streets have gone and there is room to move and to park cars" (*RIBA Journal*, 1954, p. 214). The plans eventually implemented at Exeter were not as car-focused as in Liverpool, but the changes did have a profound impact on the amount of traffic that could flow into and through the city centre by the late 1950s.

More road-centred plans

Many reconstruction or redevelopment plans were made which treated the cities as *tabula rasa* – particularly in Hull and Plymouth – though the rhetoric of wartime was tempered by realities such as the economy, the legislative hurdles and local financial constraints. Pendlebury's perception of historic city plans acknowledges these as proposing a "radical restructuring of urban form", and he adds that where cities had seen extensive bomb damage "there was little of the tendency to recreate historic street patterns and building forms found in many continental cities" (Pendlebury, 2003, p. 327). A brief look at some of these plans confirms his statement.

Perhaps an extreme example of the prominence of vehicular circulation in a post-war plan, Plymouth stands as an unprecedented example of planning implementation in this period. Its city centre was planned as if the whole had been leveled by bombing (it had not), and completely new street patterns were introduced. This may not seem to provide an example of automobile-centred planning but, if the roads are an indication, the addition of broad boulevards certainly seems to indicate that they were of great importance. The title on the perspective in the published plan by Paton Watson and Abercrombie (1943) – "The City of Tomorrow" – gives a definite impression of the ideals promoted by Abercrombie in several British cities.

The plan for Hull was another of Abercormbie's major projects.[6] Hull's council originally welcomed both the bold plan, and the concept of creating an entirely new city centre with new traffic patterns and circulation (Figure 4). However, when it came to implementation of the grandiose plan, as in very many other British cities many business owners and freeholders dug in and tried to retain their pre-war sites. Hull had much more damage than most provincial cities, but also more local (and vocal) opposition. Awarded a Declaratory Order for 200 acres, the local authority was only later able to obtain a Compulsory Purchase Order (CPO) for eleven acres.[7]

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[6] Abercrombie was commissioned for this plan with the eminent architect Sir Edwin Lutyens, who died before the plan's publication. His actual contribution, while terminally ill, is unknown, although Abercrombie said that "he performed very useful service in loosening up the imaginations of the committee" (Hussey, 1950, p. 21).

[7] Minister of Local Government and Planning, 1951, p 193. The new street layouts

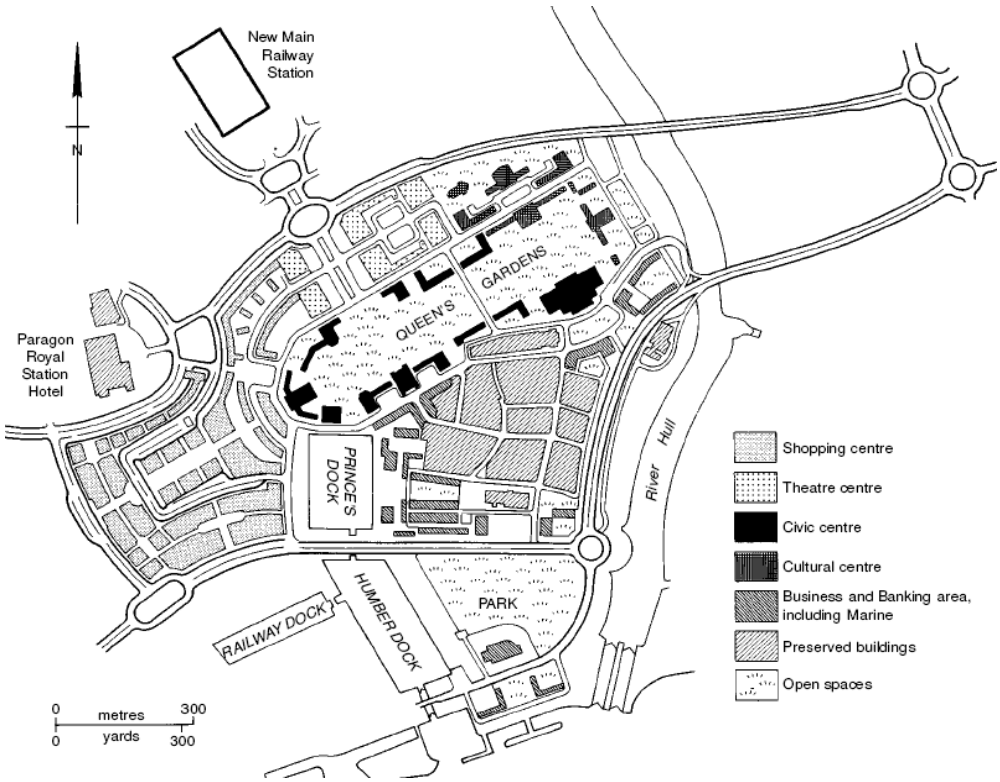

Figure 4. New road proposal, Hull, cutting across the historic city core (outlined by the docks and Queen's Gardens) (Abercrombie and Lutyens, 1945)

Many further examples exist of planning around the car: one of the most prominent is perhaps the development of the inner ring road in Birmingham. Described by Gold (2007, pp. 82-83) as an "urban motorway", Birmingham apparently ignored specifics about city centre development to concentrate on the traffic problem, as well as infrastructure (and the ubiquitous concern for housing). Subsequent city-centre development grew up around this circulation plan, rather than an aesthetic or land-use plan for the centre itself. Additonal cities discussed by Pendlebury also demonstrate a number of very specific plans around the automobile, for example at Bath ("[a]s with most reconstruction plans, road proposals were a dominant feature …") and Edinburgh (road proposals "loomed large" and were "regarded as an imperative") (Pendlebury, 2003, pp. 377, 378). Larkham has written about many of these very same issues, including the difficulties of agreeing a city plan with the planning ministry and crucially the Ministry of Transport, in the city of Chichester (Larkham, 2009).

While it is easy to acknowledge the prominence of the automobile in post-war plans, it is a little less simple to understand precisely where such an outlook was rooted. Today we prefer our city centres car-free and our historic buildings preserved. In the 1940s and 1950s the perception of what was 'best' for Britain's cities and towns was profoundly different. One of the key influences on post-war British cities was the rise in popularity of

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included building over a small street, called Chariot Street. See *Hull Times,* 24 May 1952; City Council of Kingston-Upon-Hull (undated, *c.* 1958), p. 17; Ministry of Housing and Local Government, 1955, p 68.

the modernist style of architecture. The taste for modernism was prevalent among architects and planners, who certainly espoused the clean lines and new materials, but local authorities who controlled much of the appearance of 1940s and 1950s city centre building enthusiastically adopted it as well (Gold, 2007, chapters 2, 3, 7). Such taste extended to inclusion of motor vehicles as part of the modern vision. As archival records show, local authorities showed an over-riding sense of the embracing of modernity and a wish to be seen as a forward-thinking city, not stuck in the past (cf Larkham and Lilley, 2003).

And, while there were certainly complaints about pulling down individual historic buildings, none of the archival material consulted yields any discussion of rebuilding any part of a city or single historic building as it had been. Certainly a few buildings in some cities were repaired and almost rebuilt in replica where enough of the original remained to do so, and especially in terraces; but this was rare in the cities attempting to implement new plans. This apparent lack of concern for historic value, for a general sense of what might be good, have 'character', and therefore should be saved does not reflect the intense pressure for preservation which arose more than a decade after reconstruction hit its peak (Pendlebury, 2003, p. 371; Larkham, 2003; Stamp, 2010). From the poor urban conditions of the pre-war period, and incomplete efforts at slum clearance, to the rising use of modernist forms and concerns for "modernization" – especially for car-friendly urban spaces – it is not surprising that there was little nostalgia for exact reconstruction.

City officials, city councils, developers and architects of the post-war era were paying little attention to "heritage", rather they were paying considerably more attention to other contemporary demands. The concept is worth re-stating in Pendlebury's words:

> "[m]any historic cities that had slowly evolved over hundreds of years commissioned plans that if implemented would have entailed relatively rapid large-scale urban transformation ... the root cause was a crisis in responding to the pressures of the modern world that had been building up for some time, in particular the impact of the motor car … Major changes to urban form were considered to be inevitable (Pendlebury, 2003, pp. 387-388).

Clearly this drive for modernisation took over – at least in the ideologies of those responsible for making the reconstruction(s) happen – and instead of the historic sense of place found in much of Britain, replaced it with the "mid-twentieth-century sense of a modern planned economy and society, expressing a landscape which it was hoped would further a post-war social democratic consensus of [stability]" (Short *et al.,* 2003, p. 8).[8]

Happily the drive for modernization and bringing vehicles into city centres waned fairly quickly, and criticism of such planning ideals appeared as early as the mid- to late 1960s criticism of such planning ideals appeared. Speaking of an article written for the *Oxford Mail* in October 1968, James Stevens Curl recounted that "[t]hose of us who cared for the architectural values of the past were very much in a minority, while roads, traffic,

[8] Some authors have attributed the post-war approach to "fashion", for example in Coventry: "the scheme … buried a past that still had psychological value to local communities, and it imposed a highly integrated urban aesthetic that owed more to fashion than to pragmatism" (Calame, 2005).

motor cars, and non-traditional architecture were all accepted as essential aspects of 'progressive' thought" (Curl, 1977, p. viii).[9] Some have also justified the shift as a natural progression: M.R.G. Conzen (1966, p. 57) called it "functional adaptation" – in the wider historical sense of urban development.

While a certain rhetoric of blame persists around post-war planning and architecture (promoted by people such as Prince Charles and Margaret Thatcher starting in the 1980s), some critics do occasionally show an appreciation for the ideology of modernity that so strongly supported this vehicle-centred planning. Sunand Prasad, a Past President of the RIBA, in an 'essay' for BBC radio recently stated that there was

> "certainly a deal of naïve utopianism in the planning and architecture of the postwar decades, and maybe that period *can* be described as a gigantic and failed experiment driven by idealism … But it's not idealism – laudable or foolish or otherwise – that shapes modern cities, it's their political economy.
>
> With the benefit of hindsight, we can see that for *all* the good intentions our confidence in professional knowledge was much greater than our real understanding of how it would all work … In the second half of the 20th century, we thought we were replacing trial and error with science" (Prasad, 2010).

Yet perhaps, as testimony to the lack of appreciation for the rebuilding efforts of the 1950s, recent redevelopments of a number of these post-war projects now boast huge areas of completely pedestrianised retail and commercial space. Two examples in cities discussed above include Exeter's flagship 'Princesshay' development by Ravenseft Properties, pulled down in 2004 and replaced by a bigger, newer and more modern shopping centre with yet more floor space to bring higher rates to the City and rents to the developer.[10] In current-day Liverpool, the city centre retains pieces of the post-war redevelopment, but a new mega-development, Liverpool One, was created by acquiring large blocks of post-war development: it opened in 2008.

Seen as a necessity, planning still did not determine the final outcomes within the blitzed city centres. In the end it was not only planning that shaped the blitzed city centres, and so the motor vehicle did not always take over the city centre. The post-war economy and lack of steel changed and challenged the building industry, but equally crucial – if not more so – were the opinions and decisions of civil servants and local authorities, the necessity of using private developers, and the myriad of external factors faced by all the actors involved. Modern visions translated into somewhat less desirable realities: but then planning does not create reality.

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9 In 1970 the *Oxford Mail*, reporting on the Civic Society's objections to the new road network being proposed, stated that "[w]hen inner relief roads were first proposed for Oxford, they were the accepted solution to the problems of movement within a city. Now it is becoming recognised that the unrestricted use of the car in cities destroys environment and is socially damaging." The Society recommended re-examining the role of public transport and keeping commute traffic outside the city boundary (Curl, 1977, p. viii).

10 "The £230m Princesshay development officially opened September 2007. The scheme has been heralded as the biggest single investment in regeneration in the city's history. It contains a mix of shops, restaurants and apartments" BBC News, 23 May 2008 < http://news.bbc.co.uk/ 2/hi/uk_news /england/devon/7415831.stm >. See also While and Tait (2008).

“It is true that not only the planners but the Government itself had promised, if not a new heaven at least a new earth, at the end of the war” (Holford, 1952).

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Helicopter dreaming: the unrealised plans for city centre heliports in the post-war period

Martin Dodge
Department of Geography, University of Manchester, Oxford Road, Manchester

Richard Brook
Manchester School of Architecture, University of Manchester, Oxford Road, Manchester

> The "concept for a high-speed personal helicopter was an early expression of what would become in the years immediately after World War II an extremely popular vision of the future. To many observers, the helicopter seemed to promise wings for the city dwellers who might land atop their apartments or office buildings. Unfortunately, helicopters were – and remain – difficult to fly, relatively unsafe, noisy, and energy inefficient" (Corn and Horrigan, 1984, p. 100).

This paper considers a time in the middle of the twentieth century when the helicopter was a new and thoroughly exciting form of flying that held great promise to revolutionise urban transportation. The focus is on the development of plans to accommodate passenger helicopters effectively into British cities and, in the context of Birmingham and London, how the industry experts, property developers, architects and politicians worked to plan new heliport facilities in the city centre during the 1950s.

Helicopter travel concept and urbanism

The notion of flight via a rapidly rotating wing is old, perhaps in the minds of ancient Greek philosophers and dating back at least to Leonardo da Vinci in the fifteenth century with his now widely-known and intriguing sketch of a prototypical helicopter. Practical development had to wait, however, until the late 1930s when sufficiently light and powerful piston engines were available and allowed aircraft designers to go beyond autogyro planes to true helicopters, capable of vertical lift and forward flight, using the rotor blades alone. Despite more than half a century of subsequent technical adaptation and cultural assimilation, the helicopter remains a distinctive flying vehicle, still capable of eliciting response when seen in the skies. The sight – and sound – of a 'copter hovering low overhead still stops people in their tracks.

The helicopter has some unique characteristics as a mode of transportation that have long promised – but not yet delivered – radical changes to urban form and structure. The key advantage over surface modes of transportation is the speed and ability to traverse *above* space. As Almy succinctly noted in 1996, "[t]he shortest distance between two points … is a straight line which usually can be travelled only by flying via helicopter" (quoted in Cwerner, 2009, p, 226). As has become evident in the police chases screened on television, the helicopter can easily outpace even the fastest, most determined driver who is tied to road spaces. The promise to be able to rise above congested city streets is appealing, with perceived advantages for personal travel of rapidity, anonymity and security. The helicopter's superiority over fixed-wing aircraft is its ability to take off and land vertically in a relatively small space and thereby offer the flexibility of point-to-point journeys. Here we see the helicopter's fundamental

affordances: for rapid, direct personal travel that breaks apart the collective journey tied to trains on rails or airliners and long runways.

To make the most of the beneficial characteristics of helicopter flight, the aircraft requires its own dedicated spaces in the city to land safely, unload, park and refuel. These are known as heliports or helidromes and are distinct from simple helipads for landing.

> "The helidrome is a cleared space, an absence of obstacles or structures that could hinder the aircraft. It is designed so that the helicopter is free to fly safely. It ranges from a green pasture to a flat roof, and it seems characterised by the absence of architecture rather than its presence" 9de Voogt, 2007, p. 8).

In some senses the heliport is the most notable physical feature of virtual flight in the urban landscape. There are, however, planning and architectural design challenges for inserting larger heliports effectively into complex and multi-functional urban fabric; although the helicopter seems to receive little coverage in the planning literature (but see Branch, 1964; Cwerner, 2009; Finch, 1966; de Voogt, 2007). While airports are almost invariably located on the edge of cities, at a distance from most of the population and in space open to the skies, heliports need to be centrally located to exploit the point-to-point rapidity of vertical flight. This logic of location makes the size of any proposed site for a heliport hard to justify in commercial terms on landing fees alone, and it is also bound up in the difficulty of ensuring that the pad has an unobstructed approach. The presence of a heliport in a populated area has been known to be associated with issues of noise disturbance and perceptions of operational safety (for what remain 'specialised' machines in the eyes of the public). The risks of helicopters flying, at relatively low levels, over cities was vividly highlighted by the January 2013 crash in London when the aircraft stuck a construction crane which was shrouded in fog.

The nature of the heliport and its potential architectural realisation is little considered in academic literature, especially in relation to the lionised status of the airport, which has become emblematic for major cities connected into global network of flows and indeed compared to cities themselves (see Bouman, 1996; Kasarda and Lindsay, 2011; Koolhaas, 1995).

The heliport is often an afterthought and the helicopter remains a mechanical oddity, usually lacking the sleek aesthetics of the airliners or the luxury connotations of private jets. It has only a very marginal role in most of our lives. Despite the hopes of enthusiasts and entrepreneurs, the helicopter remains, stubbornly, a socially exclusive mode of transport, most evident in specialist tasks (particularly police surveillance and emergency response) and in niche environments (such as transporting workers to oil rigs and other inaccessible sites). Most people's first-hand experience of a helicopter flight is as an occasional recreational outing.

Whilst the real practical application of the helicopter today is undoubtedly limited, the capacity to fly remains deeply appealing to ground-dwelling humans. Elemental to the fascination of the helicopter is that it seems to promise direct point-to-point *personal* flight. Such aerial travel was shown in the popular 1930s science fiction film *Things to Come* and was envisaged by Aldous Huxley in his prophetic 1932 novel *Brave New World*, where personal helicopters are owned by the élite to move above the social masses (Figure 1). More broadly, in the heady days of the American consumer boom and the 'infinite future' of post-war suburbanisation, some prophesised that helicopters,

Figure 1. This cover image of a French science magazine from 1946 is emblematic of the early imagination about what vertical flight might encompass (authors' collection.)

like the automobile, would come to find a place in every garage, enabling the successfully businessman to fly from his home in the country to the city office.

There are social consequences to the use of helicopters to overcome space. While we do not now have widespread, personal helicopter use – and certainly not the science-fiction fantasies of heli-car – the accessibility of private modes of flight has effects on the mobility of few and the rights of the many. The helicopter is fundamentally undemocratic. It has been, and remains, undoubtedly a transport tool for the privileged and its enables elites to be socially exclusive via the bypassing of the spaces of inequality that their actions help to create and to perpetuate. This is well illustrated in Saul Cwerner's analysis of the extensive use of personal helicopters in São Paulo,

Brazil. As he notes: "[i]t is true that helicopter travel perpetuates and, in some respect, symbolises, the social differences that are inscribed in architecture and urbanism" (Cwerner, 2009, p. 236). The dialectical nature of private exploitation of the common resource of the airspace above the city is well illustrated by the issue of noise disturbance. As was noted many decades ago: "[i]f large numbers of executives took to flying by helicopter in London, life would become unpleasant for many people working there" (Harding, 1966, p. 360). To benefit the few able to afford to fly above, one must penalise the many left below. Thus we should resist the inherently utopian rhetoric of the 'freedom of the skies' promulgated by the aviation industry by highlighting the capacity of the helicopter to engender inequality across urban space.

The post-war promise of routine helicopter travel

After the Second World War the helicopter quite rapidly emerged from being an experimental machine that was fundamentally precarious and often downright dangerous to even attempt to fly, to a more stable and airworthy mode of transport. As helicopters became reliable and capable, people saw that they could begin to plan appropriate services and schedules. As the British helicopter matured, with several competing aircraft manufacturers, it emerged, in the 1950s, as one of key icons of post-war futurism, promising the imminent reality of mass inter-city flight and all of its utopian possibilities.

Throughout the 1950s and early 1960s, plans were advanced in many British cities for the centrally-located heliports required to bring the new flying craft safely into the heart of commercial districts, and the appeal of rooftop landing pads was readily apparent in a significant number of proposals. As one MP noted in a Parliamentary debate on heliports in 1953:

> "I believe that we are on the threshold of a helicopter age in Britain for internal passenger transport. … The point that I wish to emphasise is that only by the erection of elevated stations in the centre of our principal cities can we gain the maximum benefit from all the time-saving potentialities of these brilliant little machines" (Nabarro, 1953).

Thinking about how best to handle helicopter landing sites in the post-war period followed several decades of speculation by urbanists on how the emergence of mass aeromobility, by dirigibles and propeller planes, could be integrated into the fabric of cities as an effective mode of transport for both local trips and long-distance travel. Rooftop heliports are reminiscent of earlier ideas to use of skyscrapers to tether and transport passengers on to the giant airships of the 1920s and 1930s. They also relate to earlier fanciful schemes for elevated landing strips between towers and platforms built above open spaces such as parks and rivers (see Bruegmann, 1996).

Much of the interest was focused on London, as the place with greatest demand for likely helicopter services. Through the 1950s, multiple schemes were proposed and developed for heliports in a wide array of locations across the centre of London. We have noted at least 15 different sites put forward with plausible proposals, including adding heli-decks on the roofs of all mainline rail stations, building landing platforms over various Thames bridges and above new wholesale markets. This forward-looking activity was partly in response to missives coming from the Ministry of Civil Transport to city authorities to prepare sites for helicopter services (see House of Commons, 1953). An official report of the Interdepartmental Helicopter Committee from 1951 concluded that "operation between the centres of towns and cities is essential and feasible. Operated in this way, the helicopter will offer a high

degree of public convenience and time saving advantages over all other forms of transport for distances between 50 and 300 miles" (Ministry of Civil Aviation, 1951, p. 13). In a commentary in the *Manchester Guardian* on the potential for regular helicopter flights between major British cities, the correspondent noted that

> "… the convenience and economy of any such service will call for a city landing ground almost as centrally sited as the main railway stations. News that the siting of a Manchester helicopter station is shortly to be discussed with the specialists of the BEA [British European Airlines] … gives further assurance that an appropriate space is likely to be earmarked against the needs of a new service from which the city could hardly be excluded" (*Manchester Guardian*, 1951, p. 6).

Of the more elaborate proposals advanced in the early 1950s, one was for a huge 'helidrome' to be built on stilts above Charing Cross train station[1] (Figure 2); another concerned heliport provision in relation to the large-scale development of the South Bank site after the closure of the Festival of Britain (*Flight Magazine*, 1952a, pp. 504-505). The idea was floated in favour of another rooftop solution placed upon Waterloo train station in 1953, although it was seen as more problematic being further from the river and in a more densely built-up area (*Flight Magazine*, 1953b, p. 573). Nearly a decade later, in 1961 the architect Charles Glover advanced a scheme to relocate the wholesale market from Covent Garden to a new building above the railway sides north of Kings Cross, which would have included a rooftop heliport (Rowntree, 1961, p. 5).[2] It is unclear how realistic or realisable the schemes for Waterloo, new Covent Garden market or Charing Cross stations were, and they may have been architectural dreams in a similar mould to the 1930s schemes for rooftop landing strips for aeroplanes in the middle of London.[3]

More serious consideration of the need for, and the siting of, a heliport in central London was undertaken by an official Ministry of Aviation expert panel in the late 1950s. Its findings were presented in 1961 in a substantial document, with supporting data and maps (Ministry of Aviation,1961). The underlying thinking was summarised as following:

> "[s]ince the helicopter's appeal depends on saving time, the heliport should be brought as close as possible to the main source and destination of a substantial proportion of the traffic. …it should not be much more than a quarter of an hour from Grosvenor Sq, and ideally, between the West End and the City (p. 4).

In its deliberations, the committee had formally evaluated nine different sites capable of handling routine helicopter services and they selected three as the most

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1 The scheme was apparently initially advanced by Norman Dodds MP in May 1951 based on design work by the architects Aslan and Freeman [cf. *Flight Magazine*, 1953a, p. 10] and was featured prominently in a double page spread in *The Illustrated London News* [1952, pp.170-171].

2 Glover's scheme is featured in a contemporaneous *Pathé News* report titled "Market Report", an online copy of which is available at <www.britishpathe.com/video/market-report>.

3 In 1931 the architect Charles Glover advanced a fanciful idea for a massive wheel shaped airport actually constructed over and above existing buildings in Kings Cross area (*Illustrated London News*, 1931, pp.956-957). A few years later the municipal engineer Charles Frobisher proposed the notion of rotating steel decks high above the city for handling planes. He developed the idea sufficiently for it to be patented in July 1934 as "Improvements in and relating to elevated centrally pivoted rotating aerodromes or airport landing grounds" (ref. GB413773a).

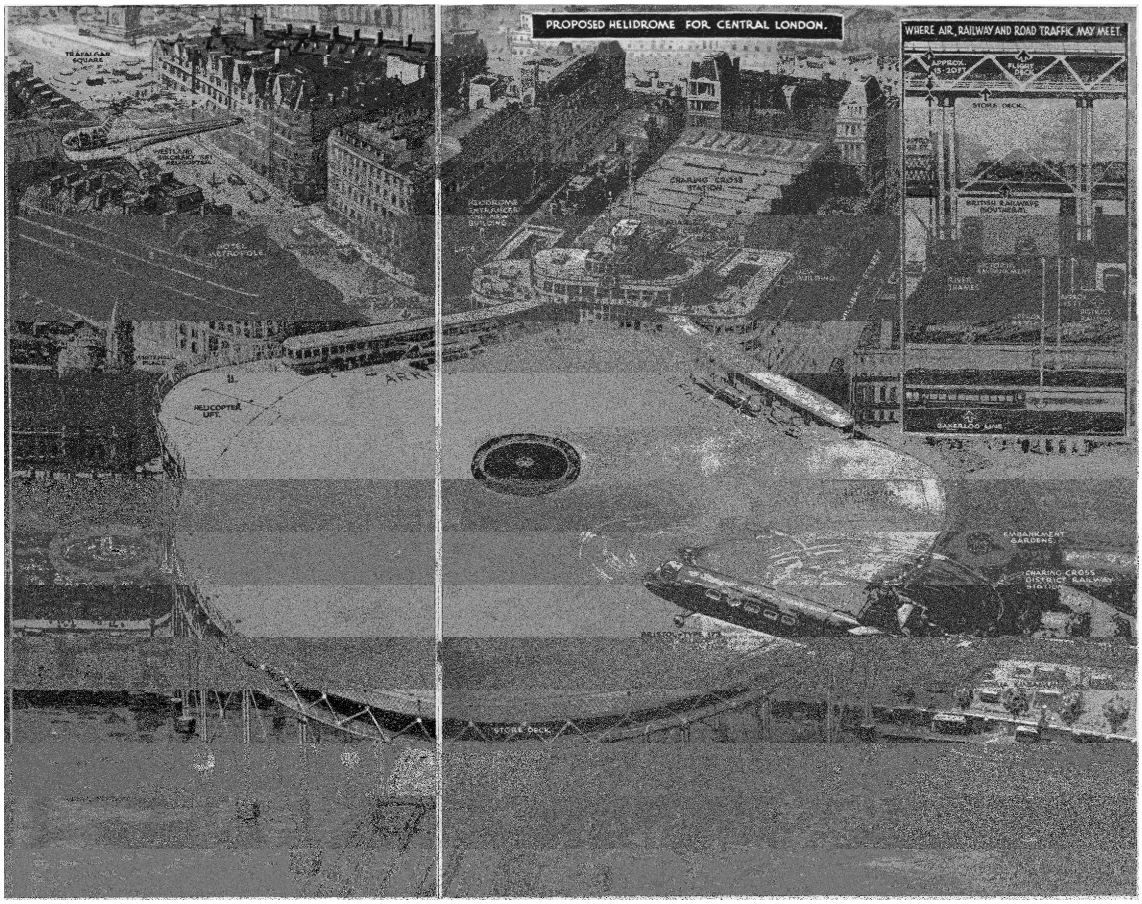

Figure 2. Publicity drawing of the proposed helidrome over Charing Cross station, comprising a 300ft plus square amour plated concrete pad raised about 100ft above the existing train tracks and spreading out across surrounding roads and ground structures. Below the main platform was to be a secondary deck for helicopter storage and maintenance. The helidrome position supposedly would allow for safe, unobstructed approach along the Thames (*Illustrated London News*, 2 February, 1953, pp. 170-171. Scanned copy courtesy of John Weedy, www.iln.org.uk.).

viable: Nine Elms goods yard, Cannon Street Station and St. Katharine Docks. Each of these sites had a riverside aspect, as the Thames was seen to offer a safe corridor along the water. None of these sites were developed as a helicopter station. In the end a supposedly temporary helipad was erected as a platform cantilevered out over the River Thames at Battersea, opening in April 1959; it remains in operation[4] (Figure 3). The 1961 report was probably the zenith for governmental discussion on the need for new large city-centre heliports, and the idea of wide-scale use of helicopters for civil transport began to recede from then onwards.

It is apparent that helipads on the top of buildings, while being conceived in later years, were not actually constructed; and are not common as perhaps is popularly imagined. The roofs of skyscrapers are not routinely dotted with the 'H' landing signs. This is due to the lack of demand and financial feasibility, perceived safety risks and security concerns [significantly enhanced post 9-11], along with pragmatic reasons in that many

[4] Called London Heliport, <http://www.londonheliport.co.uk/>.

Figure 3. The Westland Heliport at Battersea shown in an explanatory drawing from its planning in the late 1950s (Helicopter Foundation International, historical archive, <http://archives.rotor.com>).

roofs are too small or oddly shaped, and that the space is often required for HVAC machinery and valuable telecommunications equipment. None of the tall buildings in any British city centre are equipped with a helipad available for general purpose travel to the best of our knowledge.

Perhaps the most iconic skyscraper helipad – celebrated in dramatic photographs of helicopters swooping into land – was located on the 60-storey Pan Am Building in midtown Manhattan, by Gropius and Belluschi (Figure 4).[5] This is no longer in use and is forever known for an accident that occurred in 1977. The helipad had opened in 1965 and operated shuttle flights to nearby airports, but closed in 1968 as it was unprofitable (de Voogt, 2007, p. 44). The pad was reactivated for flights in February 1977 but in May that year a stationary helicopter suffered a mechanical failure in its landing gear, collapsed to the deck, and one of the rotor blades broke free. "Whirling like a gigantic boomerang the blade struck four people on the rooftop land pad, killing three instantly, then plunged over the skyscraper's west parapet. … One piece of blade continued to fall, whirling onto Madison Avenue and killing a woman walking on Madison and 43rd Street shortly after 5.30pm" (*The New York Times*, 1977, p. 1). The helipad was permanently closed after the incident.

[5] See Clausen (2005) for details on the planning and architecture of this controversial building.

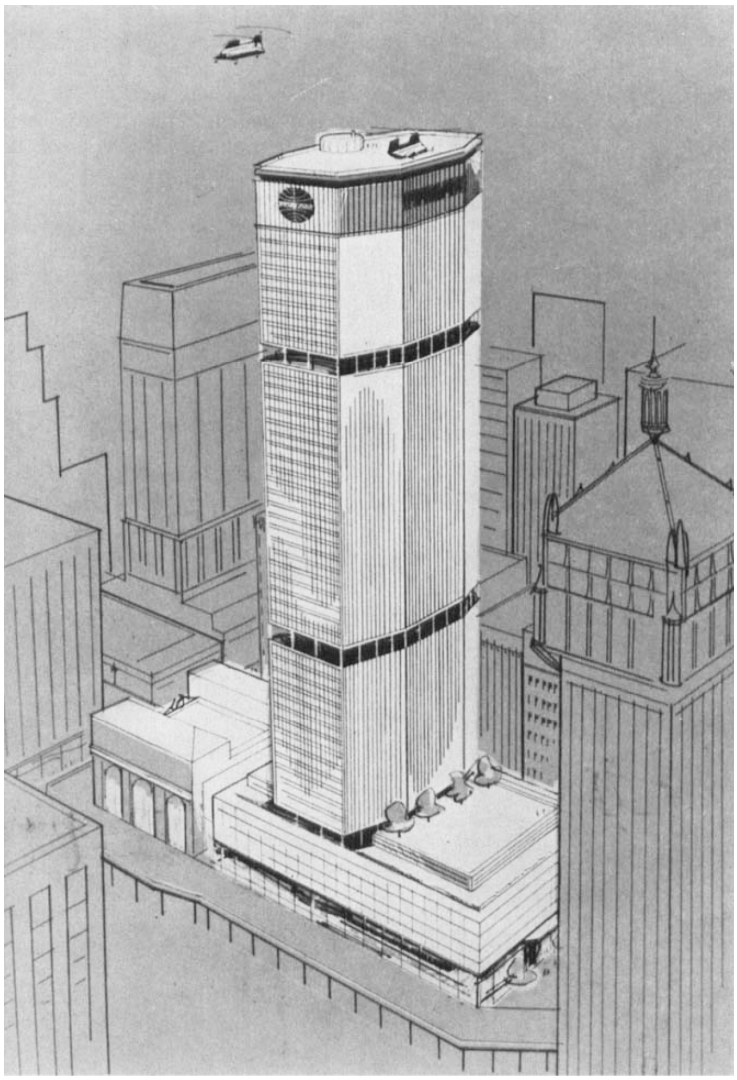

Figure 4. Design sketch for distinctive form the Pan Am building, illustrating its celebrated capability to handle helicopter landings on the flat roof deck (Baur, 1963, p. 96.)

Tentative steps toward passenger transport services

The major concern by end of the 1950s was not really the physical architecture to support helicopters, but the need to develop an economic model that would make regular passenger services profitable for airlines. While there was hope of putting together a plausible network of scheduled inter-city flights in the UK at the start of the 1950s (Figure 5), the financial justification proved more difficult due to the relatively small size and inefficiency of helicopters available at the time. There was considerable anticipation of the successful development of much larger twin-engine machines which would arguably permit safer operations over built-up areas and, crucially, have sufficient load-carrying capacity to lower the cost per passenger mile. In 1952 BEA's chief executive stated that its broad requirements for commercial viable services were for "a large multi-engined helicopter capable of cruising at not less than 150 mph and offering between 40-70 passenger seats by 1960" (*Flight Magazine*, 1952b, p .621).

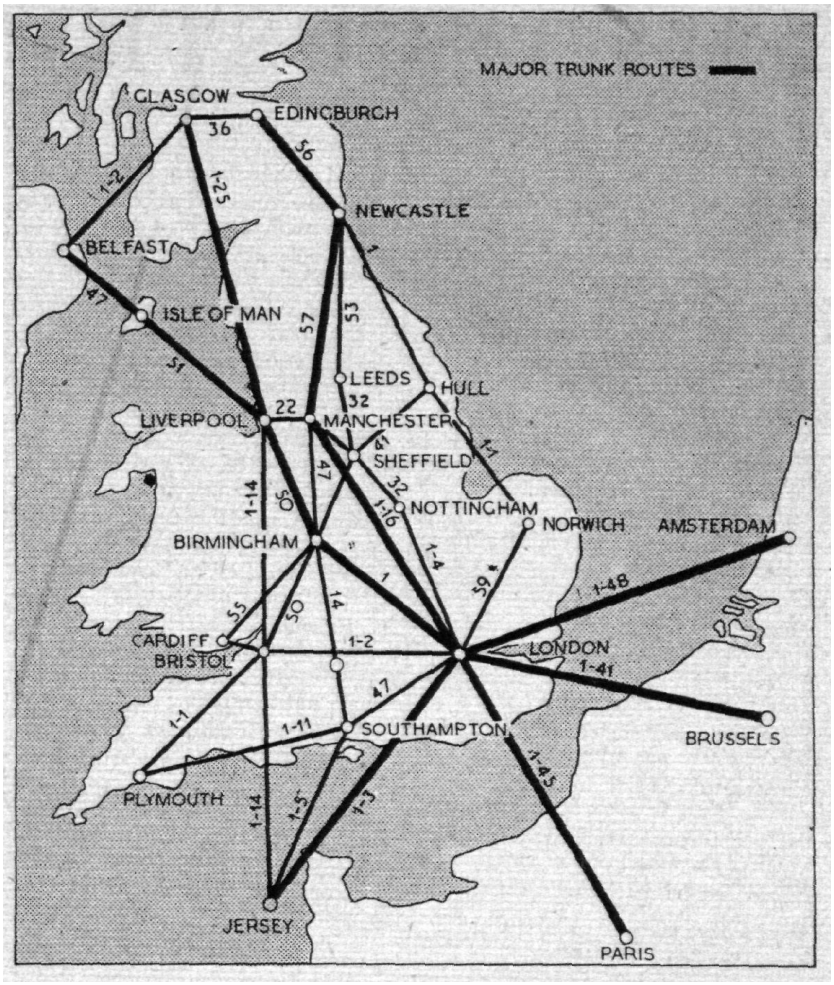

Figure 5. Outline network of inter-city helicopter services proposed at the start of the 1950s for an anticipated operation of large aircraft capable of carrying 48 passengers. The numbers on the route lines represented notional flight times assuming the helicopter flying at 160 mph (*Flight Magazine*, 1952b, p. 622).

Beginning in 1950, BEA undertook several long-distance trial services for paying passengers. The ambition was to see how helicopters could become more than personal air taxis, replacing private motorcars for *ad hoc* journeys and to develop scheduled services, like buses of the skies. The first experiment began on 1 June 1950, with a daily service between Liverpool and Cardiff, plus a request stop at Wrexham to collect any passengers that wished to join.[6] The service operated for just under a year, and was used by only 819 passengers (*Flight Magazine*, 1952b, p. 621). The route of the second trial was a more obvious choice, flying between the two major centres of population in Britain. BEA commenced a service linking Birmingham and London in June 1951. There were three scheduled flights a day, with tickets ticket costing £2 10s for a single, £4 10s return (*Flight Magazine*, 1951, p. 683). At the Birmingham end the helicopters operated from a dedicated site, built on a recreation ground, at Hay Mills, about three miles east of the city centre. Flights connected to Northolt Airport in the outer suburbs of West London and then onwards to Heathrow Airport. The Birmingham 'rotorstation' at Hay Mills was described thus: "[i]It had two asphalt touch-down points, a small wooden traffic building, and was the first special

[6] There is a *Pathé News* report on this start of this service, see <www.britishpathe.com/video/helicopter-service/query/Speke>.

helicopter station used by B.E.A." (*Flight Magazine*, 1956, p. 189) (Figure 6). It was a crude building and pragmatic facility, but it is worth remembering that in the early 1950s most airports were themselves much smaller in scale and less architecturally elaborate than we might imagine. It is less obvious why Hay Mills was selected as a site. The proposition of a suburban heliport seems nonsensical and it was only a couple of miles away from Birmingham's existing airport at Elmdon. The location probably matched the 'make-do' circumstances of the time, contingent on available land that was vaguely suitable (i.e. council owned, flat and expansive, with open approaches, to safely handle these unfamiliar aircraft). The journey between Hay Mills and Northolt took about 70 minutes in small Westland-Sikorsky S-51 helicopters, which could only carry 3 or 4 passengers at a time. Despite positive press coverage of the opening of the service and enthusiastic support for, and patronage of, the service by Sir Gerald Nabarro, ('maverick') MP for Kidderminster, the flights stopped in April 1952 (House of Commons,1952).[7]

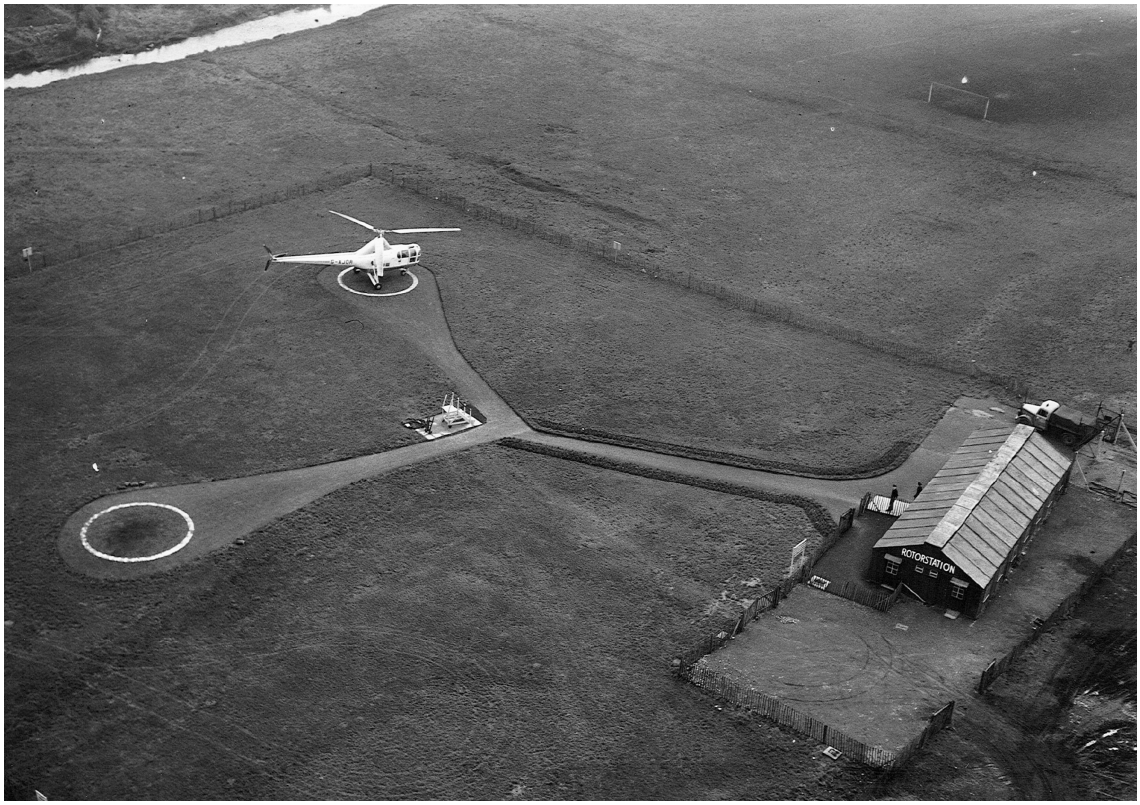

Figure 6. Aerial image of the Hay Mills rotor station, probably 1951. The Sikorsky S-51 helicopter was manufactured under license in Britain by Westland and called the Dragonfly (Helicopter Foundation International, historical archive, <http://archives.rotor.com>).

These were trial services, required government subsidies to operate and were often under-used. They were also fundamentally ineffective in testing the *raison d'etre* of the helicopter that it could take off from the centre of towns. Indeed this point was flagged in a short report in *The Times*, noting that the Birmingham-London service represented only "an intermediate stage between carrying passengers from airport to airport and the

[7] Nabarro noted in his speech in the House of Commons debate on 'Civil Aviation', 16 July 1952: "If I may say so with due modesty, I think I am the only Member of the House of Commons who has been issued by the Vote Office with a helicopter voucher book for travel to and from my home in Birmingham."

ultimate aim of direct services between city centres" (*The Times*, 1951, p. 4). From the reporting of these trials it would appear that their aim was to evaluate the machines and flight systems (navigation controls, autopilots, air traffic control) and not really about building a robust business case for inter-city routine helicopter services.

Our preliminary research suggests that once the flights out of Hay Mills ceased, there was no further progress in developing a centrally-located heliport in Birmingham in the 1950s. The Birmingham City Corporation was much less active in this regard than its counterparts in Liverpool and Manchester.[8] There is reference to a heliport as part of speculative plans in the early 1960s for a £21m redevelopment for the then moribund Snow Hill railway station. The scheme was being advanced by City Wall Properties Ltd. with the intention "to develop the 20-acre site over and alongside Snow Hill station, which would be transformed into the most modern railway station in Europe with the hotels, sport stadium, heliport, offices, shops and flats above the tracks" (*The Guardian*, 1961, p. 4). This renewal project was not realised.

Fading hope for helicopter services

> "For my part, I am convinced that the helicopter will be the bird of burden for domestic use in the future. However, I must emphasise the words 'in the future' because I do not believe that this is immediately round the corner" (Mr John Profumo, Parliamentary Secretary to the Ministry of Civil Aviation, House of Commons, 1953).
>
> "All enquiries at any time seemed to lead to the conclusion that the commercial future of the heliport was always about twenty years in the future. They were operable for military or emergency purposes or for purposes with a high element of 'social benefit' but in terms of normally generated traffic for civilian purposes [whether pleasure or business trips] the costs were relatively high and operating precautions … relatively severe" (Borg, 1966, p. 364).[9]

The above quotations are still applicable today. They present an account for the fact that the vision of routine, mass helicopter use failed to materialise and revolutionise urban travel. The future was never delivered. Nothing came of the schemes for city centre heliports in London, or major provincial cities, in the 1950s and, by the mid 1960s, the realistic prospects faded at a national scale for commercially viable inter-urban helicopter services.[10] As a consequence, no major purpose-built city-centre heliports seem to have been constructed in any British cities, with the exception of the Battersea landing pad in London. Certainly, there are no spectacular landing decks on skyscrapers or the roofs of mainline railway stations!

While the helicopter disappeared from the urban transportation radar, commercial aviation has seen huge growth. Routine flying necessitates a ring of major airports around the periphery of London, alongside a number of substantial airports serving major cities in the Midlands and the North. In contemporary British cities, however, the

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8 Discussion of heliport planning by Liverpool Corporation is given in *Flight Magazine*, 1954, p. 839 and Hough, 1955. A thorough examination of Manchester Corporation's activities regarding heliport provision for the city is given in Brook and Dodge, 2012.

9 Neville Borg was appointed as Birmingham's first Redevelopment Officer in 1952, and succeeded Sir Herbert Manzoni as City Engineer.

10 The only notable exception has been the extensive use of passenger helicopters in supplying the North Sea oil and gas industry.

role for helicopters remains marginal. So the nearest point for regular commercial helicopter operations to centre of London remains the Battersea landing pad. This provision still only supports flight services for a small number of élite travellers, pilot enthusiasts, pleasure trips for helicopter 'experiences' and the emergency services. The most visible presence of helicopters hovering over towns and cites in Britain are the police air support units and the occasional Air Ambulance service that can land at hospitals with trauma centres. The sound and sight of helicopters in the skies above the city still attracts attention as it indicates potential trouble and trauma in the streets below.

Acknowledgement

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Experiencing the reconstruction of Coventry and Birmingham

David Adams
Birmingham School of the Built Environment, Birmingham City University, Millennium Point, Birmingham, B4 7XG

Introduction

The increase in motor traffic in the 1930s in all British cities had caused chaos and the creation of dedicated spaces for traffic, pedestrians and civic parks, squares which formed the basis of new plans (Gold and Ward, 1994). Of course, this began before the onset of war, but using sophisticated statistical analyses of traffic censuses (Diefendorf, 1989), examples from the U.S. and Nazi Germany, Alker Tripp's (1938, 1942) theories, the traffic engineer could plan the roads of the future with enthusiasm and seemingly unchallengeable certainty. There were increasing national anxieties over the economic, social and environmental impact of congestion, and road casualties whose main purpose was to increase the alacrity of commercial and private traffic. This paper explores post-war realities of Coventry and Birmingham as two cities that were reconstructed around the needs of vehicular traffic, by removing tortuous mediaeval thoroughfares and out-dated infrastructure. Both have received adverse publicity for the nature of their rebuilding, and parts of their rebuilt infrastructure have been, or are likely soon to be, rebuilt in their turn.

Experiencing post-war Birmingham and Coventry

Although much has been written about post-war Coventry and Birmingham (including, in Birmingham's case, an official history [Borg, 1973; Sutcliffe and Smith, 1974; Higgott, 2000]; Larkham, 2007), there have been some calls for a reassessment of the influence of different actors – including local residents' memories – that shaped the design, rebuilding and the experiencing of these two reconstructed cities (e.g. Hubbard *et al.*, 2003a, 2003b, 2003c, 2004; Gould and Gould, 2009; Adams, 2011; Adams and Larkham, 2013).

Exploring the manner in which individuals engaged with elements of reconstructed cities is burdened by clear limitations (cf. Gold 1997, 2007). One of the biggest methodological challenges for this study revolved around the most appropriate way of capturing the often elusive 'feelings' which local residents might have experienced at the time of reconstruction (cf. Lilley, 2004). Nevertheless, to 'capture' people's experiences of the two cities, a 'walk-along' method was adopted with interviewees recruited through an appeal to local history groups, and history group website appeals. This research also re-evaluated earlier oral history interview transcripts from work carried out for Coventry (43 individuals interviewed during 2001) and Birmingham (22 individuals interviewed during 2007-2008).

The paper also draws on a small selection of archives collections, most notably the holdings of the National Sound Archive (NSA) in London. An interview conducted by Andrew Saint with Donald Gibson (1908-1991), Coventry's City Architect from 1938 to 1954 and acknowledged as being an important influence on the reconfiguration of the post-war city, was also used. Even though a wide range of architects was active in Birmingham during the reconstruction period, two are of particular relevance as their buildings dominated certain quarters of the city. This paper concerns the work of James Roberts and John Madin, two of the Birmingham's most prominent post-war architects, who have been acknowledged as having a profound influence on the reshaping of the city (Larkham, 2007; Adams, 2012). Anthony Sutcliffe's (1967-9) detailed interviews with prominent people closely involved with

the post-war reconstruction of Birmingham (including Manzoni, Sheppard Fidler, the City Architect (from 1952-1962, d. 1990), the influential local councillor, (Sir) Frank Price, and John Madin (d. 2012) provided a useful starting point for an exploration of how the city centre evolved during the mid-twentieth century: the transcripts of these interviews were also re-assessed and drawn on to inform the following narrative. Brian Redknap, Coventry's City Engineer from 1974 to 1989 and who joined the Council in 1956, and both James Roberts and John Madin, were also interviewed by the author for the project.

Birmingham and Coventry compared: approaches to post-war re-planning

In Coventry, the task that the City Architect's Department – led by the young Donald Gibson (appointed in 1938) – had, even before the onset of hostilities, set itself the task of boldly designing a new city centre replete with new infrastructure including shopping facilities, services, and housing, distanced from the perceived constraints of the past. This was rendered much easier by impact of the wartime bomb damage from late 1940 (Hasegawa, 2013). But this was by no means a straightforward exercise. Hampered by the perilous state of the wartime and post-war national economy, an uneasy relationship between Donald Gibson and Ernest Ford, the then City Engineer, over the responsibility for leading the re-planning process, the limited availability of building materials – especially structural steel, a depleted local labour pool to carry out the rebuilding, and the reluctance of the then Town Clerk (Frederick Smith) and the Treasurer (Sydney Larkin)[1] to underwrite Gibson's ambitious proposals.

In spite of this, Coventry certainly had authoritative chief officers, reinforced by influential local councillors, who were able to engender public support for their proposals (Tiratsoo *et al*., 2002; Gould and Gould, 2009; Larkham and Lilley, 2012, pp. 662-663; Hasegawa, 2013, p. 278). When interviewed, Brian Redknap argued that momentum towards the post-war rebuilding was increased when the newly-appointed Town Clerk, Charles Barratt and the City Treasurer, Alfred Marshall, were introduced as the post-war replacements for the more conservative Larkin and Smith.[2] Redknap's testimony also highlights the tension between Ford, the more conservative City Engineer, and Gibson, the young radical architect:

> "Charles Barrett [was] an eminent figure in local government and very influential in processing the bureaucracy of redevelopment ... He was a person of national stature in Westminster and the treasurer who replaced Larkin was Dr. Alfred Marshall and he was influential at national level [too] ... Ernest Ford really had his nose was put of joint because there were a lot of public buildings to be designed and it was appropriate that this should be carried out by the city engineers department we've got to have an architect and they [the Council] chose Gibson … He came and he produced a plan for the central area – he started on his own initiative and he got the ear of Alderman Hodgkinson and the two got together and came up with a plan for the redevelopment of [the city centre]. …" (Brian Redknap, interviewed 20/10/2010).

In an interview with the architectural historian Andrew Saint, Donald Gibson also sheds light on his working relationship with Percy Johnson-Marshall[3] and his sometimes strained relationship with Ernest Ford:

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1 Sydney Larkin's son, the celebrated mid-20th century poet, Philip Larkin, spoke of his rather grim memories of his childhood home in Coventry in his poem, *I remember, I remember*. During a visit to the city in 1954, he caustically suggested that his childhood was 'unspent' in Coventry, saying to his travelling (rail) companion, "as though you wished the place in Hell".

2 Redknap (interviewed October 2010) suggested that both Barratt and Marshall were appointed in 1946.

3 Johnson-Marshall was then a junior member of Gibson's Architect's Department; he

> "Percy [Johnson]-Marshall ... [was] ... a great chap on sketching and drawing and in the evenings we used to talk about designs and we would talk about what we would like to do ourselves. It became clear that we were poaching on the City Engineer's territory. .... Eventually I had a showdown with the engineer about it" (Gibson, interviewed by Andrew Saint, National Library Sound Archive: Architects' Lives C447/11).

As Redknap (2004, p. 34) acknowledges, "the path to redevelopment was not a simple [or straightforward] one". Coventry's ambitious proposals were viewed critically within the Ministry of Town and Country Planning.[4] Particular concern was directed at the scale and boldness of Gibson's plan, the seemingly insufficient involvement of the local business community in shaping ideas the reconstruction, and the Council's apparently intransigent attitude towards the Ministry of Town and Country Planning over the necessary financial assistance to proceed with the reconstruction (Hasegawa, 1999, 2012; Redknap, pers. comm., 2010). On 2 March 1945, F. Blaise Gillie of the Ministry of Health[5] wrote in a pointed letter to George Pepler (Chief Technical Adviser to the Ministry of Town and Country Planning) over his concerns for the "explosive possibilities of the Coventry Reconstruction Plan", suggesting that progress could be made towards encouraging Coventry to temper its ambition by liaising with the more traditionalist Town Clerk (ie Smith) (The National Archives [hereafter TNA] HLG 79/131). In closing the letter, Gillie astringently remarked that "the bullheadedness of the Coventry Council in adopting an ill-considered Plan and trying to stick to it in spite of obstacles may cause us a good deal of trouble before we are done" (HLG 79/131).

Boldness[6] was very clearly manifest in the three principal aims of Gibson's 1941 plan for the central area,[7] which aimed to improve traffic circulation and capacity; to open up individual building units; and to group together buildings which cater for the same form of activity – shopping, administration, recreation and business (*Architects' Journal*, 1941). The second stage of Gibson's 1941 plan was even more radical: including a proposed an inner circulatory road that followed the line of Queen Victoria Road, Corporation Street, Ford and Lower Ford Streets and Vacquerey Street. Gibson's plan for the shopping area was also laid out in a series of squares on a formal east-west axis centred on the Cathedral spire designed for the comfort and safety of shoppers eliminating the need to "cross from one side of a traffic street to the other" (*Journal of the Royal Institute of British Architects*, 17/03/41, pp. 76-77).

Following the enactment of the 1944 Town and Country Planning Act, widely known as the "Blitz and Blight" Act, the City Council was given the confidence and power to progress the plan; although there were some dissenting noises from the Chamber of Commerce over the inflexible design of the precinct – especially the perceived preference given to those shoppers arriving by cars. This led to a modification of the designs of the precinct: it was divided into two halves with the introduction of a north-south trafficked cross street, Market Street. Despite the Ministry of Transport's concern over the scheme, the other significant development was the re-alignment of a proposed inner ring road.

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eventually became Professor of Urban Design and Regional Planning at the University of Edinburgh.

4 It has to be said, however, that the Ministry tended to be critical of all proposals not originating from the Ministry itself: for examples of its attitudes, see Larkham (2011) and Hasegawa (2013).

5 At this time the Ministry of Health still controlled housing, including the layouts of new housing estates.

6 The then Minister, Sir John Reith, had famously encouraged representatives of several bombed cities, including Coventry, to "plan boldly".

7 This was clearly a development of the vision exhibited in May 1940, several months before the first major raid on the city centre (discussed in Lilley and Larkham, 2007, pp. 18-21).

It is outside the scope of this paper to unpick these political debates; however, it is significant to note that the feeling amongst the majority of local people who were interviewed in summer 2001 was that they had not objected to the principles of rebuilding, but they were, perhaps, more ambivalent towards the *process* of redevelopment (cf. Hubbard *et al.*, 2003). Such feelings of ambivalence were balanced by more 'everyday' and important priorities in the immediate post-war years (Lilley, 2004).

Respondents during the recent round of walking interviews, perhaps because they were all were in their teens or early twenties at the time of reconstruction, suggested that there was a very tangible public mood of excitement towards the realisation of City Council's ambitions. Hugh, for example, reaffirmed this sense of enthusiasm, suggested that the plans for rebuilding, and the subsequent rebuilding of the city's infrastructure, had a very profound "sociological impact" on the city:

> "I think people were interested in what Gibson was doing and I think it was a huge sociological change in Coventry brought about by the war - the damage and lots of people, builders from all over the country, Ireland, traditional trades came in and set up successful building businesses off the back of the redevelopment and then subcontractors – O'Flanagan's[8] and then built it up the very successful house building business as a result. This had a really deep impact ... But yes, people quite liked initially the Gibson's schemes and it was quite revolutionary" (Hugh, born 1941, walking interview 19/10/12).

Unlike the seemingly unwavering belief in comprehensive re-planning following wartime destruction on the part of many professionals such as Gibson (and more widely expressed by, for example, Tubbs, 1942), Herbert Manzoni, Birmingham's City Engineer and Surveyor, was not in favour of an all-encompassing reconstruction plan: to him, the nature of the damage, relatively limited and scattered in comparison to some other cities, and the existence of a range of plans and ambitions dating from as early as 1913, meant that, in his mind, Birmingham had no need for a reconstruction plan (see Larkham, 2007). Furthermore, as Sutcliffe and Smith (1974, page 443) note, "the Corporation wanted to avoid discouraging developers by laying down a rigid planning scheme; it preferred to attract them to Birmingham by the implied offer of freedom to build what they liked, and then persuade them to introduce modifications into their schemes".

In a similar way to the 'bullheadedness' of certain personalities within Coventry City Council in pursuing its plans (despite the internal and external disagreements), it is the influence of Manzoni and other professional officers, the elected members acting as Committee chairs, and the developers and their architects that was significant in Birmingham. Even though a wide range of architects was active in Birmingham during the reconstruction period, the work of James Roberts and John Madin is particularly noteworthy, as their buildings dominated particular quarters of the 'un-planned' city centre (Larkham, 2007). It is useful, therefore, to draw on Madin's own testimony in this regard:

> "There's interesting stories about Manzoni because ultimately when I came back from the army I was very keen on comprehensive planning and I suggested to Manzoni that there were only about three freehold interests [within the city centre] and what he should do is do a comprehensive plan for the whole of the centre of Birmingham within the [line of the proposed] ring road. But I thought here was a great opportunity [to replan comprehensively]...".[9] (John Madin, interviewed December 2009).

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[8] James O'Flanagan Ltd was established in 1940 and in the beginning the company was mainly involved in demolition and contracting in the Coventry and Warwickshire area (see http://oflanaganhomes.com/history).

[9] A similar line of argument has been recalled in other accounts: "I said that there should be a

In a comparable way, James Roberts, spoke of Manzoni's 'unsympathetic' approach and lack of concern shown for buildings of historic merit:

> "Manzoni I got to know very well but he was, he was, he had no interest in architecture at all, [no interest in] aesthetics at all, he wasn't interested in people or pedestrians. It was cars, lorries, getting things through and out again and so he did considerable damage to the heart of Birmingham I think but there should have been a lot of tender loving care after the war" (James Roberts, interviewed December 2009).

Experiences of infrastructure and inner ring roads

Of course, plans change. But it could be argued that the ideas, concepts and visions for the redevelopment of both city centres were underpinned by two key planning principles that attempted to secure a certain level of distance from the pre-war city: first, the segregation of pedestrians and motorised traffic facilitated by the construction of circulatory inner ring roads and the recommendations for the development of 'quiescent' pedestrianised precincts; and, as with other towns and cities charged with wrestling with the pressing issue of traffic management, many existing roads were either widened or straightened, thus opening up new possibilities of people accessing the city core.

In 1947, Coventry City Council's Redevelopment Committee resolved to apply for a Declaratory Order required under the 1944 Town and Country Planning Act to enable compulsory purchase orders to be confirmed in order to acquire the land needed to realise the plan (Gould and Gould, 2009).[10] Gibson, along with the Coventry City Architect's Department, had significant control in giving shape to the overall plan for the city centre. This was a situation which, according to Gould and Gould (2009), continued until at least 1970.[11] Building materials were still rationed until the early 1950s, and structural steel was made to bomb-damaged cities as a result of a rationing process with Ministerial involvement (Larkham, 2007; Flinn, 2013).[12] A foundation stone for the new precinct was laid in 1948 by the then Princess Elizabeth; the Levelling Stone, replete with a copy of the plans for new Coventry, was symbolically unveiled; and the new Broadgate traffic island was laid out and landscaped.

Building activity quickened during the early 1950s: the shopping precinct – a large infrastructure project in itself – bounded by Queen Victoria Road / Corporation Street and Trinity Street, Broadgate to the east, is a remnant of the reconstruction area as designated in the 1945 plan, though its original designs have subsequently been significantly altered. Several respondents certainly looked forward towards a reconstructed and largely traffic-free

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three-dimensional plan, but he replied that it could not be done ... So much of the land in the city centre was controlled or owned by the Corporation. But all that we architects have been allowed to do is to plan parts of the city centre. We are only pawns in a very big chessboard. ... Basically, Manzoni was road engineer. He was a fine chap, and a great friend, but it was his limitation" (Madin, interviewed in Sutcliffe, 1967).

[10] Initially for 452 acres, this was reduced by the Ministry of Town and Country Planning to 274 acres covering the central area within the line of the proposed ring road and confirmed in June 1947 (see Gould and Gould, 2009).

[11] Even where external architects and developers were involved with the production of detailed building designs, they were required to adhere to the design principles (scale, height, mass, materials, and so on) as set out in the plans. After 1945, rebuilding was relatively slow during the first five years or so.

[12] Larkham (2007, p. 24) suggests that it was not until 1949, following pressure from MPs representing war-torn cities, that the Parliamentary Secretary to the Board of Trade announced that the rebuilding of central areas should proceed where plans were sufficiently developed (see also *Estates Gazette*, 1949).

pedestrian area that provided an accessible, safe, convenient shopping experience, and, for some, a sense of "freedom to wander around":

> "You didn't see the cars so you were able to walk freely about and of course later on when I got my own children; it was always easy to take the children in town because you never used to have to worry about the cars. But I think, after a while, people tended to get used to it and I don't think we quite appreciated how modern and nice it was … It was so modern, like for its day and age" (Jean, born 1936, interviewed 18/07/01).

If anything, the recently-collected walking interviews further supported the narratives elicited in 2001. This was especially true, perhaps, in relation to respondents' feelings towards the design of the Upper and Lower precincts. For other people, the precincts also represented a place of adventure, though this was perhaps tempered by a feeling that the shopping area was initially 'alien', but, nevertheless, it was something that people came to 'learn to accept' with the passage of time:

> "[I can remember] the noise of people, ... by the 1958 erm most of the precinct was built and er, what I never like it, it just didn't feel right, erm, but it's like everything else in life, you learn to accept it. [Although] it was a bit of an adventure because young and lively you obviously went up to the other levels from BHS and from Marks and Spencers and you could once you were on the level you could you know go to both of those places quite easily" (Valerie, born 1931, walking interview 05.09.12).

Whilst some people lamented the lack of 'good quality' shops and a bland, and monotonous shopping experience, and an experience that suffered badly in the 1980s, other respondents noted that here were also broader factors in shaping the city's post-war fortunes – especially the decline of the city's manufacturing base. Logie's (1962, page 42) assessment of post-war Coventry keenly noted that, because the city had prospered on the back of the motor and engineering trade, the inflexible nature of the employment structure led to the city's 'unbalanced' social structure and that the city ... is dependent 'not merely on what happens in Coventry but 'on trends in the nation as a whole'.

Whilst the building of Coventry's Upper Precinct began during the early 1950s, Birmingham's major post-war building activity began significantly later. There was considerable construction work taking place in the city during the 1960s, particularly following the de-regulation of the economy, the lifting of the 100 per cent betterment levy on land, and where entrepreneurial developers began to force the pace of change in British cities (Bullock, 1997, p. 66). Clearly-defined shopping and civic precincts, and modernist-inspired shopping centre ideas found expression in Birmingham: for example, the designs for a 3-acre street block fronting Corporation Street (Gold, 2007). The 'Colonnade' development, as it became known, has been described by Foster (2005, p. 102) as Birmingham's "best 1960s shopping development", largely because of its outwardly street-facing blocks of shops and internal pedestrianised shopping area (*Cubitt Magazine*, 1963, p. 10).

As much of this activity in the heart of Birmingham's shopping area took place later than in the centre of Coventry, people had strong recollections of the 1950s. For most people this represented a time when there were still remnants of the city's Victorian legacy – and the built form from this era was viewed with some affection by several people. For these respondents, this was exciting, though their 'mental map' of the city was, to some extent, disrupted by the newly-erected, and for some, overbearingly large buildings:

> "The whole of town was under construction [in the 1960s]. When I worked in Lewis's [Corporation Street] – you were generally walking a different route every day because you had to avoid the construction works, over plants, and if you went to New Street

> Station, it was a different way in and a different way out every day (laughs)! But we saw that as being quite exciting really ... I think that [overall] people [of our generation] were rather pleased with it and that it was a world class facility" (Steven, born 1947, walking interview 31/05/12).

Inner ring roads were also developed in both cities. The first ideas of an inner ring road for Birmingham can be traced back to a visit by the City Engineer and councillors to Germany and Austria in 1910 (Borg, 1973, p. 51). An inner ring road had been implied, if not actually proposed, as early as 1917, to join together the ends of the wide radial routes that were then planned (Manzoni, 1968, p. 2). The line of the 1940s road was deliberately selected "to avoid the most valuable property" and "taking advantage of the sites where the buildings had been destroyed or damaged" during the war (Manzoni, 1961, p. 268). Unfortunately, however, the 1946 Birmingham Corporation Act granting permission for the inner ring road (amongst other powers) did not remove the need for additional funding from central government.[13] Clearance and construction on both inner ring roads started in the late 1950s, they were slowly built in sections, and they were eventually completed in the early 1970s.

Official guidance on road building from centre was also adhered to. An inspection of the Ministry of Town and Country Planning's 1947 publication *The Redevelopment of Central Areas* reveals that the circulation of motorised traffic was of significant concern, and it expressly encouraged planning authorities to consider "the information concerning traffic flow, congestion, accidents and car parking provision … [to ensure] smooth flow of all traffic needs to enter the central area" (MTCP, 1947, pp. 31-32). Furthermore, following the stipulations set-out in the Ministry of War Transport's publication on the *Design and Layout of Roads in Built-Up Areas* (MoWT, 1946), which, incidentally, included several case studies and illustrations from Birmingham,[14] inter-related notions of increasing the speed of vehicular (and pedestrian movement), de-congesting the city cores, a concern for people's convenience, and time-saving efficiencies, were manifest in the rhetoric surrounding the design of both inner ring roads.

As Redknap (2004, p. 21) suggests, however, surgery to widen Coventry's streets began *before* the war: particularly the destruction of streets and buildings between the Cathedral and Broadgate – the heart of the city – such as Butcher Row, Little Butcher Row, the Bull Ring irrevocably changed the character of the city centre before the wartime devastation:

> "[there were] huge numbers of timber-framed buildings and what these new streets did was that it introduced additional highway capacity and allowed Owen Owens [department store] to take place. Then in 1938, the Coventry bypass was built, but up until then it was medieval street pattern" (Brian Redknap, born 1928, interviewed 20/10/10).

There were also pre-war attempts to manage the traffic problems in central Birmingham. In April 1961, Manzoni reported that the twelve arterial roads referred to by Hutton's (1780 [1856]) *History of Birmingham* which fed into the city centre were still successful in bringing traffic into the core, but in much greater volume, to the extent that in 1933 a one-way system was introduced as a measure to try and relieve the 'choked lines'. Though this system was extended in 1937, and the levels of traffic decreased noticeably as consequence of the outbreak of the Second World War and the introduction of petrol rationing, Manzoni (1961, p.

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[13] An application was made to the Ministry of Transport for the necessary approval for the first stage construction, at a cost of £1.14 million and involving a notional government grant of 75 per cent (Birmingham City Council, 1955).

[14] Because Manzoni was a member of the Committee authoring this report.

266) stressed that whilst "the traffic problem became temporarily less acute ... the system is still obviating the traffic chaos which otherwise would certainly exist".

Despite the incorporation of a one-way system, most respondents suggested that the city core during the 1960s was a place of danger as a consequence of vehicular traffic. This was perhaps particularly noticeable at the confluence of Colmore Row, Victoria Square and New Street. During the early 1960s Colmore Row carried five A-roads of traffic! Maggie recollected that walking from her place of work at the Town Hall during her lunch breaks along into New Street was fraught with difficulties:

> "It was a square [Victoria Square] and as I say, the Lyons tea shop [on the corner], bank buildings and official buildings in the centre it was all traffic. The road went round and down New Street, down Colmore Row that way and down the square and into New Street: it was incredible, but the city had great problems: it was just all traffic!" (Maggie, born 1937, walking interview 04/05/12).

Similar to the way in which Manzoni envisaged a city centre free from extraneous traffic, writing in 1958, one year before the commencement of the building of Coventry's inner ring road, Arthur Ling (Gibson's successor) acknowledged that 'inside the ring there will be a network of service roads to enable people to move about by car or bus as easily as possible within the centre around the cruciform plan shopping precinct (Ling, in *Architectural Design*, 1958, p. 498). Concerns relating to congestion and pedestrian safety were not unjustified: in 1958, it was suggested by the City Council's Public Relations Department in a booklet detailing the process of reconstruction that average car ownership in Coventry was 115 per 1,000 population compared the national average of 77 per 1,000 (Coventry City Council, 1958, p. 3). In an effort to improve vehicular movement, and influenced directly by the workings and advice of the National Road Research Laboratory, Brian Redknap argued that the vehicular flow along the inner ring road was influenced by the application of the 'Waldron Formula' and the innovative use of 'origin-destination' surveys as a means of ensuring 'free' vehicle circulation (Brian Redknap, born 1928, interviewed 20/10/10).

It should be noted that there was general sense amongst respondents of both cities that the construction of the ring roads, replete with grade separated junctions and flyovers – especially in Coventry's case – was hugely disruptive. One resident of north Birmingham recalled his dissatisfaction of walking to reach his place of work in Digbeth (south of the Bull Ring), suggesting that in the 1950s "you could cut through all of the back streets and it didn't seem so far at all and it didn't seem to take long at all [to reach the city centre]. To me, it was either under or over. It seemed to take much longer … afterwards… in the mid '60s [following the building of the Smallbrook Ringway]" (Thomas, born 1942, interviewed 29/10/07). Disruption was not always limited to pedestrians, and despite the rhetoric of speed and efficiency, Jenny spoke of her recollections of driving along the newly-constructed Smallbrook Ringway as being slow and congested:

> "[in] 1964 and 1965 I had a job in the holidays in tyre factory and Erdington and I used to drive across the city centre along Smallbrook Ringway [from the south-side of the city] and the traffic used to be pretty horrendous but I used to have an old car and people used to get out of the way" (Jenny, born 1943, walking interview 24/05/12).

Nevertheless, there was also a generally positive feeling amongst several people towards the safety and time-saving attributes of the inner ring roads, once they were constructed:

> "I think basically [the ring road] was and still is a good idea, though it took some time to get built! But, you could get to all parts of the city relatively easily and quickly, get in and then get out! But [it is] not large enough and it needed to be further out … I always used to park outside [of the city centre], and I had to go under subways. [Of

course], you could be mugged under there very easily, and they've put cameras in, but the principle of the subways was alright" (Philip, born 1938, walking interview 05/10/12).

According to Manzoni (1968, p. 271), the inclusion of pedestrian subways (about 30 in total) into the design of Birmingham's inner ring road was also intended to ensure safe and "rapid progress to any corner of the city". Some respondents agreed with this but also talked of being curious and interested by the 'newness' of the idea. For example Steven, who was working at (the then newly-constructed) Scala House cinema, was less concerned with the time-saving attributes of the subways, preferring instead to use the underpass at Holloway Circus traffic island – as part of the first section of the road to be built (in 1957-1960) – as means to walk underneath the ring road through to a 'relaxing' garden space. For Steven, this was often used as an unusual place for meeting friends who were working in other parts of the city:

"At Scala House – the island there – the one with Pagoda is now [erected in the late 1980s]. It was lovely, super, beautiful mosaics, and er, er, it was very very nice that was another space where people would walk down Smallbrook Queensway [under the inner ring road] to have their lunch time / sandwiches and the like. Lovely, it was like sitting in a garden, lots of flowers, benches, [it was] better than being in the office. It was a bit of green spaces in the heart of the city with traffic circulating all round you, you know" (Steven, born 1949, walking interview 31/05/12).

To some extent, Steven's narrative brings into question the City Council's desire for speed and efficiency. It is also perhaps more illustrative of the rather un-coordinated way in which the post-war replanning of Birmingham was carried out, with certain developments, such as Smallbrook Ringway, lined with ground-floor shops fronting on to the fast-flowing inner ring road and encouraging pedestrian footfall. For other sections of the road, however, and following the Ministry of Transport's (1946) concern for separating out vehicular and pedestrian traffic, the decision to have shops along its length was dropped.

It could certainly be argued that notions of order and control were certainly apparent in the design intentions of both inner ring roads. For example, by 1969 several letters submitted to the *Birmingham Mail* suggested that there was a degree of dissatisfaction at the way in which established pedestrian practices were perceived to be subjugated to the needs of motor vehicles:

"[T]he railings round the roads I deplore; they make one feel herded. The underpasses should never have been made for pedestrians. The planners should have put all traffic underneath, and with people able to wander everywhere … I hate going in to shop [I just] get out of the centre as fast as I can' (Andrews, 1969).

It could be also be argued that certain routines emerged from pedestrian practices themselves rather than being something 'imposed' by 'planners' / highway engineers upon urban walkers (cf. Middleton, 2011). Valerie P., for example, though hugely critical of the inhibiting influence the rebuilding had on her movement through town during her shopping expeditions, suggested that she also used to take advantage of the historic (and largely unaltered) backstreets (such as Needless Alley, Canon Street, Cherry Street) to move from one area of town to the next.

"At Corporation Street and Bull Street there were underpasses; I used to hate those but you had to do it to get from one side of the road to the other, you know. It became second nature in the end [moving through the city centre], otherwise you took your life in your hand!" (Valerie P., born 1932, walking interview 10/05/12).

There are certain similarities here with the narratives elicited from the Coventry respondents. Aside from pointed comments over the significant levels of destruction wrought by compulsory purchase and the clearance of slum-type dwellings, the majority of Coventry respondents had conveyed an sense of 'growing-up' and 'learning to live' with the inner ring road:

> "My Dad did moan about because he said that every town should have a centre point at where traffic could cross [and] I can remember … the bits that were built first was London Road and by the police station and St Patrick's and erm one of things I can remember when I was coming into town there was excavated out ready for it and I remember looking and wondering about it, but er ... you just accepted the ring road and the underpasses and overpasses was the word – because there were different ones – you took in your stride. I think there is a case to accept things ... move on no good getting rigid in any outlook really, no matter what it is … " (Valerie G., born 1951, interviewed 05/09/12).

Some of the post-war infrastructure in Coventry and Birmingham has already been re-designed. Birmingham's inner ring road has been lowered to allow ground-level pedestrian movement from the library out to Symphony Hall and the International Convention Centre. The most recent stage involved the wholesale demolition of a raised roundabout section, in the name of easier movement to the Eastside quarter, about to be regenerated. Coventry has not escaped similar changes. The insertion of the Cathedral Lanes shopping centre on Broadgate has, to some extent, compromised the axis between the Cathedral spire and the Precinct – a point not lost on some respondents. The West Orchards shopping centre has eroded the design quality of Smithford Way, whilst the Jerde proposals of 2008-9 would have hugely affected the Precinct, and there is debate over 'what to do' with sections of the inner ring road (see, for example, Gould and Gould, 2009).

Conclusions

By briefly exploring the history of city-centre reconstruction for Coventry and Birmingham, this paper has touched on how some of the rhetoric of modern planning and design – speed and accessibility – impact upon everyday experience. In particular, the varied reactions and mixed experiences towards showpiece 'modern' developments – the inner ring roads – collected during recent 'walk-along' interviews suggests that plans for in the post-war years were not greeted by unanimous praise by local people. These perspectives largely accord with the narratives collected in earlier sedentary interviews with local residents of Coventry and Birmingham. Of course, there are methodological dilemmas in interpreting this locally-collected information, although there were understandable public concerns, doubts and oppositions particularly to the rate of change, the seemingly lack of consideration to historic fabric, and worries over the design of some of these developments. What is interesting, perhaps, given the age of the respondents, is that the pockets of praise for and enthusiasm about some elements of the post-war built form, and the sense of 'coming to terms' with this period of the cities' past. Whilst to some extent the flow and circulation of vehicular traffic did dominate both city centres, factors *other* than the impositions of planners' (in the broadest sense) intentions were also important: the decisions made by civil servants, the role of the private sector, and the habits and routines of everyday people were just some of the many factors that shaped (and continue to shape) both cities.

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Cycle ways and planning in the early post-war New Towns

Andrew Millward
School of Digital Media Technology, Birmingham City University, Millennium Point, Curzon Street, Birmingham B4 7XG

Introduction

The starting-point for this paper is the Eric Claxton Papers in the National Cycle Archive (NCA) at Warwick University.[1] Although deposited in the 1990s, they had not been consulted until 2012 when the author took on the task of making an initial examination of the papers and documents forming 21 archive boxes and two large bound volumes of statistical data.

Claxton is principally known for his work in Stevenage New Town, where he was responsible for providing cycle ways: this work drew national and international attention from the 1960s onwards (Wyatt, 1966, p. 50). Following his retirement in 1972, he worked in a consultancy capacity for cycling and environmental groups such as Friends of the Earth, the British Cycling Bureau and the Cyclists' Touring Club.

Although not always making explicit reference to Claxton, his work in Stevenage has drawn the attention of planners, mobility scholars and historians. This interest has focused on debates relating to cycling provision and cycling policies during the post-war period. Although a generalisation, these fall into two main periods. First is the period from the late 1960s to the 1980s when, prompted by the oil shortage, there was a growing awareness of how cycling provision had lost out in policy terms. This period has drawn authors such as Ward (1966), Watson and Gray (1978) and McGurn (1999), and writers and cycling campaigners focusing on cycling provision such as Hudson (1978). Then the policy shift towards more 'green' sustainable and integrated transport since the mid-1990s has attracted a new group of scholars and writers attempting to examine aspects of policy influencing the activity of cycling (for example Horton *et al*., 2007).[2]

While Claxton's work has now been recognised and its influence in the post-1970 period assessed, no detailed work has so far examined how Claxton's work fits into the broader context of policy making and those involved in managing the process of reconstructing and developing the road networks in the post-war years. The research is at an early stage and so the intention of this paper is, first, to discuss in very broad terms the attitudes to the provision of cycling facilities after the war, in order to contextualise Claxton's work and to examine the experience in the New Towns in particular. Secondly, it will identify and map out the research questions

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1 Records of Eric Charles Claxton OBE, 1909-1993 (MSS.328/N12), National Cycle Archive, Modern Records Centre, University of Warwick, UK (hereafter Claxton Records).

2 The following websites have been found useful points of reference relating to research into cycling, cycling history and cycling policy: R. Aldred < http://rachelaldred.org/>; Cycling and Society Research Group < https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=cycling-and-society > and D. Horton < http://thinkingaboutcycling. wordpress.com/ >.

emerging from this initial review of the literature, in order to develop an agenda for taking the research forward. It seems that the future direction of research should probably focus not only on the experience of the people living through the reconstruction in the two decades following the war, and how their travel patterns and mobility changed in this critical period, but also the factors leading to these changes in the inter-war period with particular reference to the urban migration taking place.

Eric Claxton and segregation

Eric Claxton initially worked as a bridge engineer for Surrey County Council. He joined Stevenage Development Corporation in 1946, becoming Chief Engineer there, and retired in 1972. As a civil engineer he played a major part in the creation of the new town of Stevenage in the 1950s and 1960s. His ideas on road safety led him to promote segregation of the cyclist and pedestrian from road traffic.[3] His archived papers tend to reflect the later period of his career in the 1960s and the consultancy work he did after his retirement in 1972, when his ideas and his work in Stevenage were gaining national and international recognition and he himself was contributing his own assessment of his work.

According to Balchin (1980, pp. 138-139) the Master Plans for Stevenage in 1946 and 1949 proposed the general approach of creating a separate cycleway and pedestrian way network which would be entirely independent of vehicular traffic routes, pass underneath traffic at intersections, provide a direct route into the town or industrial area without interfering with access roads and enable a two-way route. [4] The local estate roads would be unaffected by the scheme and cyclists were expected to cycle on the estate roads to access the cycle ways.

Claxton's work was lauded as foresighted in the 1970s in the light of the lack of facilities provided for cyclists outside Stevenage and in some of the other New Towns. Watson and Gray (1978, p. 27) noted the contribution that the cycleways in Stevenage had made to the initial increase in cycling and Hudson (1978, pp. 60-61, 87) noted the "world famous" principle behind Stevenage's network. *Richard's Bicycle Book*, a popular guide to cycling from that time, was particularly effusive about the cycleways in Stevenage and singled out Claxton for praise: "Most or all of the credit for the design and engineering of Stevenage, and in particular its transportation systems, goes to Eric Claxton, now retired as Chief Engineer for the Stevenage Development Corporation, and a man who must be reckoned a one-of-a-kind genius" (Ballantine, 1979, pp. 360-364).

While Claxton's "historic innovation at Stevenage" (Shaw, 1978, p. 152) would have stood in stark contrast to other towns and cities, in reality, Claxton was only following the logic of the pre-war policy framework which was founded in the attempts to address the dramatic increase in road traffic accidents in the inter-war period (Table

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[3] These ideas paralleled others in transportation planning at the time, evidenced in some of the post-war reconstruction proposals discussed elsewhere in this publication.

[4] For details of the cycling provision planned for the New Towns see Ministry of Town and Country Planning (1946), *Technical Report, Stevenage New Town and Draft Master Plan* and Stevenage Development Corporation (1949) *Stevenage New Town Technical Report and Master Plan,* SDC, Stevenage

Table 1a. Reported road accidents and casualties, Great Britain, 1927-1940

		Killed					Injured ('000s)	All Severities ('000s)
Year	Total Accidents ('000s)	Pedestrians	Pedal Cyclists	Motorcycle Users	Others	All		
1927	134	2,774	644	1,175	736	5,329	149	154
1928	148	3,255	691	1,395	797	6,138	165	171
1929	152	3,523	795	1,582	796	6,696	171	178
1930	157	3,722	887	1,832	864	7,305	178	185
1931	181	3,467	926	1,499	799	6,691	202	209
1932	184	3,385	1,046	1,558	678	6,667	206	213
1933	192	3,504	1,354	1,569	775	7,202	216	224
1934	205	3,529	1,536	1,430	848	7,343	232	239
1935	196	3,073	1,400	1,277	752	6,502	222	228
1936	199	3,068	1,498	1,187	808	6,561	228	234
1937	196	3,002	1,416	1,151	1,064	6,633	226	233
1938	196	3,046	1,401	1,145	1,056	6,648	227	233
1939	. .	4,497	1,374	1,231	1,170	8,272	. .	. .
1940	. .	4,724	1,363	1,270	1,252	8,609	. .	. .

Source: Department for Transport statistical table RA S40001 available at < http://www.dft.gov.uk/statistics/series/road-accidents-and-safety/ >

Table 1b. Reported road accidents and casualties, Great Britain, 1950-1970

		Killed					All Injured ('000s)	All Casualties ('000s)
Year	Total Accidents ('000s)	Pedestrians	Pedal Cyclists	Motorcycle Users	Others	All Killed		
1950	167	2,251	805	1,129	827	5,012	196	201
1951	178	2,398	800	1,175	877	5,250	211	216
1952	172	2,063	743	1,142	758	4,706	203	208
1953	186	2,233	720	1,237	900	5,090	222	227
1954	196	2,226	696	1,148	940	5,010	233	238
1955	217	2,287	708	1,362	1,169	5,526	262	268
1956	216	2,270	650	1,250	1,197	5,367	263	268
1957	219	2,225	663	1,425	1,237	5,550	268	274
1958	237	2,408	668	1,421	1,473	5,970	294	300
1959	261	2,520	738	1,680	1,582	6,520	327	333
1960	272	2,708	679	1,743	1,840	6,970	341	348
1961	270	2,717	645	1,544	2,002	6,908	343	350
1962	264	2,681	583	1,323	2,122	6,709	335	342
1963	272	2,740	589	1,279	2,314	6,922	349	356
1964	292	2,986	583	1,445	2,806	7,820	378	385
1965	299	3,105	543	1,244	3,060	7,952	390	398
1966	292	3,153	514	1,134	3,184	7,985	384	392
1967	277	2,964	463	920	2,972	7,319	363	370
1968	264	2,762	391	877	2,780	6,810	342	349
1969	262	2,955	402	791	3,217	7,365	346	353
1970	267	2,925	373	761	3,440	7,499	356	363

Source: Extracted from Department for Transport statistical table RAS40007 available at < http://www.dft.gov.uk/statistics/series/road-accidents-and-safety/>

1a and Table 1b). The Transport Advisory Council, in its *Report on Accidents to Cyclists* (1938, pp5-8) recommended the provision of cycle tracks, having been impressed by their use in Belgium where 32 per cent of road mileage was "furnished with cycle tracks". Similar recommendations appeared in the 1939 Report of the House of Lords Select Committee set up in December 1937 (Alness, 1939) to examine how to reduce the number of road accidents.[5]

Therefore, clearly, opinion amongst policy makers in the late 1930s was that the increased building of cycle paths was one of the measures that could protect cyclists, although the outbreak of war prevented any significant development or implementation of this idea.[6] Nevertheless this thinking influenced the New Town philosophy which sought to cater for all modes of transport, and which would have reflected the high level of journeys made by bicycle in the immediate post-war period.[7] As Ward observes, it "used to be said in the early days of Harlow and Stevenage that the only traffic jams in the two towns were the twice-daily queues of cyclists threading in and out of the factory area" (Ward, 1993, p. 78). It was only natural that, as the first of the New Towns, Stevenage's planners would take account of this and that "[m]ost people would see it as an advantage of New Towns ... that they have the opportunity to provide for the four modes of transport: foot, bicycle, public transport and private transport, in that order" (Ward, 1993, p. 78).

Explaining the lack of provision of cycling infrastructure outside the New Towns

However, outside the New Towns, investment in cycle paths and facilities to encourage or support cycling was not forthcoming. This explains why major interest was shown in Claxton's work during the 1970s when, although urban cycling in general was reviving, the lack of provision of comparable facilities for cyclists in many towns and cities across the UK appeared to be a major policy oversight. With the Stevenage system of cycleways in mind, Watson and Gray noted at the time that "Given that some towns have geographies that are kind to cyclists, it is a lamentable shame that more councils do not make some kind of effort to foster the bicycle as a commuter's vehicle" (Watson and Gray, 1978, pp. 27-28). It seems reasonable to ask why, despite the pre-war recognition and pressure to provide cycling facilities emanating in the debates before the war, so little was done to provide them afterwards.

Part of the problem lay in the way in which resources were set aside for road building after the war. These came from highway funds, which could only be spent on highway land. Therefore, grants could be made by central government for the building of cycle tracks (or "paths" as they were also referred to) alongside trunk and principal roads, but not for cycle routes which either followed a segregated pedestrian system or used the quieter back streets. The Stevenage cycleway

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5 See Millward (2010) for a general discussion of the policy issues affecting cyclists at that time and the response of cycling organisations to them.

6 The introduction of cycle tracks and paths abroad was noted in a Ministry of Transport journal called *Road Abstracts*, published from the mid-1930s and produced primarily for road engineers and planners. It consisted of articles translated from overseas publications. This would have informed opinion amongst some policy makers at that time.

7 Interestingly the film *Charley in New Town*, sponsored by the Central Office of Information for the Ministry of Town and Country Planning and explaining how to build a new town, features the central character on a bicycle: see http://www.nationalarchives.gov.uk/films/1945to1951/filmpage_cint.htm

system closely followed the main road system for this reason, and Hudson (1978, p. 58) notes that this funding methodology continued to 1974. Balchin, (1980, p. 127) also notes, with regard to Stevenage, that

> "[t]he cycleway system has not always been allowed to keep pace with the construction of the roads because of expenditure constraints but, wherever possible, the detail plans for the cycle ways were always prepared concurrently with the road scheme so that road design and particularly road intersections could accommodate the cycle system when it could be installed".

Ward also notes how, faced with limited funds for a comprehensive cycle way scheme, Claxton achieved his aims through "subterfuge, as part of other work, to get the scheme off the ground. Limited approval was forthcoming later to link up a few bits at a time" (Ward, 1993, p. 79). [8]

Funding was also an issue in terms of building cycle facilities within existing infrastructure. The underpasses in Stevenage, for example, cost an estimated £10,000 each, but would have cost much more if they had been built under an existing road, having to include the moving of existing sewer pipes and telephone cables (Bendixson, 1973, p. 85). More important than funding, however, was the policy shift in response to the growth in motoring after the war. This became apparent from the early 1950s. Car ownership equalled the pre-war peak of just over 2 million by 1949, and was to double in the next eight years (Table 2).

In the wartime and immediate post-war period, however, there is little evidence of a default position to promote the motor car at the expense of other road users. Obviously, petrol was strictly rationed (until May 1950) and new cars were prioritised for the export market. Cycling therefore played an important part in the mobility choices at that time. In her influential study *The journey to work* (1944), Liepmann noted that "[t[he advantages of cycling to work, both to the individuals concerned and as a relief of the pressure on public conveyances, make encouragement of the use of bicycles the right policy". She also noted the desirability of continuing car sharing after the war which, she concluded, would prove beneficial (Liepmann, 1944, pp64-65). It should, therefore, have been logical for policymakers to adjust their plans to accommodate cycling in road-building plans, but clearly this did not happen. So why was this?

While critics of the motoring interests writing in the 1970s and 1980s highlighted the policy level successes of the 'road lobby' (Bendixson, 1974; Hamer, 1987; Plowden, 1971) in shaping the expansion of the road system often to the detriment of other road users, it is undeniable that the extraordinary increase in the number of road vehicles, particularly private motor cars by the 1950s, placed demands on policy makers to reduce congestion resulted in commensurate responses to build and widen more roads. The context of policy making can best be understood by examining how this post-war expansion of motor vehicles soon overtook the policy ideas at large in the immediate post-war period. When the New Towns Committee reported during 1946, one in every ten households in Britain owned a motor car; but, twenty years later, "well over half of the households in most of the new towns possessed a car" (Ward,1993, p. 76). It was possible for planners in the new towns to adjust to this change, but in the old towns the adaption to the motor age was more drastic : "sometimes brutally through wholesale demolition to get the traffic through at

[8] Ward is citing Claxton's version of events which appeared in Rees and Rees (1991).

Table 2. Licensed vehicles by tax class, Great Britain, annually: 1920 to 1970 (figures in thousands ['000s])

Year	Private Cars	Total	Year	Private Cars	Total
1920	187	591	1946	1,770	3,107
1921	243	846	1947	1,944	3,515
1922	315	952	1948	1,961	3,728
1923	384	1,105	1949	2,131	4,108
1924	474	1,300	1950	1,979	3,970
1925	580	1,510	1951	2,095	4,190
1926	684	1,715	1952	2,221	4,464
1927	787	1,886	1953	2,446	4,809
1928	885	2,030	1954	2,733	5,250
1929	981	2,182	1955	3,109	5,822
1930	1,056	2,272	1956	3,437	6,287
1931	1,083	2,201	1957	3,707	6,743
1932	1,128	2,227	1958	4,047	7,175
1933	1,203	2,285	1959	4,416	7,809
1934	1,308	2,405	1960	4,900	8,512
1935	1,477	2,570	1961	5,296	8,989
1936	1,643	2,758	1962	5,776	9,532
1937	1,798	2,929	1963	6,462	10,336
1938	1,944	3,085	1964	7,190	11,176
1939	2,034	3,148	1965	7,732	11,697
1940	1,423	2,325	1966	8,210	12,022
1941	1,503	2,478	1967	8,882	12,760
1942	858	1,840	1968	9,285	13,082
1943	718	1,537	1969	9,672	13,362
1944	755	1,593	1970	9,971	13,548
1945	1,487	2,553			

Note: The annual vehicle census of licensed vehicles has been taken as follows: 1920 at 31 March; 1921-1925 for the highest quarter; 1926-1938 at 30 September; 1939-1945 at 31 August; 1946-1970 as at 30 September.

Source: Plowden (1971, p. 456) and Department for Transport statistics Table VEH013 available at < http://www.dft.gov.uk/statistics/series/vehicle-licensing/ >

any cost, sometimes incrementally through one way systems, priority to public transport and the exclusion of vehicles from central areas" (Ward, 1993, p77).

The central dilemma posed by catering for the motor car was that the achievement of high mobility for one mode of transport was at the expense of other modes. Critics of this approach to providing road infrastructure centre on the design of housing developments in the 1950s and 1960s based on widespread car ownership to the exclusion of other road users, particularly cyclists. The approach of prioritising road building for motor transport led to policy blind spots. Plowden and Hillman, for example, contend that the provision of facilities for cyclists was not officially regarded as an issue for transport policy and that "the land-use transportation studies which

were the favoured instrument of urban planning in the 1960s and 1970s took no account of either walking or cycling" (Plowden and Hillman, 1984, p. 135).

Eventually, albeit slowly, policy makers came to recognise the importance, or perhaps just the existence, of cycling. Colin Buchanan's 1963 examination of Newbury in the landmark study *Traffic in towns* showed only 17 per cent of trips to work made by bicycle compared to 36 per cent on foot or using public transport. The Report recommended that £4.5m be spent on urban motorways but concluded that it would be "very expensive, and probably impracticable, to build a completely separate system of tracks for bicycles" (Watson and Gray, 1978, pp. 25-26).[9] The turning-point for government support for cycling infrastructure was the two government White Papers (DoE, 1976 and DoT, 1977) which eventually resulted in experimental schemes being planned for cyclists through the newly-formed Transport Advisory Unit from the early 1980s (Plowden and Hillman, 1984, p. 135; Hudson, 1978, pp. 9-10). By this time the British Cycling Bureau, with Claxton acting as a consultant, was advocating the creation of cycling trails and cycle routes (Shaw, 1978, pp. 155-6).

It is worth noting that, in the old towns, "cycle track" was still being referenced in government reports although few tracks were actually constructed (Hudson,1978, p. 58). More schemes providing cycling infrastructure were implemented during the 1970s and into the 1980s. Old towns such as Swindon, Portsmouth and Bedford attempted to introduce schemes to promote cycling with varying success during the 1970s, but did not enhance their facilities even though, in Bedford's case, there was a large cycling population. Other examples of retro-fitting in old towns included the introduction of a Cheltenham cycle way under a new bypass road and a Norwich cycleway under a new ring road (Shaw, 1978, p. 155). In the New Towns, Cumbernauld (designated in 1955) operated a policy of segregation which contributed, like Stevenage, to a good safety record (Ward, 1993, p. 79). Milton Keynes incorporated its red ways for cyclists and pedestrians while extensions to Northampton and Peterborough also catered for pedestrians and cyclists (Ward, 1993, p. 82). In 1973, Peterborough announced its intention to build 38 miles of main cycle ways and 34 miles of minor ones at a cost of £1.7m (Bendixson, 1974, p. 76).

These belated efforts in the 1970s imply that policy-makers had begun to adjust to the idea of cities and towns designed to accommodate the motor car also had to accommodate other means of transport. However, while accepting that the motor lobby effectively put the case for this expansion it was assisted by the relative ineffectiveness of the cycling lobby in the post-war period. In contrast to the inter-war period, the cycle manufacturers' trade association diminished in influence (Millward, 2010) and through the early 1950s to the 1970s there was no commensurate lobbying from cyclists and cycling organisations for infrastructure on the lines Claxton was pioneering in Stevenage – in fact they were opposed to segregated cycling facilities.

The main reason for the opposition from cycling organisations was that the use of cycle paths could add to the dangers of cycling particularly at right-hand crossings (Ministry of Transport, 1938, p18) and especially where they were frequently crossed by side roads and entrances to factories: for example "when statistics became available, it was seen that the number of accidents to cyclists had increased considerably after the construction of cycle paths along a stretch of the Great West Road[10] out of London" (Shaw, 1978, p.152). Having campaigned forcefully against

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9 In fact the popularised version of the Report (Buchanan, 1963) seems to omit this.

10 The first cycle-path was constructed along two and a half miles of Western Avenue in London in 1935 (Oakley, 1977, p. 51).

segregation of cyclists from the main road by cycle tracks during the 1930s (McGurn, 1999, p. 159), organisations such as the Cyclists' Touring Club (CTC) initially maintained their opposition to segregated tracks along public highways after the war (Shaw, 1978, p. 154). However, by 1955 the CTC "whilst repeating opposition to compulsory use, declared it was not opposed to the construction of cycle paths of any kind in any circumstances" (Oakley, 1978, p. 130, discussing CTC, 1955); accepting that an additional slow lane or cyclists' safety zone could be advocated. However this amounted merely to the removal of opposition not to the actual promotion of cycle ways.

Indeed, aware of the opposition to and emotional reactions produced by cycle paths amongst cycling groups, Claxton used the term 'cycle ways' in the manner of a motorway for cyclists. Cycle paths, in contrast, were not integrated into main transport routes, terminated at junctions and made it difficult to re-join the main carriageway. In many cases this made using the roads more convenient for cyclists to use and, as a result, the few cycle paths that were built fell into disuse.[11] However, by the 1970s Claxton's ideas of segregated facilities enjoyed greater support from not only Friends of the Earth and The British Cycling Bureau (the cycle manufacturers' trade association) who both employed Claxton as a consultant, but also from the CTC (Shaw, 1978, pp. 154-156).

Current perspectives on Claxton, segregation and cycleways

Claxton's work has been subject to some recent reappraisal. For some, Claxton is regarded as a 'heroic' pioneer (Ballantine, 1979, 359-364).[12] Being a cyclist himself, and allied to environmental and cycling groups, he appears very 'modern' in his views and seems to have fought a lone battle to promote cycling against the orthodoxy of his age.

However, with the benefit of hindsight, more sober judgements can be made of his work in two respects. The first criticism is that the various segregated cycling schemes built in the new towns and since the 1980s have led to a feeling that cycling is best done off roads not on the roads themselves – acting to reinforce the idea that cycling on roads is dangerous (Horton, 2007, pp. 137-147). Attempts to address such concerns certainly informed Claxton's work as his own papers suggest that as part of his job as Chief Engineer he was maintaining statistics on road traffic accidents in Stevenage and elsewhere from the early days with a mission to reduce road accidents.[13] Of course, the same data could have been (and occasionally was) used to argue for extending the cycleway in the interests of safety (Balchin, 1980, p. 128). Claxton's own personal interest in minimising accidents stemmed from his experiences in the Second World War. He was involved with the emergency services, founded the Casualties Union and was keen to point to the impact that the integrated road system introduced in Stevenage was having in this regard: "[i]t is

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11 For more details of cycle path construction at that time see Ministry of Transport, (1966, 1968).

12 A more recent (and more circumspect) discussion of Claxton features in a website written by Carlton Reid featuring his forthcoming book *Roads were not built for cars*, < http://www.roadswerenotbuiltforcars.com/about/ >. Entitled "The sad tale of a cycle network innovator forgotten by the New Town he built", Reid outlines Claxton's work in Stevenage and discusses the failure of cycleways to promote cycling as a mass mode of transport (< http://www.roadswerenotbuiltforcars.com/stevenage/ >).

13 Claxton Records, *Stevenage Accident Map Photographs 1953-76*, MSS.328/N12 Box 2. This box also contains associated reports relating to traffic accidents and surveys undertaken by Claxton in Stevenage.

estimated that the cycleway system is saving the community £28,000 a year in hospital expenses, not to mention the human suffering that is avoided" (Shaw, 1978, p. 153). And, as Claxton himself noted,

> "the loveliest comment that I ever heard was from parents who told me that they had complete peace of mind in sending their children to school on bicycles, because all the schools are served by cycleways and no child need cross a trafficked road at traffic level. They were free and safe all the way. This goes for adults as well ... the accident rate for Stevenage has gradually dropped until it reached little more than half the national average" (Rees and Rees, 1991, p. 154, cited in Ward, 1993).

Although well-intentioned with regard to reducing accidents, some modern critics such as Horton (2007) see the whole movement of segregating cyclists, along with promotion of helmet wearing and road safety promotion, as tending to lead to a growing "fear of cycling" which actually mitigates against people cycling in the long term as this fear becomes culturally deeply rooted. Part of the problem with Road Safety Promotion is the way that it targets the victim, and as part of that process, sees making them fearful as a means of effecting appropriate avoidance measures.[14] Therefore it is argued that it is putting the onus to change on the wrong group (Horton, 2007, p. 139). This misplaced focus of attention was not entirely accidental. From the 1930s the road safety lobby came under criticism from the Pedestrians' Association for its pro-motorist leanings (Plowden, 1970, pp. 282-284). By 1954 the CTC came to the same conclusion and left RoSPA on the grounds that the organisation had become too close to the motoring interests when it appointed a new president who was chairman of Vauxhall Motors, and a chairman of its road safety committee who was also a leading figure in the Society of Motor Manufacturers and Traders (McGurn, 1999, pp. 165-166).

The second criticism is that, in spite of government efforts, rhetoric and policy in the UK over the last 30 years, people have been reluctant to make more journeys by bicycle. While there are well-known barriers affecting the adoption of cycling such as terrain, weather, lack of facilities and infrastructure (see Parkin *et al*., 2007) between 1949-2002 cycling fell from 37 per cent of all journeys to about one per cent (Horton *et al*., 2007, p. 3). The optimism of cycle planners such as Hudson in the 1970s, that if safer cycling facilities were provided then more people would cycle, has proved to be flawed (Hudson, 1978, p. ix). It is possible that Claxton's removal of traffic congestion served to promote more car usage rather than less – at the expense of cycling. In Stevenage, a decline in journeys using bicycle was noted between1966-69, although this subsequently levelled off. Even in Stevenage, cycling had been overtaken by motoring as the main mode of transport. Balchin (1980, p.140) refers to Claxton's 1971 Household Survey which noted that the 69,000 inhabitants of Stevenage owned 15,000 cars and 14,000 bicycles, of which 12,500 cars were used for work and 4,200 bicycles were used for work or school. The question of whether Stevenage cycle ways were a white elephant or 'folly' was actually raised at the time. Claxton's view was the cycle would come back and the limited traffic congestion Stevenage had as a result of the cycle ways was the attractive feature to outsiders hankering after them (Balchin, 1980, p. 140). However, this predicted return to cycling has not been borne out by experience either in Stevenage or across the UK during the last 40 years.[15]

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[14] For a more detailed discussion of the issues surrounding road safety see Davis (1992).

[15] Reid features photographs of the cycleways in Stevenage as they were in 2012 and illustrates the extent to which they have fallen out of use since they attracted so much

Accounting for the decline in journeys by bicycle

Pinpointing the timing of the decline

Reviewing Claxton's work and the experience of providing segregated cycling infrastructure suggests that this was insufficient to arrest the decline of journeys by bicycle. Provision of infrastructure does not, in itself, seem sufficient to affect people's mobility choices. Cyclists missed out, because cycling went into decline. So what was influencing this drift away from cycling? The remainder of this paper moves away from discussing Claxton, turning to the issue of people's experience during the period of reconstruction which had an influence on their mobility choices as the process of reconstruction unfolded.

Although the shift in the mode of transport from walking and cycling to motorised forms of transport combined with a lack of infrastructure to support cyclists could explain some of the fall in cycling, it is difficult to pinpoint when this decline in cycling started. It is also problematic to attribute the decline in cycling exclusively to these factors.

It is also customary to see discussions of the decline in cycling as a post-war phenomenon. On the surface this appears credible. In the period immediately after the war, cycling was undertaken by a significant proportion of the population and was part of everyday life. In the late 1940s the excitement of cycling amongst the young retained its appeal, particularly with the advent of massed start road racing events initially promoted by the 'rebel' organisation The British League of Racing Cyclists (Messenger, 1998) which was reflected in the film *A boy, a girl and a bike* (released in 1949). There was also the sporting successes of Reg Harris and the 1948 Olympic team, which generated popular interest. In the early 1950s it is estimated that there were 12 million cycles in regular use in Britain "and most used their bicycles for everyday personal transport" (McGurn, 1999, p. 165). Oakley (1978, p. 65) refers to the growth of the Cyclists' Touring Club membership from 23,703 in 1941 to a peak of 53,574 in 1950. Yet, despite this, a decline in cycling as a means of making journeys by road seems to be in evidence almost as soon as the government began to gather statistics on the distances travelled by each mode of transport (Table 3) from 1949 onwards. The number of journeys by bicycle fell consistently compared to motorcycling and cars through to the 1970s (Hudson, 1978, p. 15).

In fact, a number of factors suggest that in spite of appearances, cycling was already declining as a mode of transport much earlier; starting in the decade before the war. One measure is the decline in cycle sales to the home market. Although the output of cycles from the UK cycle industry was growing through to 1952 the actual volume of sales to the home market fell after 1936 (Table 4). This decline took place significantly ahead of increases in motor vehicle usage based on numbers of registered vehicles (Table 2). This suggests that a simple substitution of mode of transport to cars could only be partly responsible, although it could also partly be explained by people shifting to public transport.[16]

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attention both nationally and internationally 40 years ago. (< http://www.roadswerenotbuiltforcars.com/stevenage/ >).

16 The manufactured output of buses and the registration of public transport vehicles grew particularly in the 1930s and in the years immediately after the war. See < http://www.dft.gov.uk/statistics/series/vehicle-licensing/ > and Political and Economic Planning (1950) pp. 10-14 and 58-77.

In addition to the falling volume of sales of bicycles on the home market, there was also a change in the composition of demand with fewer adult bicycles being sold and a growing proportion of these sales targeted towards the juvenile and youth market and fewer standard roadster utility models to adults.[17] The idea that a substitution effect, moving from bicycles to cars, set in after the end of petrol rationing accounts for the 1950s the decline in cycle sales, overstates the case. The major factor in declining cycle sales came from overseas, particularly the raising of the American tariff on bicycles by 50 per cent in 1955 (Wyatt, p47) which resulted in almost a halving of cycle exports over the next few years. This also accounts for the success of the novel small-wheeled Moulton cycle in the early 1960s, which generated a new interest in adult cycles on the flagging home market (see Watson and Gray, 1978, pp. 42-44; McGurn, 1999, pp. 166-168).

Therefore the decline of cycling as a mode of transport appears to have already started before the war if cycle sales are an indicator.[18] Similar reservations apply to using membership of cycling organisations as an indicator of overall cycling activity. While the membership of cycling organisations such as the CTC did grow during this period, Oakley (1977) also acknowledges that its membership was becoming "more proletarian".[19] However only a relatively small proportion of working class cyclists joined – the membership numbers achieved in the 1940s at 53,000 was the same as that achieved from the upper and middle classes members who joined during the 1890s boom.

Explaining the decline

Taking the decline of cycling as a continuation of a pre-war phenomenon, an explanation of this decline is needed. Firstly an important aspect emerges from recent studies examining the promotion of cycling which have looked at other factors influencing individuals' attitudes to cycling. Horton (2007) recognises that people's current propensity to cycle is affected by a variety of complex influences, including emotional ones. This applies equally to explaining historical changes, and such an approach would enable a closer examination of the complexity of factors influencing mobility choices through the period of reconstruction. Although Horton's consideration of the growing fear surrounding cycling is very pertinent to understanding mobility choices in the late 20th century to the present day, it is arguable that this was a less significant consideration in affecting mobility choice a century ago. The potential dangers to cyclists of road accidents were recognised from the 1870s when it grew as an activity, but by the inter-war period the dangers of cycling alongside growing volumes of traffic represented a new level of concern, but

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17 Note that the statistics for output are inflated from those of the earlier Census of Production because children's bikes were included after 1937 yet overall output figures were still falling. One notable aspect of this was that cyclists as a group were changing: becoming composed of a larger proportion of young people and school children rather than adults. A possible consequence of this was that their participation in public consultations over cycling facilities was overlooked.

18 The statistics might require some qualification given that a "Make do and mend" philosophy might have had an effect of reducing scrappage rates of cycles in the years of the war and the following austerity, to some degree offsetting losses on the supply side.

19 One element to the theme of the film *A boy, a girl and a bike* is the relationship between the working-class members of the cycling club and the middle-class young man who joins it. He is eventually accepted and enjoys the fraternity of club life which is portrayed affectionately in the film.

Table 3. Pedal Cycle and Motor vehicle traffic (in billions of vehicle miles) by vehicle type in Great Britain, annual from 1949

				***Other Vehicles*:**			**All Vehicles**	
Year	**Cars & Taxis**	**Light Vans**	**Goods Vehicles**	*Motor Cycles*	*Buses & Coaches*	**Total Other**	**Total Motor**	**Pedal Cycle**
1949	12.6	4.1	7.8	1.9	2.5	4.4	28.9	14.7
1950	15.9	4.8	6.9	2.7	2.5	5.2	33.0	12.4
1951	18.2	5.1	7.3	3.4	2.6	6.0	36.6	12.9
1952	19.0	5.4	7.0	3.7	2.6	6.3	37.8	14.2
1953	20.7	5.6	7.2	4.2	2.6	6.8	40.3	12.9
1954	23.1	5.8	7.6	4.3	2.6	6.9	43.3	11.7
1955	26.3	6.1	8.2	4.7	2.6	7.3	47.9	11.3
1956	28.7	6.2	8.1	4.6	2.6	7.2	50.2	10.1
1957	28.1	6.4	7.7	5.2	2.5	7.7	49.9	10.0
1958	34.4	7.4	8.4	5.2	2.4	7.6	57.8	8.8
1959	38.6	8.5	9.1	6.1	2.5	8.6	64.7	8.5
1960	42.3	9.3	9.5	6.2	2.4	8.6	69.8	7.5
1961	47.8	10.2	9.6	6.0	2.5	8.5	76.1	6.7
1962	52.0	10.3	9.6	5.4	2.5	7.9	79.8	5.8
1963	56.8	10.9	9.8	4.7	2.5	7.2	84.7	5.1
1964	65.7	11.0	10.8	4.7	2.5	7.2	94.6	5.0
1965	72.0	11.8	10.8	4.1	2.4	6.5	101.1	4.4
1966	78.6	11.8	10.9	3.7	2.4	6.1	107.4	3.9
1967	84.0	11.6	10.7	3.2	2.4	5.6	111.8	3.4
1968	88.6	11.7	10.9	2.9	2.4	5.3	116.6	3.1
1969	91.9	12.0	10.8	2.6	2.4	5.0	119.6	2.8
1970	96.3	12.6	10.9	2.5	2.2	4.7	124.6	2.7
1971	102.6	13.2	11.2	2.4	2.2	4.6	131.7	2.6
1972	108.5	13.8	11.5	2.3	2.2	4.5	138.3	2.4
1973	114.4	14.5	12.0	2.4	2.1	4.5	145.4	2.3
1974	111.8	14.7	11.6	2.6	2.0	4.6	142.7	2.4
1975	112.9	14.6	11.4	3.1	2.0	5.1	144.0	2.8
1976	118.3	15.0	11.9	3.9	2.1	6.0	151.3	3.1
1977	120.6	15.2	11.7	3.9	2.0	5.9	153.4	3.8
1978	125.8	15.6	12.1	3.8	2.1	5.9	159.4	3.2
1979	125.2	15.6	12.2	4.0	2.1	6.1	159.0	2.8
1980	133.6	16.2	12.2	4.8	2.2	7.0	169.0	3.2
1981	136.4	16.3	11.7	5.5	2.2	7.7	172.1	3.4
1982	141.2	16.2	11.4	5.7	2.2	7.9	176.8	4.0
1983	143.7	16.2	11.7	5.1	2.3	7.4	179.0	4.0
1984	151.6	17.1	12.2	5.0	2.4	7.4	188.3	4.0
1985	155.6	17.8	12.2	4.6	2.3	6.9	192.4	3.8
1986	164.3	18.6	12.5	4.4	2.3	6.7	202.1	3.4
1987	176.9	20.3	13.9	4.2	2.5	6.7	217.8	3.6
1988	189.8	22.5	14.8	3.7	2.7	6.4	233.5	3.2
1989	205.8	24.7	15.8	3.7	2.8	6.5	252.8	3.2
1990	208.7	24.8	15.5	3.5	2.8	6.3	255.3	3.3
1991	208.3	25.9	15.2	3.4	3.0	6.4	255.7	3.2
1992	210.0	25.6	14.8	2.8	2.9	5.7	256.1	2.9
1993	210.1	25.8	15.1	2.3	2.9	5.2	256.2	2.5
1994	214.4	26.9	15.4	2.3	2.9	5.2	261.9	2.5
1995	218.2	27.7	15.8	2.3	3.0	5.4	267.0	2.6
1996	223.6	28.7	16.3	2.3	3.1	5.5	274.1	2.5
1997	227.3	30.2	16.7	2.5	3.2	5.7	279.8	2.5
1998	230.3	31.6	17.2	2.6	3.3	5.8	284.9	2.5
1999	234.5	32.1	17.5	2.8	3.3	6.1	290.2	2.5
2000	233.7	32.4	17.5	2.8	3.2	6.0	289.7	2.6
2001	236.9	33.2	17.4	3.0	3.2	6.2	293.7	2.6
2002	242.7	34.0	17.6	3.1	3.2	6.3	300.6	2.7
2003	242.3	35.7	17.7	3.4	3.3	6.8	302.4	2.8
2004	245.0	37.4	18.2	3.2	3.2	6.4	306.9	2.6
2005	244.0	38.4	18.0	3.3	3.2	6.5	306.9	2.7
2006	246.9	39.9	18.0	3.2	3.3	6.5	311.4	2.8
2007	247.3	41.9	18.2	3.4	3.4	6.8	314.1	2.6
2008	245.4	41.6	17.8	3.1	3.1	6.3	311.0	2.8
2009	244.8	40.7	16.3	3.2	3.1	6.3	308.1	3.0
2010	239.8	41.0	16.4	2.9	3.1	6.0	303.2	3.0
2011	240.7	41.4	15.9	2.9	2.9	5.8	303.8	3.1
2012	240.3	41.3	15.5	2.8	2.7	5.6	302.6	3.1

Source: Department for Transport statistics, Tables TRA0101 and TRA0401 available at < www.gov.uk/government/organisations/department-for-transport/series/road-traffic-statistics >

Table 4. UK Cycles bought in the UK Market 1924-1958 (excluding Imported machines)

YEAR	TOTAL OUTPUT	EXPORTED	NET SALES	YEAR	TOTAL OUTPUT	EXPORTED	NET SALES
1924	704352	200781	503571	1946	2113000	1080000	1033000
1925	640000	276528	363472	1947	2492000	1400000	1092000
1926	680000	280051	399949	1948	2939000	1800000	1139000
1927	680000	283462	396538	1949	3518000	2200000	1318000
1928	625000	339046	285954	1950	3528000	2100000	1428000
1929	840000	368030	471970	1951	4033000	2700000	1333000
1930	882105	247147	634958	1952	3624000	2800000	824000
1931	1000000	172950	827050	1953	2994000	2000000	994000
1932	1100000	164074	935926	1954	3297000	2100000	1197000
1933	1418000	204625	1213375	1955	3562000	2400000	1162000
1934	1836000	281991	1554009	1956	2873000	2000000	873000
1935	1987000	377301	1609699	1957	2548000	1600000	948000
1936	2150000	519173	1630827	1958	2155000	1326000	829000
1937	2400000	831113	1568887				
1938	1900000	576458	1323542				
1939	2200000	614582	1585418				

Note. From 1937 figures contain output for juvenile and children’s bicycles.

Sources: United Kingdom. Board of Trade. Annual Statements of Trade 1924-1958. United Kingdom. Census of Production, 1924,1930, 1935 and 1948; Wyatt (1966, p. 47).

very largely these were played down (Bowden, nd, c1930).[20] Even after the war, many parents seemed unconcerned about letting their children cycle independently (particularly to school) as is evidenced by the popularity of the National Cycling Proficiency Scheme which trained 3 million young people (with 2 million passing the associated test) between 1958 and 1974 (Bannister, cited in Shaw, 1975, p. 80). However, although accidents affecting cyclists fell (Plowden and Hillman, 1984, p. 152), general concerns about road safety grew between 1960-70 as the number of youngsters aged 5 to 14 killed or seriously injured on the roads rose by 57 per cent (Bendixson, 1974, p. 26). However Hudson (1978, p23), writing in the late 1970s , cited a National Opinion Poll survey (Table 5) which suggested that fears or concerns about safety and mixing with other traffic were a significant, but not an overwhelming, influence on people taking up cycling.

Table 5. Factors affecting the likelihood of taking up cycling, 1976 (Hudson, 1978, p. 23: using data from National Opinion Polls Ltd)

Action which would make more people use bicycles	% of respondents citing action	
Less traffic / safer conditions	19	
Bicycle lanes on streets	14	33
Higher petrol costs	13	
Increased public transport fares	12	25
Keep fit	6	
Increased car costs	5	
Cuts in public transport services	4	
Fine weather / no other means of travel / cycling for pleasure	2 of each	
Parking for bicycles / cheaper bicycles / shortage or lack of petrol / for convenience / roads made less hilly	1 of each	
Don't know	17	

A second aspect relates to changing social and economic conditions: this may also help to explain the desire to own a car during the post-war growth of an affluent consumer society, where "the car apparently overtakes the bicycle as a status-signalling object of consumption" (Horton *et al*., 2007, p. 13). The effects of the post-war period of reconstruction could partly explain this change of attitude. Clapson, for example, notes unanticipated growth in demand for motor cars amongst working class residents in the New Towns (1998, p. 162). There was also the effect of moving into the estates which changed people: how they made friends, with what type of people and, consequently how that changed attitudes and aspirations, leading to a noticeable growth in consumption and changes in behaviour (Clapson, 1998, pp. 105, 108-109). It is possible that this process of settling into new neighbourhoods

[20] In this BBC radio broadcast Harold Bowden, managing director of Raleigh Cycle Co Ltd, noted how the dangers of cycling on the roads perceived by the older generations were not shared by younger generations who had learned to adapt to them.

might also have changed attitudes to activities such as cycling, if people feared that they would be judged as socially inferior. However, there are no studies examining this behaviour during the period in question, which points to a need to investigate this further.

But the experience in the New Towns noted by Clapson also opens up a third area to explore, namely the impact on mobility choices arising from the general urban migration of populations in response to changes to towns and cities during the inter war period and afterwards which the process of reconstruction simply accelerated. It has been noted by Clapson (1998, p. 1) that "with a few notable exceptions social history has neglected the historical significance of the outward migration of the working classes", and it is arguable that this also applies to its impact on mobility choices. Although this paper began by looking at the cycling facilities in the New Towns, outward urban migration affected millions of people and was a process which preceded the war. As Clapson (1998, pp. 1-4) points out, while the New Towns were a post-war phenomenon along with the Expanded Towns post-1952 and the Central Redevelopment Areas of the inner city following slum clearance and the rebuilding of bomb damaged areas, the building and settlement of people into new suburban estates after the war was continuing the trend started in the inter-war period. Therefore it merits serious consideration that mobility choices were also being influenced by these patterns of outward migration which was having consequences for the role of cycling.

Evidence of the effect that the early stages of outward migration was having is picked up in two studies; by Liepmann (1944) and Jevons and Madge (1946). These are particularly relevant in this regard in that they pick up on the role played by cycling at that time in respect of mobility choices[21] during the immediate pre-war period. Jevons and Madge's work was part of a University of Bristol study of Bristol Corporation's housing estates undertaken by Rosamund Jevons in the late 1930s and completed in 1944 by the Reconstruction Research Group headed by John Madge. The study notes how the development of suburban housing influenced the city transportation system and increased the distances to work, but did not result in a commensurate increase in the use of public transport as people took to cycling to cut the cost. In that regard the development of housing estates initially acted as a stimulus to bicycle sales – something that the Hercules Cycle and Motor Co. used as a means to develop its sales of cycles during the 1920s and early 1930s. However, not everyone could take this option and the high cost of transport was cited as a reason why some families moved out of an estate back to the inner city and it was suggested that "[t]here is a strong case for giving estate workers special travelling rates" (Jevons and Madge, 1946, pp. 37, 59). However, it is wrong to see cycling becoming deep rooted in this context as there were also factors counter to cycling in evidence. This was borne out by Liepmann whose 1930s study noted the sensitivity of cycling to weather, distance from place of occupation and how comfortable the journey would be. One noticeable phenomenon was the seasonal nature of cycling, which led to the estimated 8 million cyclists reducing to 4 million during the late autumn and winter, putting a strain on bus companies particularly as commuting by public transport became increasingly affordable (Liepmann, 1944, p. 37 and p. 64). Her study also showed clear links between distance and type of transport chosen. This was not always based on speed and cost. There were differences between female and male choices: females were much less likely to cycle to work (although cycling amongst women may have increased for leisure rather than commuter cycling). The type of employment was also a factor in determining where people

[21] Neither saw cycling at that time as being on the decline, but did recognise a period of change.

lived relative to work – those having widely tradable skills often living at greater distances from the workplace – thereby affecting the transport options affecting journey to work (Liepmann, 1944, pp. 55-56, 136, 142-143).

The critical factor in these studies is the importance of distance to work in mobility choices. But other effects of outward migration could affect mobility choices too, such as proximity to schools, shopping facilities, availability of delivery services etc. It is very likely that extensive urban resettlement was also having a direct effect on transport preferences as this process unfurled in the two decades following the war. This merits more detailed attention by historians.

A research agenda

This work is currently at an early stage of development and is largely informed by secondary sources. Based on this initial work, the following research agenda is emerging:

1. The initial focus was on Claxton and, while this was a helpful starting point, the study is widening to look at the process of urban migration more broadly to better contextualise his work. Additionally, work so far has been limited to the work in Stevenage and, as a result other New Towns, Harlow in particular, have received less attention and this will need to be addressed. There is also a need to look at the experience of cycle ways elsewhere to see how typical or exceptional Claxton's work was.

2. An additional aspect to the research is to widen the analysis to cover urban migration patterns as this appears seems to be a factor underpinning the social changes in respect of attitudes to cycling. This not only happened across the UK but also on the Continent at the same time, and international comparisons will be helpful.

3. With regard to the attention given to cycling in town and city planning schemes in general in the immediate post-war period, it is intended to identify instances of:

    a) Inclusion of cyclists in those plans, what facilities were provided in new suburban estates or tower blocks, for example, for residents who cycled?
    b) Evidence of instances where planners and policy makers showed a difference in approach between the immediate post-war period compared with the later period, eg to compare 1945-50 with 1950-1960.
    c) What engagement might individual cyclists and/or cycling organisations have had with the process, and is there any evidence of active *support* for cycling facilities 1945-55?

4. More research into cyclists as a group, eg characteristics of age, gender, social class etc. Statistical evidence exists for accidents, but cycle usage surveys, road traffic census data etc during the period 1945-65 will help to get an idea of who was cycling and where.

5. Undertake a survey of people who experienced urban resettlement and identify their attitudes to making journeys by bicycle. If they didn't cycle – why not? Those who did cycle during the period, but changed their mode of transport could be questioned to see why they changed.

6. It is intended to look for micro-studies of towns and cities focusing on post-war experiences of reconstruction where issues of mobility choices are discussed.

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SIT_U

Mike Dring
Birmingham School of Architecture, Birmingham City University, Parkside Building, Curzon Street, Birmingham B4 7BD

Introduction

> "During the last half-century or more, the vast majority of buildings have been constructed as radically isolated from one another and thus cannot be conceived of as elements contributing to a comprehensive built environment (utopias of sorts)" (Coleman, 2005, p. 11).

> "Scratch the surface of modern architecture's matter of factness, simply for a moment doubt its ideals of objectivity, and almost invariably, subsumed beneath the veneers of rationalism, there is to be found that highly volcanic species of psychological lava, which, in the end, is the substratum of the modern city" (Rowe and Koetter, 1978, p. 11).

The idea of the 'situated utopia' stems from an understanding and appreciation of the unique urban characteristics of Birmingham and its wider conurbation, with particular reference to urban development after 1945. This significant era of regional post-war reconstruction and speculative development was characterised by bold statements on the future of urbanism in the UK, significantly structured around road-based infrastructure, unparalleled in terms of its scale and ambition, and often likened to American rather than European models. This study is given greater urgency due to the on-going eradication of that era of urban form.

The intention of this paper is to explore the notion of utopia from its origins through theoretical and physical case studies, seeking to reveal the foundations, drivers, influences and characters behind this unwavering belief in the 'situated utopian' model of urban development in Birmingham. The paper draws on diverse archival material including a transcript of an interview with architect John Madin, conducted by Anthony Sutcliffe and Roger Smith carried out on 16 January 1969 in preparation for their book *Birmingham 1939-1970* (1974).[1] These are used to frame themes that pervaded architectural and urban discussion at the time; with particular reference to Birmingham, but with wider implications in terms of architectural and urban history and theory. Fundamentally, it poses the question as to whether the unique characteristics of the city can be seen as 'utopian', contrary to Coleman's assertion, or simply a construct of capital driven development beyond ideology, and to enquire if the 'applied' or 'situated' utopia is as relevant a device in affecting paradigm change as the 'imaged' utopia.

Absolute/relative utopia

In exploring the term 'utopia', Coleman draws on multiple philosophers, sociologists and practitioners to illustrate the variety of definitions and interpretations. Beyond the Greek poet Hesiod's retrospective definitions of the 'age of gold' located elsewhere in *time* and Paradise

[1] A transcript is available in Sutcliffe (1967-9) (copy in The Birmingham Library, Local Studies, LF71; the missing section of the Manzoni interview is retyped in Sutcliffe (1975).

located elsewhere in *space* (Coleman, p. 27) in a pre-Christian age of divinity, it is Sir Thomas More's 1516 conception of utopia that begins to formulate what we might recognise as a model for urban speculation with a prospective dimension. Coleman describes More's Utopia as "a scheme for organising desire toward realisation of common good" (Coleman, 2005, p. 26), which More proposed would be applied across the 54 cities that made up the island of Utopia. Significantly, the terms *pattern*, *geography* and *transformation* are identified as factors in the dialogue between the "relative" (realisable) and "absolute" (unobtainable) model of utopian development; terms described by sociologist Karl Mannheim in his text *Ideology and Utopia* (1936). The term *pattern* is used as a device to "situate citizens within the social space of their communities" (Coleman, 2005, p. 31), a codified construct that suggests a model of regularity, connection and potential completeness. It was an image rather than a prescription (Rowe and Koetter, 1978, p.14). In the context of *geography*, More acknowledges the significant impact orientation, geology and topography can have on city form and figuration (Coleman, 2005, p. 32), giving rise to variety and ideas of place. Linked to this is the concept of *transformation*, specifically of the human condition in developing cognitive, temporal relationships with space, in relating *pattern* to *geography* located in *time*.

Despite the reading of practical potentials of More's conception of utopia, Rowe and Koetter describe the classical utopia as "rather more of an heuristic device than any form of directly applicable political instrument" (Rowe and Koetter, 1978, p. 14), since it was for the consumption of the élite few rather than delivering a wider socially- driven agenda. Nonetheless, they go on to say that "it yielded to a message which could be interpreted not merely as a critical reference for the few but which could be seen as a vehicle for the literal deliverance and transformation of society as a whole" (Rowe and Koetter, 1978, p.15). According to them, the scientific advances of post-Enlightenment society of the eighteenth and nineteenth centuries superseded the concept of the classical utopia, establishing it as "a blueprint for the future" (Rowe and Koetter, 1978, p. 20), recognising the increasing rationality of society through the Industrial Revolution and contrary to divine aspirations towards paradise.

The American urban historian, sociologist and philosopher Lewis Mumford refers to the ability for utopian vision to change the state of civilisation and the paradoxical nature of utopian speculation in his text 'The Story of Utopias' (1928). He refers to the "reconstruction of the material environment and the reconstitution of the mental framework of the creatures who inhabit it" (Mumford, 1928, p. 23) as two symbiotic but distinctly compartmentalised elements that contribute to a single issue, that of the conception of 'modern' urban space. Mumford cites the German theologian Johann Valentin Andrae (1586-1654) in his description of Christianopolis as a 'modern utopia', predating Rowe and Koetter's estimation of the shift from an absolute to relative mode of utopian practice by a century. Mumford states, "if [More's] Utopia exhibits the communism of the family, Christianopolis presents the communism of the guild" (Mumford, 1928, p. 84). The idea that the guild as a powerful association of craftsmen or merchants would underpin society, rather than the family, represents a radical change in the concept of the individual in society. Likewise, with the onset of the twentieth century came further technological advances, greatly accelerated by military research particularly in the period immediately preceding and following the Second World War, and into the space race and Cold War era. Buckminster Fuller's assertion that technological utopianism in the United States had brought unanticipated benefits to civilian life through, for example, the development of a remarkable federal highway, also encouraged the emergence of a war-like mentality that privileged economy and efficiency above social welfare and the very notion of the city itself (Coleman, 2005, p. 74).

The changing idea of the city as a space of exchange and movement over and above the

transformation of the human condition is reflected in multiple twentieth-century utopian models that focus on the alienation of the individual. In an essay entitled "The unconstructed subject of the contemporary city", Albert Pope (in Bell and Leong, 1998, p. 164) references Manfredo Tafuri in describing modernism and subject inscription thus: "the problem was to plan the disappearance of the subject, to cancel the anguish caused by the pathetic (or ridiculous) resistance of the individual to the structures of domination that close in upon him, to indicate the voluntary and docile submission to those structures of domination as the promised land of universal planning". In this case, the subject is eliminated but the body remains merely as an enabling agent operating the machines, driving the cars, administering capital, circulating like integers in an endless industrial cycle.

The tensions between the individual and society exist in most utopian speculations, and scale appears to be divergent; the move from an *absolute* to a *relative* conception of utopia suggests a *reduction* in scale on the basis that the realised version can never be complete and will always be compromised in some way, and
the move from a *biological* to *mechanical* motivation behind utopian visions suggests an *increase* in scale since it shifts the focus away from the individual within a community to the community itself and the service it provides beyond itself.

This reading of a technological/economic utopia or personal dystopia depends on the ideological viewpoint taken. Given that the aim of this study relates to urbanism, planning and architecture, it is the *relative*, *mechanically* motivated position that will be taken in pursuing the idea of the situated utopia, often a construct of capital-driven urban development.

Twentieth-century transatlantic utopias: ideologies and models

> "The promise of liberation from the machine can only arise from an accurately controlled image of the future" (Tafuri, 1976, p. 57)

In further considering the earlier concepts of *pattern*, *geography* and *transformation*, a number of interlinked but distinct subthemes emerge as key characteristics of utopian theories and models, illustrated through the following examples. The ability of theoreticians and practitioners alike to visualise future urban models in engaging politicians and reposition the mental image of a wider society has continued apace throughout the twentieth century, not least in the post war period, perhaps reaching its zenith in the 1960s in a transatlantic volley of ideas and speculation that drew both on the past and new feats of technological innovation.

Infrastructure

> "In a single glance we can comprehend the social idea of Motopia: the separation of mechanical and biological man. A few minutes later our plane lands at London Airport, and our car whistles on the new road extension up and over and up the Motopia fly-over, along the roof roads, down the circle ramp and into the mews road to stop at the covered entrance to our own block of dwellings. Here we cast off our shell and descend as human beings to our home" (Jellicoe, 1961, p. 12).

As Geoffrey Jellicoe identified in his introduction to *Motopia*, his 1961 diagram for an ideal city, "utopias generally come to the fore when there is social discontent" (Jellicoe, 1961, p. 7), although he acknowledged that technical progress, such as one car per family, led to a desire

for change in the formation of new and development of extant urban environments in support of private mobility and independence from the centralised mobility systems that had dominated the urban landscape for the previous two centuries. Jellicoe's theoretical model for a future city "unencumbered by what already exists" (Jellicoe, 1961, p. 8) sought to explore the notion of utopia based on free mobility, new construction and automotive technologies and appreciation of the scenographic qualities of the British landscape based on a reading of the eighteenth-century English School of Landscape Gardening, an idea which regularly graced the pages of the *Architectural Review* at the time, famously described as *townscape* by Gordon Cullen.[2] What is significant in Jellicoe's model is that the motor car is at once relegated and celebrated, placed in ultimate grade separation as sole occupier of a continuous roofscape set in a uniform grid. This allows lower levels and the groundscape to become the sole preserve of the pedestrian, featuring commerce adjacent to an east-west highway and beyond that landscaped gardens between the grid, featuring glass-roofed churches, glass bridges and a glass television pagoda where "each floor contains a café tuned to a different wave length" (Jellicoe, 1961, p. 158). The study was commissioned by the Pilkington Glass Age Development Committee, a philanthropic body of the Pilkington glass company based in St. Helens, of which Jellicoe was an original member alongside Ove Arup and Edward Mills of the RIBA; the aim of which was to stimulate new ideas and create an interest in architecture. *Motopia* celebrates its commercial patronage in an outwardly-technological utopian idyll were the car literally rises to the top. As a continuous gridded structure it illustrates a particularly British response to the challenges of new urban forms, situated in a green-belt setting interlaced with historically referenced but technologically advanced typologies, with an implicit reference to American infrastructural models. The inflexibility and monumentality of the gridwork as an extruded form rather than a surface pattern meant that it would always remain a model, but the segregation of mechanical and biological remained a consistent theme throughout the 1960s as planners sought to free the city from congestion.[3]

North Bucks New City, a proposal published in 1962 by Buckinghamshire county architect Fred Pooley for a city of 250,000 inhabitants between Bletchley and Wolverton, was one such scheme that had, at its heart, a system of transport more ambitious and experimental than any preceding British new town. Ortolano describes it thus: "a railway would run through the city, the M1 motorway would skirt along its eastern edge, and smaller roads would circulate it, but transport inside the city would be handled by a quiet, automated, high-speed monorail" (Ortolano, 2011, p. 478). Despite remaining an absolute model, it paved the way for the realised city of Milton Keynes, designated as a new town in 1966, though without the futuristic movement systems that Pooley had envisioned or the elevated and total integration of car movement about which Jellicoe had speculated.

Whilst the grid plan schematics for Milton Keynes by the planning consultants Llewelyn-Davies, Weeks, Forestier-Walker and Bor were not dissimilar to those of Jellicoe in *Motopia*, Pooley's were perhaps closer to those of American planner Victor Gruen in his 10-city cluster 'cellular metropolis of tomorrow' published in 'The heart of our cities' (1965). Gruen, an Austrian who fled Nazi-occupied Europe in 1938 for the United States, is viewed as the pioneer of the enclosed suburban shopping mall, making the polemic of his book on the urgent task at hand in saving the centre of cities somewhat ironic in hindsight. Likewise, his schematic diagrams bear more

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2 Cullen's ideas were collected in his 1961 book of the same name; the origins in the pages of the *Architectural Review* are explored by Erten, 2004.

3 It also emerged from the more radical ideas of traffic planning and urban reconstruction from the late 1930s and 1940s, mentioned by Larkham in this volume.

than a passing resemblance to Ebenezer Howard's diagrams for the Garden City. In fact, Gruen is open in his feelings at the likenesses:

> "When, quite recently, in the process of doing research for this book, I read Ebenezer Howard's *Garden Cities of To-Morrow*, I experienced that double-edged feeling which comes from learning that somebody else had your idea before you did; on the one hand, a certain sense of disappointment that I had not been as original as I thought and, on the other hand, satisfaction that there must be some logic to my thoughts if they had been enunciated sixty years earlier by a man who undoubtedly was a profound thinker" (Gruen, 1984, p. 283).

Gruen also cites Howard as the unknowing originator of both the regional shopping centre and the enclosed mall through his description of the ring-shaped "Crystal Palace" in *Garden Cities*, perhaps seeking to position his own schemes in this respected canon of urbanism. Similar to Pooley, Gruen believed that private and mass transit systems were fundamental to the future of cities, employing both highway and rapid transit systems that included the 'Carvelator', a continuous row of cars, and the moving sidewalk. Again, the role of infrastructure was considered concurrently at a personal and regional scale, at once delivering the citizen into the commercial heart from the surrounding neighbourhood unit and providing efficient distribution networks to adjacent cities, resulting in a decentralisation of urban form and activity.

Three-dimensional planning, the object *and* field, and object *as* field or the megastructure

Appleyard, Lynch and Myer described the "second spatial type" of modern urban form:

> "Buildings have become isolated objects in space. It is the objects, or clusters of them, which became the remarkable perceptual elements. The space of the streets has swollen and spilled over into the spaces between buildings. In the process, the street space has lost its form, and become a neutral background for the form of the structures" (Appleyard, Lynch and Myer, 1966, p. 408).

Returning to the idea of pattern, the continuity and regularity of many of these 1960s schemes led to a control not only of the plan but of the section in defining the precise parameters of any development, and by extension the sequential experience of that place by its inhabitants. *Motopia* is one such example, but even here there is variety in the treatment of landscape and the inclusion of 'landmarks' for orientation. The American architect Paul Rudolph's proposal for the Lower Manhattan Expressway, commissioned by the Ford Foundation in 1967, pursued a wholly more ambitious architectural scale beyond the 'object and field' where he sought to integrate public and private circulation systems and connect into existing communities either side of a two-mile-long linear megastructure. The three-dimensional nature of his masterplan positioned his scheme as 'object as field' and drew on a realisation that traffic congestion was unlikely to improve and that construction technology was developing at such a pace as to make plausible the use of air rights for building and pedestrianisation in high-density areas over highways. Whilst this was unbuilt, Rudolph declared that the Boston Government Service Centre was the closest he had come to the creation of a megastructure, though without integrated infrastructure. Rudolph described the scheme as the "antithesis of the International Stylists' dictum of "buildings in parks" as freestanding objects, and of regarding the street as enemy" (Rudolph, 1977, p. 319), perhaps related to the scheme as urban infill. According to his essay, the scheme unified three city blocks into a unified structure, the three-dimensional planning of which was prescribed through ten points agreed with the 'other' architects, including;

that the megastructure should reflect the existing irregular urban form at its perimeter, that space should be made for the provision of small plazas at the intersection of street, that centralised circulatory patterns should be employed to focus activity, and that a single multi-storey building was to act as a point of orientation and scalar relationship in the city. Points 8-10 are worthy of transcription here in reinforcing the prescribed nature of the plan;

> "8. Regular bays at the street with columns 60 to 70 feet in height should be utilised but the more intimate scale of the courtyard should have columns corresponding to the series of one-storey high stepping façades.
> 9. The multi-storey building should act as a pivoting point at the entry to the plaza and serve as its principal spatial element.
> 10. All architects should use the same material (concrete) and similar fenestration."

Whilst megastructures tend to be characterised by the alienation of the individual, Rudolph was keen to point out that the stepping façades and courtyards were devices to offer a more intimate pedestrian scale. It is not explicit how the 'other' architects might have engaged in or delivered this prescribed three-dimensional plan, but the unifying material and control of apertures was clearly one of several mechanisms that Rudolph had employed to ensure the scheme was as he had envisioned it. The essay concludes with a series of quotes from Rudolph;

> "Moving in space and spatial sequences are the epitome of Twentieth Century architecture because of (a) the relationship of architecture to transportation systems, (b) the idea that a building is never completed and, indeed, constantly changes, and (c) the pervasiveness of simultaneity: i.e. space/time."
>
> "Large scale three-dimensional concepts of organization are the particular province of architects, but we have abdicated" (Rudolph, 1977, p. 320).

Rudolph's concept of architecture and urbanism as inextricably linked with infrastructure, that they adapt to changing circumstances, but more so that architecture as a profession had avoided such large-scale ambitions can be seen as a transatlantic symptom of the failing confidence both in and of the profession.

Birmingham international, or the situated utopia

The preceding sections explore early conceptions of utopia and the fertile post-war era of urban speculation and activity, which cited 'utopian' ambitions as a central tenet of future society. The opportunity for a clean start following the war was supported by a burgeoning technological revolution and greater equality in society.

Birmingham represents an unusual case study particularly in British urban history: its profile shaped essentially by a raft of formative developments which took place over a period from the close of the third quarter of the eighteenth century to the present day (Cherry, 1994, p. 11). Its evolution is well documented not least by the three-volume history of the city region commissioned by the City Council in 1938. The third volume, covering 1939-1970, was authored by Anthony Sutcliffe and Roger Smith, who stated that it paid particular attention to the work and leisure activities of ordinary people (Sutcliffe and Smith, 1974, inside front cover). However, much of the text is dedicated to the role of the Corporation in asserting its dominance over

urban land ownership and development; its national significance as Britain's biggest single-tier authority represented through the near celebrity status of City Engineer Sir Herbert Manzoni who took office in 1935 as City Surveyor and Engineer until Neville Borg succeeded him in 1963 as the newly-titled City Engineer, Surveyor and Planning Officer. Manzoni also, in effect, acted as City Architect until 1952 with the appointment of A.G. Sheppard Fidler, himself succeeded by J.R. Sheridan-Shedden in the same year following council reorganisation. Sheridan-Shedden had previously been Assistant Architect to the Harlow Development Corporation and City Architect of Leeds.

Manzoni was largely credited with the delivery of the city's ambitious infrastructural systems, though Sutcliffe and Smith note that the origins of the inner ring road as part of this strategy lie before the First World War when in 1910 the City Engineer, Henry Stilgoe, observed Vienna's wide radial roads and 'ring roads' carrying tram tracks on special reservations during the visit of a Council delegation (Sutcliffe and Smith, 1974, p. 400), resulting in a formal proposal in 1917. Interestingly, some 50 years later the Austrian turned American urbanist Gruen also cited his native town of Vienna as "nearly perfect" (Gruen, 1965, p. 36) in respect of its urban and infrastructural form, and an influence on his urban planning work in the United States. He details how the second outlying fortification line was, over time, developed into a *Gürtel* or belt, forming excellent distributary roads with a rapid-transit system (Gruen, 1965, p. 38). Birmingham was never a fortified city, its urban structure had largely been built on connection to outlying areas, parasitic on the raw materials of its surrounding region, capturing an entrepreneurial and service function (Cherry, 1994, p. 11), so the network of radial and concentric pathways was well established by the twentieth century and minor widenings to the inner routes occurred between the world wars. The City Council approved the Public Works Committee's ring road scheme in principle in 1943, the chosen route facilitated by bomb damage and through the Corporation's aggressive scheme of compulsorily purchasing frontage land along the route to a depth of circa 25 meters, the authority for which came from its private Act of Parliament, the Birmingham Corporation Act 1946. Alternative measures were considered around the same time, though the north-south and east-west tunnels beneath the city advocated by the traffic advisory committee in 1942 and the construction of a tube railway to serve north-east Birmingham failed to find support with the Public Works Committee due to the costs involved and their limited impact on industrial transportation. Members of the committee even travelled to the United States in 1956 to examine rapid transit systems, but came away even more convinced that rapid public transport was not an alternative to motor roads (Sutcliffe and Smith, 1974, p. 405). They were, however, very impressed by the numerous flyovers and underpasses in American cities (Sutcliffe and Smith, 1974, p. 408). Public transport options were relegated to a post-inner ring road scenario as a fix for any remaining traffic problems, and road construction began between Smallbrook Street and Moor Street in 1956/7. The shift from a *beaux arts* plan for the city with frontage development at the start of the twentieth century towards one based on infrastructure was never fully resolved, and this resulted in an uneasy compromise between the two, heavily criticised at the time by planners and architects alike. As Paul S. Cadbury stated in his 1952 book *Birmingham – fifty years on*, prior to the construction of the ring roads, "Ideally, the arterial roads and ring roads in their final form should be for the use of motor traffic only, and not as they are to-day frontages for houses and shops" (Cadbury, 1952, p. 49). As part of the research for their book Sutcliffe and Smith interviewed a number of key characters of the era, including the regionally-significant Birmingham architect John Madin, whose view by the late 1960s was that

> "The City has made a lot of mistakes along the Inner Ring Road. They could have established shopping precincts and freed the road itself for through traffic. Instead they

> have mixed up their uses and have neither provided proper shopping nor proper traffic movement" (Madin, in Sutcliffe, 1967-9).

To return to the debate around the object in the field, Madin's belief was that the opportunities presented by the large-scale reimagining of the city through infrastructure should have been accompanied by a comprehensive repositioning of planning and architecture, as had been witnessed in the United States. Indeed, in his business development pursuits and research towards the design of Central Library, Madin had visited America in 1964, specifically taking lunch with Paul Rudolph in New Haven, visiting the Architecture and Arts building at Yale that Rudolph had completed in 1963. Rudolph was then Director of the Department of Architecture, and in his letter (Madin, 1964) Madin wishes him well in starting up full-time practice in New York over the summer of 1964. Madin was clearly influenced by the ambition of American urbanism and architecture, although Rudolph had yet to complete or envision some of his most daring schemes at Boston Government Service Centre and Lower Manhattan Expressway. However, at a meso scale, the technological and constructional feats, social spaces and raw character of the Yale Architecture and Arts building at New Haven appear to have left a lasting impression on Madin, the renders of this and Birmingham City Library illustrating a similar openness, depth and expression of space, material and 'nature'. In his letter to Rudolph, Madin emotes that "in all my travels, which have been reasonably extensive, I would say this is one which has achieved something which so many buildings lack today – character and humanity – the best building of its kind I have ever seen" (Madin, 1966).

The Central Library exists, for the time being, as perhaps the only exception to this misunderstood urban form, and in its inception could have been referred to as a megastructure in that its section housed multiple floors of varying heights with varying facade inclinations, included multiple programmes of library, athletics institute, pub, concert hall and school of music, and a sub-basement with bus interchange, spanning both a below-ground road tunnel and grade-level roundabout as part of the Paradise Circus node upon which it was constructed. It was the key component of Madin's three-dimensional master plan for the Civic Centre prepared with the then City Architect J.R. Sheridan-Shedden. In the interview with Sutcliffe and Smith, Madin commented on the eventual scheme for the Civic Centre:

> "I prepared the overall plan [for the Civic Centre Development] with Sheridan Shedden a few years ago, but now the Council has gone and let the West End car park site to ATV. They approved the building of a thirty-storey tower of offices there,[4] which will wreck all the three-dimensional planning which we did for the Civic Centre. It will ruin the scale of the whole thing" (Madin, in Sutcliffe, 1967-9).

In indirect refutation of such criticism, Manzoni is quoted in the *Birmingham Post* in 1963, stating that

> "Other critics have bemoaned the lack of a master plan for the city centre. Sir Herbert, who is a registered architect, said a master plan showing the zoning of the centre existed, but there had never been an attempt to produce one in three dimensions, giving the size, shape and grouping of the buildings. […] "There is nothing wrong with the idea of a master plan, but the people who put it forward are thinking on a smaller scale than is involved in the rebuilding of Birmingham" (*Birmingham Post*, 1963).

[4] Alpha Tower, by Richard Siefert and Partners; now Listed.

Conclusion

Manzoni is thus confirmed as an early economic planner who saw the city as part of the wider exchange economy, over and above viewing the city as a place with use value for its citizens: although significant improvements were made – in particular in housing – during his time in office. He recognised the diminishing position of the West Midlands in the context of the global manufacturing industry and the need to diversify business into the service sector. Indeed, his successors continued this belief in infrastructure as a key driver for urban change, commissioning a broader 'West Midlands Transportation Study' in 1964 with projections up unit 1981 (Borg, 1973, p. 35), along with the 'Birmingham Rapid Transit Study' and 'Multi Purpose Tunnel Study' (Borg, 1973, p. 38) around the same time. Manzoni's refusal to acknowledge three-dimensional planning as a positive influence on urban form positioned him outside the then- current discourse in architecture and urban planning, for example as advocated by Madin following his transatlantic visits. Whilst infrastructure appears to have connected the two figures, the resultant urban form and architectural expression caused a divide, perhaps best summed up by Madin thus:

> "[Anthony Sutcliffe] How far do you believe that Herbert Manzoni was personally responsible for this refusal to countenance three-dimensional planning [for the revised scheme at the Civic Centre]?
> [John Madin] Basically Manzoni was a road engineer. He was a fine chap, and a great friend of mine, but this was his limitation" (Madin, in Sutcliffe, 1967-9).

As a realised infrastructural composition, Birmingham is a situated utopia of sorts, although, perhaps inevitably, without the contrasting absolute humanism of More's conception half a millennium previously.

There is much more research to do surrounding the critical theories, planning, urbanism and architectural histories of the city, and the network and influences of key individuals. This paper represents the beginning of a greater exploration that seeks to recognise the city/region as a space of innovation and original thought, unlike any other in the UK.

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New infrastructure in the rebuilt Japan: the development of the infilled canal of the Sanjukkenbori River in Ginza, Tokyo, after the Second World War

Junichi Hasegawa
Faculty of Economics, Keio University, 2-15-45 Mita, Minato-ku, Tokyo 108-8345, Japan. E-mail: hasegawa@econ.keio.ac.jp

Introduction

In the summer of 2012, the major newspapers in Japan reported that Ginza Cinepathos, the only surviving cinema playing classic films in Ginza, one of the most fashionable shopping districts in the country, was to close at the end of March 2013. The cinema was located in the Miharabashi Bridge underground area, a short underground street built in 1951 under the Miharabashi Bridge over the infilled canal known as *Sanjukkenbori Gawa*, meaning 'River Sanjukkenbori'. One of the earliest premises in this underground area included a cinema that specialised in newsreels, which was a forerunner of Ginza Cinepathos (Figure 1). The Great East Japan Earthquake that occurred in March 2011 caused serious doubt about the quake-resisting capacity of this area. As a result, the Tokyo Metropolitan Government ordered tenants to evacuate a portion of the area which was designated for demolition (*Asahi Shimbun*, 17/8/2012; *Mainichi Shimbun*, 21/7/2012; *Nihonkeizai Shimbun*, evening edition, 20/7/2012; *Tokyo Shimbun*, evening edition, 20/7/2012; *Yomiuri Shimbun*, 27/8/2012).[1] As will be seen later, the infilling of the Sanjukkenbori and converting it into a street was necessitated by the need to dispose of bomb-damage debris from the Second World War. Therefore, the infilling of the canal and its subsequent development was one of the new infrastructure developments made necessary by bomb damage.

Figure 1. The hanging sign says "Ginza Cinepathos 1.2.3"; the curved ceiling shows that the structure is part of the bridge. Author's photograph, 3 January 2013.

[1] Much of the information for this paper is derived from contemporary newspaper reports. These are cited with publication dates within the text, but are not given full individual citations in the reference list.

The 1946 official reconstruction plan for Tokyo proposed a number of wide roads and open spaces; however, in 1949, this plan was curtailed drastically, mainly because of financial difficulties. As a result, the plan virtually collapsed. Nevertheless, Tokyo's reconstruction planning has generated much study, with attention being focused on the analysis of the largely unrealised plan, or on the political and social factors that led to the failure in realising it (Hasegawa, 2006; Ichikawa, 2003; Ishida, 2004, chapter 7; Koshizawa, 1991, chapter 6; Tiratsoo *et al*., 2002, chapters 6 and 7; Tiratsoo *et al*., 2006, chapters 5 and 6). As Peter Larkham has argued (in the introduction to this collection), there are few detailed studies focusing on a nevertheless significant aspect of the physical restructuring: the new infrastructure made necessary – or facilitated – by wartime bomb damage, particularly on their political and social repercussions (although Ichikawa 2003 examines the development of Kabukicho entertainment area and Nakajima *et al*., 2005, chapter 5 and Hatsuda, 2011, chapters 1 and 2 discuss examples of new infrastructures such as plazas and black markets).

The infilled Sanjukkenbori is a good example of such infrastructure development in Japan. This paper examines how the idea of infilling was received, and whether the subsequent development reflected the common opinion of society and thus was considered desirable in order to reposition the new infrastructures in Ginza in the post-war economy and society.

Reaction to the proposal to infill the River Sanjukkenbori

In 1947 and 1948, the Tokyo Metropolitan Government proposed the infilling of 15 canals located in central Tokyo with war-damage debris. The case that attracted particular attention was the proposed infilling of the Sanjukkenbori at the edge of the Ginza district. Sanjukkenbori was a kilometre-long canal constructed in the early seventeenth century during the Edo era. *Sanjukkenn* refers to its original width, which was approximately 54 metres.[2] In April 1948, *Asahi Shimbun*, a major newspaper, reported that the Metropolitan Government intended to make financial use of the canal by selling or leasing the new land created by its infilling into "an ideal shopping street like Champs-Élysées in Paris" (*Asahi Shimbun*, 2/4/1948; see also *Tokyo Shimbun,* 2/4/1948).

However, some of the inhabitants of Ginza developed a vigorous movement opposing the proposed development. Commercial interests particularly feared a loss of trade and goodwill because of the creation of a new shopping street. At the Metropolitan assembly meeting in March 1949, Hideaki Ishikawa, the high-ranking official responsible for the Metropolitan Government town planning, referred to an advisory committee comprising 29 members representing the Metropolitan Assembly, the Metropolitan Government, the Assembly and the Government of Chuo Ward (the relevant local ward), and local inhabitants that had discussed the future of the infilled Sanjukkenbori.[3] He assured interested parties that the advisory committee had concluded that the new street should be developed to secure and enhance public, international and cultural purposes rather than for commercial use (Minutes of the meeting of the Tokyo Metropolitan Assembly, 10/3/1949, pp. 370, 374 and 376-377). At the same time *Yomiuri Shimbun*, another major newspaper, reported that 95 per cent of the projected infilling had been completed, and the acceptance of bids for the sites would commence at the end of the month (*Yomiuri Shimbun*, 19/3/1949) (Figures 2-4).

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2 For the history of the River Sanjukkenbori, see Gingakai (1975), pp. 184-185; Kon (1986), p.109; Honma (1983), pp. 161-162.

3 Unfortunately, records of the advisory committee have yet to be found.

Figure 2. Sanjukkenbori in 1948, just before the infilling began. Photograph from Chuo City Library, Kyobashi Library, 001989513, reproduced with permission.

Figure 3. Sanjukkenbori in 1949, as the infilling began. Photograph from Chuo City Library, Kyobashi Library, 001989514, reproduced with permission.

Figure 4. Sanjukkenbori in 1949, with infilling and new street almost complete. Photograph from Chuo City Library, Kyobashi Library, 001989515, reproduced with permission.

However, at the National Diet [Parliament], members of the Construction Committee of the House of Representatives became particularly critical of the infilling of the Sanjukkenbori. At the April 1949 meeting, Committee member Senpachi Suzuki expressed concern that, having inspected the site, the width of the new street, which would be approximately 7.2 metres, would be too narrow. Suzuki argued that the Metropolitan Government proposed too many projects for land readjustment (the established planning method in Japan), and that inhabitants affected by the land readjustment projects suffered inconvenience because of the delays accompanying such projects. Furthermore, he stated that despite the difficulties it forced upon inhabitants, the purpose of land readjustment was to rebuild the city as a healthy place immune against spreading fire, and a street only 7.2-metres wide would not achieve this aim (Minutes of the Construction Committee of the House of Representatives, 7/4/1949, pp. 2 and 6-7).

Another member, Kakuei Tanaka, argued that the infilling of canals was “a matter of grave concern to the national sentiment”, the judgement of which required “consideration from more fundamental viewpoints, such as the importance of open space and elegance and aesthetic in the urban scene” than mere legitimacy in procedure. He urged Shuji Masutani, the Minister of Construction, to consult the Committee regarding planning approval in important cases like Sanjukkenbori. In reply, Masutani promised to respect the Committee’s opinions about important planning matters attracting wide attention. In the end, Masutani managed to weather out the stormy discussions about this issue in the Diet (Minutes of the Construction Committee of the House of Representatives, 12/4/1949, pp. 1-5).

Controversies over the early building in the infilled Sanjukkenbori: Tokyo Onsen

Thereafter, however, the development of the infilled Sanjukkenbori was rather slow. In May 1951, *Yomiuri Shimbun* reported that only one-third of the infilled land had been sold, with the remaining two-thirds still in the Metropolitan Government's possession. There were 68 illegal dwellings without building permissions in the area, many of which were built by ragmen collecting waste materials (*Yomiuri Shimbun*, evening edition, 22/5/1951). In February 1954, *Mainichi Shimbun*, yet another major newspaper, pointed out the vacant sites scattered along the infilled Sanjukkenbori, 40 per cent of which were still unoccupied (*Mainichi Shimbun*, Tonaichuoban [the page for central Tokyo], 8/2/1954).

Thus, development in the infilled Sanjukkenbori was sparse and poverty was ubiquitous. In this situation, the main building on the new street that attracted wide attention was the four-storey reinforced concrete structure called the Tokyo Onsen, literally meaning 'Tokyo hot spring' (Figure 5). This building opened in April 1951 and consisted of saunas, various types of baths, restaurants, a cabaret, a dance hall and so on. Tokyo Onsen created a stir from the start, mainly because young girls in swimsuits would massage and wash a stark naked customer in a locked sauna room. Soon, a rumour that the place was an unhealthy massage parlour circulated (*Yomiuri Shimbun*, Tominban [the page for the citizens of Tokyo], 8/5/1951).

Figure 5. Tokyo Onsen (building with chimney at centre of image). Photograph from Chuo City Library, Kyobashi Library, 002266033, reproduced with permission.

In November 1951, the Health and Welfare Committee of the House of Councillors decided to inquire into Tokyo Onsen. The prices at the cabaret and dance hall were so exorbitant that only élite civil servants or businessmen paying the bill out of public money or as company expenses could visit the place. Moreover, Tokyo Onsen was given a special quota by the government with regard to permission for construction and provision of building materials. Foreign countries, notably the United States, were dubious of the legitimacy of such a building being constructed solely for luxury fun while Japan asserted that it was

having difficulty paying war reparations (*Yomiuri Shimbun*, 2/11/1951).

In September 1951, Japan had just regained independence, and the government was particularly worried about the reaction of the United States to the building. Sadao Iguchi, the Permanent Secretary of the Ministry of Foreign Affairs, made comments in the press that he planned to order Tokyo Onsen to close down voluntarily (*Yomiuri Shimbun*, 8/11/1951). Furthermore, Prime Minister Shigeru Yoshida expressed his determination to set things right at the Diet meeting held in November 1951 (Minutes of the Budget Committee of the House of Councillors, 13/11/1951, p. 12).

In the end, the Health and Welfare Committee of the House of Councillors held an executive board meeting on 30 November 1951 and delivered admonition to Tokyo Onsen. The board urged Tokyo Onsen to become a proper recreational facility by closing the cabaret and dance hall, abolishing the system of young female masseuses and reducing prices (*Yomiuri Shimbun*, 1/12/1951; see also *Mainichi Shimbun*, evening edition, 30/11/1951).

This actually set the seal on the investigation into Tokyo Onsen, even though the name Tokyo Onsen subsequently attracted inquisitive public attention because of cases of bodily injury committed by its chief manager and his son (*Asahi Shimbun*, 6/6/1956, 20/12/1958; *Yomiuri Shimbun*, evening edition, 6/6/1956, 20/12/1958) and tax evasion (*Asahi Shimbun*, 2/10/1953, 21/6/1969; *Yomiuri Shimbun*, 15/11/1952, 15, 16 and 18/9/1953, 2/10/1953, 21/6/1969, 21/3/1970, 14/5/1970). Its system of young female masseuses also survived; however, Tokyo Onsen gradually gained a reputation, expressed at the Diet and in popular magazines, that it was not necessarily an indecent massage parlour (Minutes of the Judicial Affairs Committee of the House of Councillors, 20 February 1964, p. 10; Minutes of the Social and Labour Committee of the House of Councillors, 3 March 1964, p. 17; *Mainichi Gurafu*, 27/1/1957, pp. 8-13; *Shukan Asahi*, 28/4/1957, photogravure; *Shukan Shincho*, 2/2/1959, pp. 26-32). At the same time, whatever factor caused a stir in the society, when built, Tokyo Onsen was regarded by the Diet and the media as a far cry from a desirable place to secure and enhance the public, international and cultural purposes – as had been promised by the Tokyo Metropolitan Government – leaving strong suspicion about the favourable treatment accorded to this project by the ministries concerned.

Development of the Miharabashi Bridge Area

Meanwhile, the development of another focal point of the infilled Sanjukkenbori proceeded. In September 1951, *Yomiuri Shimbun* reported that construction of an underground area in the form of a short street with approximately 400 sq m of floor space on each side was soon to commence on the infilled land under the Miharabashi Bridge. A private company, the 'New Tokyo Tourism Company', was to develop the area, which would include a cinema that specialised in newsreels "through the good offices" of an affiliated organisation of the Metropolitan Government called the 'Tokyo Metropolitan Tourism Association'. It was understood that the Tourism Association would lease the land from the Metropolitan Government and then entrust the Tourism Company with its management (*Yomiuri Shimbun*, Tominban, 11/9/1951; see also *Mainichi Shimbun*, Tonaiban [the page for Tokyo], 23/8/1951).

Then, in March 1953, *Asahi Shimbun* reported that twin two-storey buildings were under construction (Figure 6), one at each end of the Miharabashi Bridge, to be built above the completed underground area consisting of the cinema and, as it turned out, a *pachinko* parlour (a Japanese-style pinball parlour) and Japanese-style pothouses. The new buildings were to be used for promoting tourism and intended to house facilities such as a tourist

Figure 6. One of the two-storey buildings at each end of the Miharabashi Bridge, with the central stair leading to the underground area. Author's photograph, 3 January 2013.

information centre and a shop specialising in promoting Tokyo specialties. Once again, the Tourism Association would lease land from the Metropolitan Government and then entrust the Tourism Company with the construction and management of the buildings. As *Asahi Shimbun* commented, this tripartite relationship was rather "dubious". The president of the Tourism Association, Seiichiro Yasui, was in fact the Governor of the Metropolitan Government, while the president of the Tourism Company was Yasunobu Taku, a former town clerk of the Tokyo City Government, the predecessor to the Metropolitan Government. In addition, the paper touched upon the opposition of the local Chuo Ward to the construction of the twin buildings. The ward criticised the fact that construction had commenced without prior consultation with the locality, and argued that it had originally been decided to designate the Miharabashi Bridge area, including the sites for the twin buildings, as an open space in the form of a roundabout (*Asahi Shimbun*, Tokyoban [the page for Tokyo], 31/3/1953).

In June 1953, the Chuo Ward Assembly submitted its statement of opinion to the Metropolitan Assembly. The Ward Assembly argued that the Tourism Association had subleased, rather than entrusted, the underground area to the Tourism Company, and that the sublease of the Metropolitan Government's land was a violation of Metropolitan Bylaws. At the same time, as the Ward Assembly claimed, the lease and sublease of the Miharabashi Bridge underground area were made on the condition that its use would follow the advisory committee's opinion on using Sanjukkenbori to promote tourism, but this condition was ignored. Furthermore, the advisory committee demanded removal of the twin buildings under construction on the Miharabashi Bridge; however, there was little possibility that its opinion would be taken seriously. All this left the Chuo Ward Assembly with no choice but to submit its statement of opinion (*Asahi Shimbun*, Tokyoban, 9/6/1953; see also *Mainichi Shimbun*, Tonaichuoban, 29/5/1953).

Against this, the Tourism Company maintained that the leases to a pachinko parlour and

pothouses followed the amended conclusions of the advisory committee regarding the Sanjukkenbori (*Asahi Shimbun*, Tokyoban, 9/6/1953). Unfortunately, in the absence of records of the advisory committee, the exact conclusion of its discussion is still shrouded in mystery. Nevertheless, at the Metropolitan Assembly meeting in June 1953, the Metropolitan Government promised to take action regarding the Miharabashi Bridge area. Deputy Governor Hikosaburo Okayasu expressed the Metropolitan Government's regret that a pachinko parlour and pothouses had been built in the Miharabashi Bridge underground area and claimed that the Metropolitan Government, "through the Tourism Association, directed the Tourism Company to remove these premises" (Minutes of the meeting of the Tokyo Metropolitan Assembly,15/6/1953, p. 51).

However, in August 1953, *Asahi Shimbun* reported that the pachinko parlour and pothouses still existed in the Miharabashi Bridge underground area. The article indicated discontent among the locals and referred to rumours about the Metropolitan Government's weak attitude or even a conspiracy among those concerned (*Asahi Shimbun*, Tokyoban, 29/8/1953).

In November 1954, the Local Government Committee of the House of Representatives began pursuing the issues in connection with the development of the Miharabashi Bridge area. A petition from the Chuo Ward Assembly was submitted during the Committee's meeting on 10 November 1954. This petition criticised the way in which the area had been developed, suspected an injustice committed by those concerned and demanded that the Committee consider the need for the Local Autonomy Law to be amended so that the opinions of Metropolitan Wards would not be ignored by the Metropolitan Government administration (Minutes of the Local Government Committee of the House of Representatives, 10/11/1954, p. 2). The Metropolitan Government's Deputy Governor Okayasu appeared at this meeting as a witness. He assumed a humble, even apologetic, attitude. It should also be noted that much of the Committee's discussion concerned the construction of the Tokyo Expressway, an elevated highway on the Sotobori, another infilled canal in central Tokyo (*Nihon Keizai Shimbun* and *Yomiuri Shimbun*, 11/11/1954, reporting on this LGCHR meeting, dealt exclusively with the issue of construction of the Tokyo Expressway).

Because of these two points, it seemed, the Local Government Committee's consideration of the case of the Miharabashi Bridge area did not proceed. Although the Metropolitan Government decided to demolish the twin buildings in 1958, thereafter, the case of the area seemed almost forgotten. It was not until 1982 that *Asahi Shimbun* reported that the buildings still existed. According to that article, no rent had been paid in the 24 years since the Metropolitan Government stopped collecting ground rents when it decided to demolish the buildings in 1958 (*Asahi Shimbun*, evening edition, 15/4/1982). There are no records to show continued opposition to the twin buildings during or after these years.

Concluding remarks

In conclusion, while the original four-storey Tokyo Onsen building was rebuilt into a 12-storey structure in the mid 1980s (*Asahi Shimbun*, 3/11/1985; *Yomiuri Shimbun*, 7/11/1986) and the film theatre in the Miharabashi Bridge underground area was closed in March 2013, the problems involved in the development of the infilled Sanjukkenbori should not be overlooked. First, when the proposed infilling met opposition, the Metropolitan Government responded by promising that the new street would be developed to secure and enhance the public, international and cultural purposes, instead of adhering to the original idea of making a

fashionable shopping street. However, this promise was scarcely kept. The problem was not only that the actual development produced infrastructures giving impressions of indecency and extravagance, as in the case of Tokyo Onsen, but that it also raised suspicions of cheapness and dubious relationships of the Metropolitan Government, as in the case of the Miharabashi Bridge area. Furthermore, it should be noted that these impressions were created in the absence of the Metropolitan Government's sufficient consultation with local interests.

Secondly, the infilling of the Sanjukkenbori and its subsequent development attracted wide attention; however, this was more focused on the scandalous aspects of the area's development rather than its planning aspects. Few of the interested parties expressed ideas and opinions about the form the development should take. The local Chuo Ward Assembly and Government and local commercial interests were among the few who did. However, as there was no real sign that their opinions were taken seriously by the Tokyo Metropolitan Government, these local interests gradually seemed to give up. In February 1954, *Mainichi Shimbun* reported that the initial idealism shared by the locals in developing the infilled Sanjukkenbori had disappeared. Instead, half-resigned acquiescence to the need for aiming at such realistic ends as making the new street a popular, vulgarised amusement centre or using hitherto unoccupied sites as car parks prevailed (*Mainichi Shimbun*, Tonaichuoban, 8/2/1954). As very few, if any, have seriously considered the development of the infilled Sanjukkenbori, the problems it entailed are forgotten, leaving only nostalgic sentiments for the infrastructure necessitated by war damage and created, with sensation and suspicion, in the still-confused years of the early 1950s.

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