Central Lancashire New Town

An urban vision for the North

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Contents

Acknowledgements	2
Abstract	3
Chronology	4
Research aims	6
Methodology and structure	8
Literature review	11
Originality	13
Introduction	15
Part 1	19
Manchester's garden suburbs 1901-13	20
Neighbourhoods, satellites and regionalism	41
Linear cities	59
Part 2	76
The heart of the city	77
British new towns and the micro-region	92
Urban renewal and Ekistics	106
Part 3	130
Study for a city	131
A study in city growth	155
Central Lancashire New Town's buildings and infrastructure	172
Conclusion	178
Epilogue	182
Further research	185
List of illustrations	186

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Whilst undertaking this research, relating my childhood memories of a hidden Central Lancashire New Town to post-War planning theories and their origins has enlightened me. I was raised in Preston during the mid 1970s and 80s and during this time my father, who was a vet working with farm and domestic animals, had established surgeries in Longridge, Preston and Bamber Bridge (near Cuerden). He lived, worked and commuted daily throughout Central Lancashire's urban and rural environments. When not in school, my time was often spent sitting in the Preston surgery's waiting room, overlooking the roundabout in front of the cemetery on New Hall Lane, near Ribbleton, watching traffic bustle between the town and the M6 motorway. After visiting the surgery, my mother would often take my siblings and me shopping in Preston. She would drive along the ring road, up the ramp and into the car park above the newly completed Market Hall (figure 1). On foot we would descend through its austere concrete stairwell, onto the busy market floor and then walk through the covered pedestrian precincts into town. Later, as a teenager, I would take the bus from Longridge to Preston. Arriving at the bus station, the city's multi-level transport interchange, I would walk through its subways, sometimes stopping at the subterranean supermarket, and into either the Guild Hall or St. John's arcade. Now gone, these elements were designed for the citizen and were integral to the conceptual fast city's communications network that sought to segregate the pedestrian from vehicles.

Abstract

In May 1974 the Central Lancashire Development Corporation published an outline plan for a new town in the Preston, Leyland and Chorley area (figure 3). Central Lancashire New Town was fundamental to Manchester's decentralisation strategy and its study area had been designated in 1970 under the 1965 New Town Act. Its outline plan was based on a series of feasibility studies prepared by the new town's initial consultants, Robert Matthew, Johnson-Marshall and Partners (RMJM) between 1966 and 1971. This research focuses on RMJM's preliminary designs, which propose a framework for a linear sub-regional polycentric 'super city' capable of accommodating 500,000 people. An abundance of diagrams by RMJM illustrate the preliminary design reports to explain the new town at a range of scales. To historically contextualise RMJM's scheme for Central Lancashire New Town, these diagrams are compared with drawings by local and international designers who progressed planned development from 1882. Different concepts, forms, scales and types are introduced, ranging from community cluster to regionalism; garden cities, satellites and linear settlements; and the Mark I, II and III British new towns. With reference to zoning, neighbourhood density, open space, infrastructure and communications, the composition of Central Lancashire New Town's framework is described and the origins of these ideas are traced by identifying the new town's designers' links with Percy Johnson-Marshall, Constantinos A. Doxiadis, the MARS group, CIAM and Team 10. The research concludes by noting the new town's architectural legacy across the sub-region, including built, un-built and demolished buildings and infrastructure.

Chronology

Key events and feasibility studies leading to the establishment of the Development Corporation for Central Lancashire New Town in 1971.

General election: Conservative majority led by Stanley Baldwin	November 1935
Britain and France declare War on Germany	September 1939
V.E. Day	May 1945
General election: Labour majority led by Clement Attlee	July 1945
General election: Labour majority led by Clement Attlee	February 1950
General election: Conservative majority led by Winston Churchill	October 1951
Preliminary Plan for Lancashire: Leyland and Chorley identified as overspill catchments receiving up to 47,500 people	1951
General election: Conservative majority led by Sir Anthony Eden	May 1955
General election: Conservative majority led by Harold Macmillan	October 1959
'Review of the County Development Plan'	1962
General election: Labour majority led by Harold Wilson	October 1964
'Preliminary technical report of Lancashire County Planning Officer: population intake of 150,000 in the Leyland-Chorley area	1964
Richard Crossman's (MOHLG) announcement of the intention to designate a new town area sited at Leyland Chorley	1964
General election: Labour majority led by Harold Wilson	March 1966
Study for a City by RMJM	May 1967
Impact on North East Lancashire by RMJM	February 1968
Draft designation order published for 41,000 acres	December 1968
Public inquiry	May 1968
Designation of 35,000 acres	March 1970
Study in City Growth by RMJM	May 1970
General election: Conservative majority led by Edward Heath	June 1970
Secretary of State for the Environment confirms decision to proceed and establish the Central Lancashire Development Corporation (CLDC)	**February 1971**
RMJM issue a draft master plan to CLDC	Summer 1971
R. W. Phelps appointed General Manager of CLDC	December 1971

CLDC publish the draft Outline Plan	November 1973
General election: Hung parliament. Heath resigns and Harold Wilson, Labour, becomes Prime Minister	February 1974
CLDC publish the Outline Plan	May 1974
General election: Labour majority led by Harold Wilson	October 1974
Outline Plan public Inquiry commences	January 1975
Ministers re-evaluate new town funding	1976
Decision letter and inspector's report published	April 1977
Central Lancashire New Town's population increase reduced	April 1977
General election: Conservative majority led by Margaret Thatcher who remains Prime Minister until 1990	May 1979
Curtailment of the New Town Development Corporations announced	February 1982
CLDC dissolved	1985

Research aims

I initially selected Central Lancashire New Town as the research subject because the brutalist and modern civic architecture set against Preston, Leyland and Chorley's post-industrial landscape intrigued me. In addition to cataloguing its buildings and infrastructure, I intended to evaluate Central Lancashire New Town's typology to evaluate whether its arrangement and characteristics conformed or deviated from the British Mark I, II or III models and whether it displayed garden city principles. Midway through the research timeframe, at the point of transfer to PhD (RD2), I discovered a series of diagrams by RMJM in Lancashire Archives relating to the new town and the aims were adjusted to allow specific investigation into the new town's theory and phased growth. The diagrams did not relate to topography and sought to order amenity distribution and the new town's overall framework. The research aims were modified to identify the design principles embedded in the theoretical diagrams and, relating to economic growth, the research focus narrowed to address this design stage (1966-1971) because their detail is omitted from official public-facing publications prepared by the consultants, RMJM, the Development Corporation and professional appraisals in the architectural press. During the fourth research year the research scope was further refined when Percy Johnson-Marshall's involvement became apparent following re-reading Miles Glendinning's *Modern Architect: the Life and Times of Robert Matthew* (2008). Percy Johnson-Marshall's *Rebuilding Cities* (1966) records his interest in urban renewal and linear planning and further research uncovered his involvement in the MARS Groups activities. At this point the research focus shifted towards urban and rural planning rather than an architectural appraisal and consequently Central Lancashire New Town's diagrams have been contextualised against equivalent drawings relating to the progression of planned development.

Whilst undertaking this study, Central Lancashire New Town has been explored through the following themes:

1. **Historic:** With specific reference to Manchester's resettlement strategies, Central Lancashire New Town has been placed in a historical context of regional morphology; the evolution of planned development and its typologies; and the adoption of urban pattern to structure expanding communities.

2. **Theory of urban structure:** The theoretical approach to Central Lancashire New Town's composition, urban pattern and growth has been examined with reference to zoning, residential units, green space, industry, infrastructure and communications. The theoretical pattern's adaptation to the sub-regional context of central Lancashire has been analysed with reference to individual townships and their phased delivery.
3. **Architectural appraisal:** In relation to zoning and community types identified in the theoretical city, the identification and description of Central Lancashire New Town's architectural legacy relating to the period of study (1966-1971) including its key associated completed and unrealised buildings, infrastructure and developments.

Methodology and structure

To build the narrative this research has used traditional qualitative methods and primarily three types of activities have been undertaken simultaneously and then cross-referenced:

- Archival work supported by primary source journals and newspaper articles.
- Analysis of British Mark I, Mark II and Mark III new town diagrams.
- Biographical research for the main architects and town planners involved.

Central Lancashire New Town's design was informed by an array of architectural and planning practitioners and their principles. Published building reviews, journal articles by the designers and their obituaries have enabled this practitioner network or timeline to be pieced together with the assistance of archival resources. These findings and observations are contextualised by the discussion of theoretical ideas relating to planning and historical precedent.

Lancashire Archives holds records for Central Lancashire New Town's Development Corporation (NTC). Closed to public use for 30 years until recently, the vast NTC collection covers public objections; board minutes; studies for infrastructure; employment; housing; economic analysis; statistical data; public participation; annual reports; budgets and publicity material, which includes press articles, drawings and photographs. It includes RMJM's early feasibility reports that were prepared prior to the establishment of the Development Corporation in February 1971. By referring to primary source architectural journal articles and newspaper articles, my research contextualises the concepts presented within the reports. Lancashire Archives holds material relating to the proposed new town at Garstang, an alternative scheme, as well as a selection of planning and architectural projects for Central Lancashire New Town's industry and housing including the Leyland township centre. Although some of the new town's architecture was built after the thesis timeframe, a selection is included to identify buildings directly related to the new town's economic growth.

Using a similar approach, research into Raymond Unwin and Barry Parker's suburban and town planning work has been undertaken at John Rylands Reference Library, Deansgate. This was imperative whilst compiling the first part of the thesis

to understand Manchester's contribution to the international advancement of planned development by identifying the connection between Edgar Wood; Unwin and Parker; Clarence Stein and Henry Wright and Lewis Mumford.

Although the extent of Percy Johnson-Marshall's personal involvement in Central Lancashire New Town's initial studies, undertaken with Robert Matthew, remains unclear, his collection held at The University of Edinburgh provides an insight into his connection with MARS and CIAM and these theories can be traced in Central Lancashire New Town. This material can be aligned with the book *The CIAM Discourse on Urbanism* (2002).[1]

Diagrams for Central Lancashire New Town have been compared with drawings for selected new towns, dynamic cities and garden cities to identify common and distinguishing design principles. For centuries prior to the new town movement future cities had been the subject of imaginative illustrations. Varying in medium and mode, these graphics either express a desire to repeat or reinforce a set of social, economic and cultural conditions specific to a period of time or, more commonly, mark an ambition for change as well as associated hopes for and criticisms of ways of living. In 1948 George Pepler stated that 'town plans are not mere diagrams – they are a series of hieroglyphics in which man has written the history of civilisation'. [2] The reduction and distillation of the city into a single diagram is an extreme abstraction and encapsulation of an urban environment which, although often elegant, can over simplify and not resolve highly complex conditions and issues. This drawing type is the product of a reiterative design process, focused on problem solving, testing and experimentation with the purpose of applying functional order to society on a large scale. Early examples include Ebenezer Howard's vision for a garden city, which used green routes to order and define zoned urban functions.[3] Subsequent designers of the new town movement adapted and progressed these principles and, for each new settlement, formulated a unique diagram and identity. Often delineated in a stripped-back architectural language based on compositional arrangements, these ordering devices codify moral and planning information, which can be interpreted by connecting visual cues to enable typological analysis. Anticipated common themes

[1] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London
[2] G. L. Pepler in Patrick Geddes, *Cities in Evolution,* 1949, London, Williams and Norgate Ltd, pp.12-13.
[3] Ebenezer Howard, *Garden Cities of Tomorrow*, London, Swan, Sonnenschein & Co, 1902.

include mobility, neighbourhood, the superblock and pedestrian and vehicular segregation.

The research findings describe the testing of the different new town models in Lancashire in various reiterations over a twenty-year period. It also outlines the evolution of regional planning and the potential role of Mark III new towns within this framework to address transportation needs and apply the neighbourhood principle that had evolved since the first garden cities and suburbs. To explain this progression this document is arranged in three sections:

Part 1: With specific reference to Manchester, garden city principles developed prior to the First World-War and progressed as concentric development through the Mark I new towns will be introduced. As an alternative model conceptualised prior to Ebenezer Howard's garden city, linear cities will be examined. Although their forms differ, they possess common characteristics and ideas that were applied regionally in monocentric and polycentric urban renewal schemes prior to the Second World-War. The associated international network comprising the Garden City Association, the Regional Planning Association of America and CIAM will be traced.

Part 2: After the Second World War practical demonstrations of civic cores, satellite towns, regionalism and polycentric growth advanced large-scale planned development. The research focuses on the British new town movement and abandoned Lancashire schemes. Percy Johnson-Marshall and Robert Matthew's links with the Ekistics movement are explored and their influence on Mark III new towns are cited.

Part 3: The final section of this document is dedicated to Central Lancashire New Town and the work of the initial consultants, RMJM, which was handed to the Development Corporation in the summer of 1971. During this period the proposals were assessed to determine their impact on adjacent towns outside of the study area and the potential regional growth.

Literature review

There are few published architectural and urban design appraisals of Central Lancashire New Town, its evolution and architectural legacy.

In addition to the *Outline Plan*,[4] two key books are dedicated to Central Lancashire New Town. A consultants' design report, entitled *Central Lancashire: Study for a City,*[5] prepared by Robert Mathew, Johnson-Marshall and Partners in 1967 prior to the new town's designation, outlines the location's geographical, economic and social setting and includes diagrammatic master plan proposals.[6] Written for public consideration, this does not explain the design's theory at the same level of detail as reports held in Lancashire Archives.

The second document, a secondary source, is *Planning, Politics and Communications: a study of the Central Lancashire New Town* by Geoffrey Woodcock.[7] Based on a PhD dissertation awarded in 1983, this provides a reflective account of procedural political events and the organisation of Central Lancashire Development Corporation after 1970, the year of Central Lancashire New Town's designation. Woodcock's sources and research methodology included observations at private and public meetings and a summary of press articles. Although his work can be cross-referenced with Central Lancashire New Town's archive, his focus is public participation in planning, which had become topical following the publication of the Skeffington Report in 1969. This book does not have an architectural emphasis and does not discuss the scheme in relation to other new towns or significant town extensions. In addition to these two books, short descriptions of Central Lancashire New Town are included in publications committed to wider new town studies. For example Osborn and Whittick describe the development as a series of linked townships without a dominant core in *The New Towns: the Answer to Megalopolis* printed in 1969.[8]

[4] Central Lancashire Development Corporation, *Central Lancashire Development Corporation Outline Plan,* 1974.
[5] Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London.
[6] Robert Matthew, Johnson-Marshall and Partners, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* H.M.S.O, London, 1967.
[7] Geoffrey Woodcock, Planning, Politics and Communications: A Study of the Central Lancsahire New Town, Gower, Aldershot, 1986.
[8] Frederic Osborn and Arnold Whittick, *The New Towns: The Answer to Megalopolis*, McGraw-Hill, New York, 1963, p.214-215.

The architectural and local press reviewed Central Lancashire New Town's proposals and its progress during the late 1970s. In 1977 the *Architects' Journal* published an article by Jack Whittle, Cheshire's County Architect, entitled 'New Towns of the North West'.[9] This reviews the region's four new towns (Runcorn, Skelmesdale, Warrington and Central Lancashire New Town), captures their achievements and compares them with national new town typology. The *Architects' Journal* maintained an interest in Central Lancashire New Town and the following year reviewed Astley Park Village amongst other Central Lancashire New Town residential developments.[10] My research focuses on RMJM's design reports produced between 1967 and 1971 to explain the new town's theoretical approach which is not covered by these publications.

In relation to Lancashire's abandoned new town schemes, *A Preliminary Plan for Lancashire* offers short descriptive accounts and maps for Leyland, Garstang and Parbold.[11] Lancashire's regional strategy for population resettlement based on a tripartite agreement between authorities is summarised by Lloyd Rodwin in *The British New Towns Policy,* 1956.[12] Rodwin outlines its general principles and identifies Leyland, Garstang and Parbold as receiving settlements, but provides no further details.

Because there is scant literature regarding Lancashire's advancement of planned development prior to the Second World War, primary source publications and material explaining the British new town movement's historical background, agenda and morphology has been integrated into the thesis' narrative and aligned with Lancashire's situation.

[9] Jack Whittle, 'New Towns of the North West', *The Architects' Journal*, 23rd February 1977, pp347-352; 353; 355-363.
[10] 'Central Lancs', *The Architects' Journal,* 22nd March 1978, p.539.
[11] G. Sutton Brown, *A Preliminary Plan for Lancashire*, Lancashire County Council, Preston, 1952.
[12] Lloyd Rodwin, *The British New Towns Policy*, Harvard University Press, Cambridge, pp.135-140.

Originality

This research has been informed by existing material primarily held in archives. The thesis provides a detailed account of Central Lancashire New Town's theoretical framework, which previously has not been published. In addition, my insights and original contribution to knowledge includes the tracing and piecing together of international urbanist' and humanist' networks and professional associations, which collectively sought to improve the quality of life in cities from 1880 to Central Lancashire New Town's conception during the 1960s. Specific significant findings include:

Part 1 narrates Ebenezer Howard's selection of Lancashire as a possible location for a second garden city project and Manchester's contribution to the promotion of the garden city movement through the design and construction of suburban extensions. Pertinent to this advancement is the Manchester Society of Architect's role in popularising planned development locally and at international conferences plus the work of local architects, such as Edgar Wood and Raymond Unwin, through their transatlantic associations. Barry Parker, Unwin's former partner in practice, and Clarence Stein later advance Howard's regional city idea by proposing polycentric urban constellations linked by highways.

Equally important to Central Lancashire New Town's regional framework is the link between Patrick Geddes, Lewis Mumford, Constantinos Doxiadis and, local to Preston, George Grenfell Baines. Their shared interest in topographical surveys is evidenced by the use of aerial photography to understand urban character and arrangement. In 1938 Mumford published an aerial image of New Hall Lane, Preston, and later Grenfell Baines and Doxiadis use the same photograph to highlight Preston's planning challenges. Relevant to Central Lancashire New Town's proposed phased economic growth strategy is Robert Matthew and Percy Johnson-Marshall's collaborative work with Doxiadis and Grenfell Baines during the 1960s.

The third chapter focuses on linear planning and CIAM's early work. The thesis refers to examples of Russian planning during the inter-War years. From 1938 Percy Johnson-Marshall contributes to the design of the MARS plan and later, during

the 1970s representatives from Central Lancashire Development Corporation visit Russia's industrial cities.

Part 2 relates Grenfell Baines' scheme for Preston with the wider MARS Group's network through critical review of a shared exhibition called 'Living in Cities' during the early 1940s. John Voelcker, a Prestonian, studies at the AA with Andrew Derbyshire and together they prepare 'Zone', a project with a hierarchical framework to order society and amenities. Derbyshire uses 'Zone', together with Hook new town, as precedent for Central Lancashire New Town. RMJM's concept diagram for Central Lancashire New Town, based on an arc of linked polycentric settlements, is also set within a typological context of other regional cities. Design teams for these regional cities employed the same transport engineers.

After analysing Central Lancashire New Town's key reports *A Study for a City* and 'A Study in City Growth', Part 3 identifies key civic projects associated with the new town and those commissioned by the Development Corporation. This final chapter is the start of a wider future project, which I hope to continue outside of the PhD.

This PhD was submitted in November 2019 and the viva voce took place in July 2020. From the 23rd March 2020, to control the spread of the Coronavirus pandemic, the UK had been forced into full lockdown. Lockdown was eased from mid May but by October 2020 case numbers in the northwest of England had escalated and were amongst the highest in the UK. It is clear that the long-term economic, social and health implications of Coronavirus will pose new challenges for cities both in terms of changing consumer behaviour, spatial organisation and opportunities for social interaction. London and Paris have both adopted a 15-minute city concept as part of their Covid-recovery strategies to transform neighbourhoods and districts into greener, more people-orientated places. The urban frameworks of the case studies in this PhD complement the 15-minute city theory as they relate human proximity and mobility to time and urban structure and may be relevant to the conceptualisation of the post-Covid city.

Introduction

Central Lancashire New Town, a British Mark III new town, is a part-realised city for 500,000 people. Sub-regional in scale, it was designed to span between Longridge and Chorley following the M6 and M61 motorways. Between 1966 and 1968 consultants Robert Matthew, Johnson-Marshall and Partners determined its conceptual diagram as an arced linear string of settlements and although its clarity was later lost in the master plan produced by the Development Corporation, elements of its city-scale infrastructure, neighbourhood structure and industry were constructed. Recently some of its architectural legacy, such as Preston Bus Station, has been threatened with demolition or, as in the case of Preston's Market Hall, has been demolished rather than being incorporated into Lancashire's current growth strategy.[13] Other parts of the original plan, for example the Preston Western Distributor, are currently being developed. In the context of the contemporary resurgence of polycentric regionalism, new towns and garden cities encouraged by the Town and Country Planning Association, Central Lancashire New Town could provide a useful precedent that has been overlooked in recent years.

Since the Second World War British new towns' concepts and their physical forms evolved significantly in response to flourishing urban populations and car ownership. Their purpose was to relieve pressure on existing conurbations by providing jobs and homes on nearby sites. As self-contained settlements for around 60,000 people in virtually open country, by the mid 1960s the Mark I and Mark II new town types, had been surpassed by major town expansion schemes such as at Warrington, Northampton and Peterborough. As the next progression, Central Lancashire New Town radically departed from tradition by accelerating its sub-region's economic revival through planned growth and change.

In the early 1960s Lancashire was Britain's smallest region in area and its regeneration was particularly complex due to its concentration of people, diverse conditions, limited land availability and environmental challenges associated with its industrial and economic history. In 1965 the Government announced its intention to

[13] As part of the Government's Northern Powerhouse Partner Programme, the Lancashire Enterprise Partnership is delivering £320 million of government funding to support economic growth. Known as the 'Growth Deal', by 2021 this strives to create 11,000 new jobs, 3,900 new homes and attract £1.2 billion of public and private investment to Lancashire. https://lancashirelep.co.uk/key-initiatives/growth-deal/

designate a new town in Central Lancashire, the last and largest new town designated under the New Town Act. This would create three separate city regions in Lancashire by the end of the century. Designed as a magnet to prevent migration from the north west region and to accommodate Manchester's population overspill, the super city aimed to boost the region's economic revival and urban renewal by attracting new industrial enterprise. If realised it would have accommodated a population increase from 253,000 people in 1966 to 503,000 in 1991 across 51,460 acres.

In 1974 Central Lancashire New Town's Development Corporation published an *Outline Plan* for the new town. This had been informed by three feasibility studies (*Study for a City* (1967), 'A Study in City Growth' (1970) and the 'Draft Master Plan' (1971)), prepared by RMJM as working documents to hand to the Development Corporation. To understand the theoretical framework behind the new town, this research focuses on these studies, particularly the detail of the last two documents, which are unpublished and their content is omitted from the *Outline Plan*. Collectively these reports describe the new town's unique regional model that was capable of adapting to growth and change. They then test the framework's formula against the context and define each township's specialisation, growth structure and movement pattern as well as elements such as housing, jobs, township centres and roads and community types by growth stage.

Central Lancashire New Town's model is based on the unification and expansion of a series of large existing towns and villages to create a sub-region. By the mid 1960s multi-centred growth areas linked by communications were preferred to mono-centred cities and, as an interconnected and self-contained centre of development, each settlement could mutually benefit from this pattern. Existing town and villages could be retained and expanded when needed, supplemented by out-of-town retail and industrial complexes, whilst preserving country parks and open space. Traditional new towns could be integrated into this new planned development typology.[14]

During the early feasibility study stages, RMJM's Edinburgh office collaborated with Percy Johnson-Marshall and Partners prior to the project moving to the London office where Andrew Derbyshire led it. Principles originating from

[14] 'Ministry planner tells of new town growth proposals for a million population', *The Times,* 6th June 1973, p.4.

CIAM, Team 10 and the Ekistics movement informed the planning and architectural ideas underpinning the new town as well as its buildings' forms. This was due to the new town's architects, planners and consultants and their extensive range of associated international networks. These include garden cities and suburbs, regionalism, polycentric settlements, the civic core, communications and dynamic growth. From 1969 the Central Lancashire New Town team changed again when George Duncan, a RMJM employee who had been a key contributor since its commission in 1966, moved to Jeddah to advise the Saudi Arabian Government on regional and city planning for its western region and prepare plans for Mecca, Medina, Jedda, Taif and Yanbu (figure 4). The opportunity had arisen following the United Nations establishing a committee to assist the Saudi Arabian Government and Professor J. R. James, who had been chief planner at the Ministry of Housing and Local Government between from 1961-67 became its British member.[15]

Ebenezer Howard's poly-centric Social City (1902) was the first to connect garden city clusters as a regional complex.[16] It aimed to provide city life within a rural environment and resolve congested urban cores and peripheral sprawl through planned decentralisation. Largely dependent on mobility, dispersed industrial, financial and cultural growth became possible following the technological invention of the car, the telephone, radio and power (electricity) sources. A new pattern of regional settlements evolved and Patrick Geddes continued Howard's work by advocating surveys to understand regional conditions. RMJM's theory for Central Lancashire New Town's progressed Howard's 'regional city' concept, Geddes's planned decentralisation ideas and Lewis Mumford, Clarence Stein and Benton MacKaye's regionalism agenda by introducing an adaptable structure. As a Mark III new town its arrangement and growth was dictated by its valley profiles. Prior to Central Lancashire New Town, architects and planners, including George Grenfell-Baines, Mumford and Doxiadis, had repeatedly studied Preston's post-industrial landscape characterised by its concentrated industrial and housing layout and conceptualised its urgent regeneration.

Concurrent to the advancement of regional planning, Percy Johnson-Marshall had progressed the design of civic cores through his work at Coventry and, after the Second World War, at London County Council's architects department, where he

[15] George Duncan, 'The planning and development of the city of Jeddah 1970-1984', Durham theses, Durham University, pp.51-52. http://etheses.dur.ac.uk/7069/
[16] Ebenezer Howard, *Garden Cities of Tomorrow*, London, Swan, Sonnenschein & Co, 1902.

worked with Robert Matthew. A proactive member of the British MARS group, Percy Johnson-Marshall had contributed to the London MARS plan and attended the 1947 CIAM meeting at Bridgwater, England. Andrew Derbyshire, who had studied with John Volecker, a Team 10 member, at the Architectural Association worked with Percy Johnson-Marshall's brother, Stirrat, during the 1950s prior to being employed at RMJM's London office.

By the 1970s Central Lancashire New Town was Britain's largest building and investment programme. Requiring £900 million of investment from private and public investors over two decades, it would become the region's centre for industry and culture and its image and size would contrast with other northern cities. The scale and pace of its redevelopment would be comparable to Lancashire's growth during the 19th century and its delivery was reliant on the collaboration of the County Borough of Preston, the Borough of Chorley and the Urban District of Leyland as well as other local authorities. If completed its success would be measured by the quality of life it would provide its citizens and its contribution to accelerating the whole region's economic growth, rather than numbers of housing units and factory acreage. [17]

[17] 'A new heart for Lancashire', *The Guardian,* 20th December 1968, p.8.

Part 1

Part one discusses the advancement of concentric and linear planned development and regionalism from 1882 to the First World War. Key contributors to the Garden City Movement and their work in Manchester are identified and this is contextualised by discussing theoretical ideas promoted in the architectural press.

1898

Ebenezer Howard published *A Peaceful Path to Real Reform*

1901

Howard visits Manchester

Unwin attends first Garden City Association conference, Birmingham

1904

Patrick Geddes published *City Development*

Unwin and Parker design Letchworth for Howard

Howard suggests second garden city may be in Lancashire

1905

Thomas Horsfall published *The Improvement of the Dwellings and Surroundings of the People in Lancashire*

1906

Unwin, Parker, Wood and Lutyens design Hampstead

Design of garden suburbs in Alkrington and Burnage, Manchester, commence

1907

Garden City Conference takes place in Manchester

300 people from Lancashire visit Letchworth

Design of Oldham garden suburb commences

1909

British Housing and Town Planning Act passed

Edgar Wood draws a suburban scheme for Withington on behalf of the Manchester Society of Architects

1910

Arthur Crow exhibits Ten Cities of Health for London at the RIBA Town Planning Conference

1913

Town Planning Institute's foundation

International Garden City and Town Planning Association's foundation

1915

Patrick Geddes publishes *Cities in Evolution* and recommends Lancashire's survey

1919

Welywn Garden City designed by Louis de Soissons

1925

International City and Regional Planning Conference, New York

Manchester's garden suburbs 1901-13.

In 1901 Ebenezer Howard, author of *Tomorrow: A Peaceful Path to Real Reform* (1898), identified Lancashire as an appropriate location for his second garden city experiment. In Manchester interest in garden suburbs and Howard's garden city model begins to increase and local designers start to plan prototype developments to demonstrate the idea. This chapter contextualises the work and campaigns by local designers and urban theorists such as Thomas Horsfall and Edgar Wood to identify their contribution through debate and practical demonstration to the advancement of national and international planned city growth. This is significant because Howard's garden city principles and his regional city concept can be compared with the initial brief for Central Lancashire New Town sixty years later.

Similar to other large towns and cities in England and Wales, Manchester's population dramatically increased during the last half of the nineteenth century due to the industrial revolution. Attracted by new opportunities, commerce and higher wages, workers migrated from the countryside, increasing its population from 95,000 in 1801 to 505,000 by 1891[18]. Manchester expanded rapidly resulting in disorganised growth, congestion and intolerable unsanitary residential conditions for the working classes. Inspired by Ebenezer Howard's (1850-1928) national garden city movement as well as Thomas Horsfall's (1841-1932) promotion of German planned towns, which had both gained momentum during the late 1800s, urban designers Raymond Unwin (1863-1940) and Barry Parker (1867-1947) became influential in initiating new forms for urban extensions. Based on garden city principles and commissioned by urban reform pioneers, these aimed to enable city slum clearances prior to the First World War. Simultaneous to these movements Patrick Geddes (1854-1932) developed regionalism theory and promoted his ideas internationally. Collectively these developments and public conditions established the preconditions for neighbourhood design and the new towns campaign during the inter-War years.

Ebenezer Howard's Garden City model

In the context of London, in 1898 pioneer Ebenezer Howard, a skilled shorthand writer and mechanical inventor who had no formal training in architecture or urban design, conceived what was to become the British new town movement by outlining an alternative new city form in *Tomorrow: A Peaceful Path to Real Reform.* This did

[18] Thomas Horsfall, 'Mr. T. C. Horsfall on town government: some evils and their remedies', *The Manchester Guardian,* 5th February 1900, p.11.

not consider neighbourhoods, but instead diagrammatically planned a framework for a whole ideal garden city including its construction, financing and administration (figures 5 and 6). Although ultimately his ideas had a worldwide impact on planning approach and practice they were initially received with hesitation. In 1902 *The Builder's* review of the second edition, retitled *Garden Cities of Tomorrow,* [19] portrayed it as a fanciful utopian publication based on an unachievable theory of uniting town and country. [20] It did however commend Howard's idea of using intervening green space to restrict a city's expansion and separate buildings. It was not until 1905 that the journal dedicated a full article to evaluating garden cities and acknowledged the benefits of starting a new preconceived city on a selected site to guarantee beautiful and hygienic conditions.[21]

During a tribute dinner in 1912 to acknowledge Howard's contribution to social reform, he reflected that 'having long pondered over the difficulties of life, he was distressed at the spectacle of extreme poverty in a land so full of riches, and in the quiet of his own soul he sought for some way in which he could serve his fellows'.[22] Writing later in 1950, Frederic J. Osborn (1885-1978), a key Garden City campaigner who met Howard whilst employed at one of the U.K.'s first housing associations established in 1911, the Howard Cottage Society, Letchworth, explained that Howard's visions for urban reform had probably been informed by his inventive spirit, contrasting experiences working in opposing rural and urban conditions and a desire to improve his physical environment. Although Howard had been born in London, he had emigrated to America in 1871 for five years, initially to single-handedly farm a 160-acre plot in Nebraska and then after 12 months he moved to Chicago to resume his career as a shorthand writer.[23] At this time Chicago was at the height of its boom, rapidly expanding its urban pattern along a rigid grid layout, which through its adoption of interconnecting boulevards and large expanses of public parkland, earned its recognition as the 'Garden City'.[24]

By proposing an alternative city type based on urban pattern, Howard attempted to control development. He promoted the advantages of living in close proximity to both town and country and employed four key principles – the lower and upper

[19] Ebenezer Howard, *Garden Cities of Tomorrow*, London, Swan, Sonnenschein & Co, 1902.
[20] 'Garden Cities of Tomorrow', *The Builder,* 9th August 1902, p.129.
[21] 'What is a garden city', *The Builder,* 30th September 1905, p.336.
[22] 'The Garden City movement: dinner to Mr. Ebenezer Howard', *The Times, 20th March 1912, p.7.*
[23] F. J. Osborn, 'Sir Ebenezer Howard: the evolution of his ideas', *Town Planning Review,* vol.21, no.3, October 1950, pp.225-8.
[24] Simon Andreas, *Chicago, The Garden City. Its Magnificent Parks, Boulevards and Cemeteries',* 1893, Chicago: The F. Gindele Printing Co.

limitation of population numbers and area; growth by colonisation; variety and sufficiency of economic opportunities and social advantages; and control of land in the public's interest. A permanent green belt of mainly agricultural land restricted city growth and guaranteed the extents of settlement. The idea of co-partnership housing was not new and had been introduced in 1888 with the establishment of Tenant Co-operators who achieved five schemes in the vicinity of London. Ealing, 1901 (figure 7), was the first and, although its first phase was constructed based on rows of terraces, it inspired other Tenants' Companies to build similar schemes across England.

Howard's theoretical model proposed a circular symmetrical layout for a 6000 acre garden city. A. R. Sennett, author of *Garden Cities in Theory and Practice,* 1905, attributed the idea of its rigid layout to James Silk Buckingham (1786-1855), an author, journalist and traveller. In 1849 Buckingham had proposed a concentric square layout dissected by avenues for ingress and egress named Justice, Faith, Hope, Charity, Fortitude, Concord, Peace and Unity. It incorporated zones for dwellings, covered galleries with rooftop promenades, lawns and, in the central public square, public buildings. An octagonal tower positioned at the centre of the square would have illuminated the whole town.[25]

In Howard's model 1000 acres were allocated for urban development to accommodate 30,000 people and 2000 people would reside in the surrounding agricultural belt. Similar to Buckingham's diagrammatic plan (figure 8), a series of concentric rings, also known as Avenues, radiated from a landscaped garden surrounded by a civic core. Six wide boulevards sub-divided the plan into wards and behind the public buildings a circular Winter Garden or glass arcade known as 'Crystal Palace', separates a ring of parkland from Fifth Avenue, a tree lined residential area. Grand Avenue, 420 feet wide, is a key feature towards the outskirts of the town. Community buildings, such as schools and churches, fronted this. A ring of factories and industry, allotments and an outer railway line restrict the town's extents.[26]

Howard established the Garden City Association in 1899 (now the Town and Country Planning Association), a small but pro-active group that promoted the Garden City idea through its journal, *Garden Cities and Town Planning*. By 1911 the

[25] 'What is a Garden City', *The Builder,* 30th September 1905, p.336.
[26] E. Howard, *Garden Cities of Tomorrow,* 1944, pp.53-55.

Association (then the Garden Cities and Town Planning Association) had significantly expanded and it offered meetings and lectures across the country to illustrate national and international town planning progress through the adoption of garden city principles.[27]

Patrick Geddes regional city complexes

In his publication, *Cities in Evolution,* 1915, Patrick Geddes noted Howard's model provided a regional complex of new cities based on a central city with a population of 58,000, surrounded by six garden cities, each with a population of 32,000 (figure 9). During an opening address at the 1925 International City and Regional Planning Conference in New York, Howard reflected that when he conceived the garden city idea, which preceded regional planning, he had envisaged a network of garden cities.[28] A two-mile wide gap of countryside separated the central city from its satellites and the satellites from each other. His scheme would provide accommodation for 250,000 over 66,000 acres with 8,000 acres built upon.[29] As well as proposing a new physical structure for an entire city, Howard's vision proposed an economic growth and regeneration strategy by splitting the whole town into a series of inter-related urban community units each with a distinct function. These cultural, education and industrial centres offered equal opportunities for its demographically diverse population. By dispersing people, workplaces and financial opportunities across a wide area, Howard's scheme boosted densities of smaller towns and reinstated vitality and services to rural regions that were experiencing population decline. Writing in 1925, Purdom noted the impact of this at Letchworth where the size and population of adjacent villages and small towns, which had become populated by factory workers who commuted daily to Letchworth, had grown. This stabilised the local population and economy as young adults tended to stay, rather than move to London to find employment.[30]

Geddes theorised the organisation of urban growth, rather than producing actual plans, and his ideas were publicised when British town planning was about to receive legislative sanction. He had been influenced by French geographers Elisee Reclus (1830-1905) and Paul Vidal de la Blanche (1845-1918) and French socialist Frederic

[27] 'Lectures on Town Planning and Garden Cities', *The Builder,* vol.101, 29th September 1911, p.368.
[28] Ebenezer Howard in *Planning Problems of Town, City and Region,* papers and discussions for the 1925 International City and Regional Planning Conference, New York, p.8.
[29] Patrick Geddes, *Cities in Evolution,* p.190.
[30] C. B. Purdom, 'New towns for old', *The Survey,* 1st May 1925, p.170.

Le Play (1806-1882). Informed by Le Play's model concept of 'place, work, folk', he expressed the connection between human activity and natural environment as 'environment, function and organism'. He engaged the public and his students through exhibitions at his Outlook Tower in Edinburgh and, because he believed citizens should have a key role in town planning, he encouraged local people to participate in visualising their city. Between 1889 and 1919 Geddes was Professor of Botany at the University of Dundee and he also lectured in Boston in 1899. Because he taught during the summer term only, he travelled the world during the remaining months giving lectures, designing exhibitions, forming organisations and disseminating his ideas.[31] It is during this period that Geddes established a set of social theories that are now recognised as providing a foundation for post-War town and country planning.

In 1904 Geddes published *City Development* and, during an address to the Sociological Society on 'Civics as applied Sociology' in the same year, he advocated the art of city making. Citing Manchester, he criticised dense uncontrolled urban sprawl and emphasised the need to study the regional environment to understand how communities have established themselves.[32] Four years later, prior to the John Burn's Housing and Town Planning Bill, which at the time was before Parliament, he reiterated this approach during a lecture at the Sociological Society, advocating civic surveys as a precursor to city design.[33] These principles were then compiled into an earlier unpublished version of *Cities in Evolution* called *The Evolution of Cities,* prepared in 1909, the year of the first British Town Planning Act. These ideas, which often had been disseminated via conversation and exhibition at the Outlook Tower, were ahead of current practice. Geddes observed that cities constantly change and thought its citizens should capture emerging social ideals; technological, scientific and artistic developments and evolving physical conditions. He encouraged their observation, interpretation and involvement in visualising their city's potential through 'outlook towers', which he called civic observatories.[34] In 1913 Geddes had become a founding member of the Town Planning Institute and a member of its first council. *Cities in Evolution* was reprinted in 1949, coinciding with early new town design.

Thomas Horsfall's campaign for urban improvement

[31] Jacqueline Tyrwhitt in Patrick Geddes, *Cities in Evolution,* 1949, London, Williams and Norgate Ltd, p.xv.
[32] George Pepler, 'Geddes contribution to town planning', Town Planning Review, April 1955, p.19.
[33] George Pepler, 'Geddes contribution to town planning', Town Planning Review, April 1955, p.21.
[34] George Pepler, 'Geddes contribution to town planning', Town Planning Review, April 1955, p.21.

Whilst Howard was developing his garden city idea, in the north of England, Thomas C. Horsfall, the wealthy son of a local mill owner William Horsfall, had been campaigning to improve workers' conditions, particularly in Ancoats. In 1882 Horsfall had retired at the age of 41 with a substantial fortune and from then on devoted his life to social reform. An admirer of Ruskin and Wordsworth, he believed that the countryside could be brought to city workers through literature, images and objects and established an art gallery at Ancoats Hall with this purpose. Horsfall was well travelled and used his observations of towns in Austria, France, Australia and Germany to formulate a new type of city that could be applied to expanding towns such as Manchester, which he then promoted through the national and architectural press.[35]

For two decades prior to the passing of the Liberal Government's 1909 Housing and Town Planning Act, Horsfall had claimed that English municipal government had been ineffective at achieving healthy environments. Primarily referring to German towns as precedent, he campaigned for town extensions to incorporate planted open spaces, sufficient street widths, restricted density per acre and residential and business zones.[36] In 1905 his ideas were captured in his publication *The Improvement of the Dwellings and Surroundings of the People: The Example of Germany* where, in reference to Manchester, he stated 'the system is failing in a very marked way to remove the two forms of overcrowding, - overcrowding of houses with inhabitants, and overcrowding of areas with houses, -which are unquestionably amongst the chief causes of the high death rate and the low standard of life, from which Manchester suffers severely. These evils cannot be removed or much mitigated unless the community has a very large area of land for building on, provided with well-arranged streets and ample supply of open spaces, promptly placed at the command of persons willing to build; and our Town Council has done nothing towards causing this condition to be complied with'.[37] The following year in Westminster, during an address on planning and control of town extensions in Germany to the Association of Municipal and County Engineers, Horsfall compared their approach to the building of new districts in England to accommodate the increasing urban population. He

[35] Josephine Reynolds, 'Thomas Coglan Horsfall and the town planning movement in England', *The Town Planning Review,* April 1952, 23**,** p.53.
[36] T. C. Horsfall, 'Some German Lessons in Town Planning', *Town Planning and Housing Supplement to the Architectural Review,* 27, May 1910 p.319 and June 1910 p.372.
[37] T. C. Horsfall, *The Improvement of the Dwellings and Surroundings of the People: The Example of Germany. Supplement to the Report of the Manchester and Salford Citizens' Association for the Improvement of the Unwholesome Dwellings and Surroundings of the People,* Manchester, Manchester University Press, p.17.

compared repetitive narrow rows of terraced housing with lack of vegetation and suburban play areas found on the edges of English towns unfavourably to Dusseldorf's wide tree-lined streets intercepted by small open spaces, which had become typical of new German districts.[38]

Despite Horsfall's claims, by 1901 Manchester Corporation had demonstrated interest in controlling suburban growth by developing a scheme for Blackley, the city's first cottage estate, four miles north of the city centre. Although not based on co-partnership, this preceded the widely accepted standards that became associated with garden cities and suburbs. Covering 243 acres, the development reflected some of Horsfall's and Howard's ideas by adopting controlled density (seventeen houses per acre), wide tree-planted roads, open spaces, small-holdings and allotments.[39] German and English Garden City Associations began to exchange ideas, and in 1909, members of the German Garden City Association visited the Blackley Estate accompanied by Ewart Culpin, secretary to the Garden City Association.[40]

Raymond Unwin and Barry Parker

By 1901 Howard had promoted his garden city concept across provincial cities. In Manchester he addressed a group of Clerks including representatives from the Co-operative Wholesale Society, who later formed Manchester Tenants Limited, a co-partnership public utility company and, in the same year, in Birmingham the Garden City Association held its first annual conference, which was attended by a special correspondent from the *Manchester Guardian*. 300 delegates from around the country attended the two-day event, which included a visit to George Cadbury's (1839-1922) Bournville village, an early model village that successfully combined residential and industrial accommodation. The Association's president, R. Nevill, K. C., opened proceedings by stating that 'life in many great towns today were not compatible with healthy life. Physical degeneration was proceeding in some places at a very rapid rate… and unless we discovered some means of restoring healthy conditions of life amongst our great populations we were inevitably doomed to failure…'.[41] Promoting Howard's scheme as outlined in *Tomorrow: a Peaceful Path to Real Reform*, Nevill claimed that 'it was perfectly useless to seek to divert the population from

[38] 'The Association of Municipal and County Engineers', *The Builder,* 24th November 1906, p.597.
[39] Ewart Culpin, *The Garden City Movement Up-to-Date,* 1913, p.24.
[40] 'German Garden City Association in Manchester yesterday', *The Manchester Guardian,* 9th July 1909, p.5.
[41] 'A Garden City Conference', *The Manchester Guardian,* 21st September 1901, p.8.

manufacturing industry to farm labour. People would go where employment was the most profitable, and the Garden City Scheme would meet this condition of things'.[42] He then outlined the intention to purchase a large expanse of agricultural land and set out a city based on industry which combined the advantages of both country and town life. It is likely that this proposal became the unprecedented experimental town of Letchworth (1903-4), Hertfordshire, 35 miles from London. In 1902 the Garden City Association arranged a public meeting in London to consider whether displacing manufacturers, co-operators and other industry to new areas would relieve congestion and over crowding in large cities.[43] In the same year the Association established the Garden City Pioneer Company to identify an appropriate location to build a garden city and, part-funded by George Cadbury (1839-1922) chocolate manufacturer and philanthropist, they proposed to hold a large public conference in Liverpool and Port Sunlight in July 1902.[44]

Raymond Unwin (1863-1940), engineer, architect and town planner, who had attended the 1901 conference, became a doyen of suburb design, which he believed would be more achievable than building entire new cities. Through his early work at Earswick, Hampstead and Letchworth, he tested new configurations to improve the national housing standard by creating better environments for whole communities.[45] Unwin began work as an engineering draughtsman in Manchester between 1885-7. Inspired by Ruskin and William Morris, he became secretary of Morris's Socialist League and between 1886 and 1890 wrote a series of articles on socialism for *Commonweal.* [46] From 1889 he was involved with Manchester's Ancoats Brotherhood, through whom it is likely he became acquainted with social reformer Horsfall and socialist artist Walter Crane (1845-1915) who was the first head of the Manchester School of Art. In 1895 he moved to Buxton to practice with his brother-in-law, Barry Parker, and their early clients, such as Joseph and Seebohm Rowntree, remained life-long close friends.[47] The following year Parker and Unwin became members of the Northern Art Worker's Guild, founded in 1896 by Crane, through which they became acquainted with other architects, including Edgar Wood (1860-1935) from the north Manchester suburb of Middleton, who also supported Morris's

[42] Op cit.
[43] 'Garden Cities', *The Builder,* 17th May 1902, p.506.
[44] 'Garden Cities', *The Builder,* 28th June 1902, p.649.
[45] 'Sir Raymond Unwin', Journal of the Royal Institute of British Architects, 15th July 1940,
[46] Collection of contributions by Raymond Unwin to *Commonweal* compiled by Ethel Unwin, John Rylands Library, Deansgate.
[47] Barry Parker, 'Sir Raymond Unwin' *Journal of the Royal Institute of British Architects*, 15th July 1940

ideas. From 1896-1900 Wood trained Cecil Hignett (1877-1960) who subsequently moved to Letchworth to work with Unwin and Parker.[48] It is probable that through these associations Unwin and Parker became involved with the Manchester Society of Architects who, from the early 1900s, was concerned with overseeing the City's expansion. They would also have been aware of Wood's ideas and work, notably the design of compact community clusters as used at Long Street Methodist Church, Middleton (1898).[49]

Unwin's arrangement of dwellings as groups marks a pivotal point in his career and also in the history of urban design. In 1911 Unwin reflected that 'it was customary to make almost endless rows of one stereotyped form of cottage. Dozens of cottages of uniform design were sometimes placed in a row without any break or variation, producing an impression of monotony. We thought that, if we could treat several of the cottages as a group, it would be possible to arrange them in a more interesting way'.[50] In 1902 he had theorised the concept as an alternative to terraced housing through his publication *Cottage Plans and Common Sense* by promoting suburban layouts based on sole-occupancy units arranged in clusters around shared open space. These quadrangles faced each other across wide streets and unique features or treatments varied their character.[51] Each dwelling had a private garden and was orientated so living spaces maximised sunshine, air and aspect. This publication coincided with Unwin and Parker's first important planning commission, a model village at New Earswick, York, for Joseph Rowntree and his son Seebohm Rowntree.

The following year Unwin and Parker prepared a community design scheme 'cottages near a town exhibit' for the Northern Art Workers' Guild (1903) and it is likely that this triggered interest in garden suburbs for Manchester. Speaking at a conference in 1911 Unwin reflected that the design of community clusters arranged to respect existing site conditions initiated the commencement of planned development (figure 10). He explained 'we began to realize that city planning must be a combination of the art of man and the beauty of nature and that one of the first things to be remembered in the planning of cities is that site, which is to be covered with buildings, should be approached with reasonable respect for the beauty already upon

[48] D. Morris, 'Here, by experiment: Edgar Wood in Middleton', *Bulletin of the John Rylands Library,* vol.89:1, 2012, p.128.
[49] Nicholas Taylor in Architectural Association, *Barry Parker and Raymond Unwin Architects,* exhibition catalogue, p.15.
[50] Raymond Unwin 'Garden Cities in England' *The City Club Bulletin,* 7th June 1911, p.135.
[51] Raymond Unwin, *Cottage Plans and Common Sense,* The Fabian Society, March 1902, pp.3-5.

it and that as much of that beauty as possible should be preserved. We therefore preserved the trees and the hedgerows so that the sites should not look so bare from the beginning. Then we tried to make the streets more attractive by arranging the cottages in groups'.[52]

At the same time Howard set up the First Garden City Company and piloted his proposals through a diagrammatic plan for Letchworth, a co-partnership funded town with a population of 33,000.[53] The Garden City Pioneer Company selected the 4000 acre green field site due to its convenient proximity to the main train line to London[54] and the natural features of the landscape.[55] To avoid overcrowding Howard initially allocated housing to a central 1000-acre area, with a density of ten dwellings per acre. Public recreation space, farmland and a green belt occupied the remainder.[56] Agricultural activity would be the main source of employment, supplemented by appropriately located manufacturing works. A review in *The Builder* was apprehensive about the scheme. Although it acknowledged the design of the estate's layout and buildings offered an opportunity for 'architectural genius,'[57] a note published in 1904 doubted its success due to its scale as it relied on 'miscellaneous people' conforming to an 'ideal system' rather than workers' dwellings designed for a single manufacturer.[58]

In 1904 Unwin and Parker, who were still relatively unknown, won a limited competition to develop Howard's social experiment at Letchworth by giving the diagram an image and identity (figure 11). Halsey Ricardo (1854-1928) and Professor William Lethaby (1857-1931) collaborated to prepare the other entry. Unwin and Parker's scheme, prepared in Letchworth with the assistance of their assistant, Robert Bennett, created industrial, phasing, investment and civic planning challenges on an unprecedented scale. After being appointed as consulting architects to the First Garden City Ltd, Unwin and Parker established an office in Letchworth and Unwin relocated there between 1904-6. Unwin took responsibility for housing, road layout, grouping, plot size and style. Its civic centre, set out on an axis, was not fully realised. The plan aimed to balance a degree of formality whilst respecting the natural features of the

[52] Raymond Unwin, 'Garden Cities in England', *The City Club Bulletin,* 7th June 1911, vol.4, pp.133-140.
[53] Sir F. Osborn and A. Whittick, *The New Towns: the Answer to Megapolis,* London: Leonard Hill Books, 1969, p.66
[54] 'A Garden City at Hitchin', *The Builder,* 5th September 1903, p.255.
[55] 'The Garden City', *The Builder,* 17th October 1903, p.377.
[56] 'Garden Cities', *The Builder,* 29th July 1905, p.124.
[57] The Garden City', *The Builder,* 17th October 1903, p.377.
[58] 'The Garden City', *The Builder,* 23rd January 1904, p.75.

wooded undulating site. Its urban arrangement employed Unwin's hierarchical principles of city planning – a semi-octagonal main central dominant centre (reminiscent of Wren's proposal for the rebuilding of London, 1666, figure 12), combined with smaller nodal points connected to the countryside with boulevards or parkways through ward centres or districts. In residential areas Unwin and Parker introduced small crescents or cul-de-sacs of cottages.[59] Factories were positioned on the east to enable the prevailing wind to carry smoke and noise from the town.

Also in 1904 Howard reported on progress at Letchworth during a branch meeting of the Garden City Association in Manchester and stated that if successful the First Garden City Company may consider a second experiment in the north of England. He advised that cultural activities, a healthy mix of population and the reinvestment of profit to benefit the public as well as private interests would be required.[60] The *Manchester Guardian* reiterated the commitment to a northern garden city through an article a month later following a second visit to Manchester by Howard. The correspondent stated 'there are many reasons why Manchester people should follow its development with interest, and even do what is in their power to give it practical assistance'. Lancashire or Cheshire became possible locations and the correspondent claimed that Howard was hopeful that even Lancashire's manufacturing towns could be transformed into healthier habitable places.[61] By 1908 the population of Letchworth had increased from 3000 to 5000, the number of factories had doubled to ten but the number of factory hands had increased three-fold to 900.[62] By 1909 the population was 6000.[63]

In *Cities in Evolution* Geddes reflected that Unwin had realised that the majority of new development would take the form of suburbs rather than cities (figure 13). The application of garden city principles to Unwin's next project, Hampstead Garden Suburb (figure 14), designed with Parker and Edwin Lutyens in 1906,[64] marks the transition of the garden city idea to suburban conditions through the formation of superblocks or neighbourhoods complete with a full provision of amenities. *The Builder* had positively promoted the scheme's concept in 1905, but predicted that its

[59] E. Ben Joseph & D. Garden, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol. 5, 2000, p.238.
[60] 'Making the garden city: meeting of the Manchester Association', *The Manchester Guardian*, 1st September 1904, p.10.
[61] 'The Garden City movement: Manchester and the Hitchin scheme', *The Manchester Guardian,* 7th October 1904, p.5.
[62] 'First Garden City', *The Builder,* 8th February 1908, vol.94, p.158.
[63] 'Letchworth Garden City', *The Builder,* vol.96, 2nd January 1909, p.22.
[64] P. 191.

social value would be an isolated example.[65] Commissioned by the client, Dame Henrietta Barnett, Hampstead sought to offer a new type of residential area where rich and poor; old and young could live a Christian life with their educational and spiritual needs catered for. As well as working with Lutyens, Unwin and Parker collaborated with Edgar Wood. With Lutyens they resolved a layout based on small crescents, cul-de-sacs, squares and the generous provision of green spaces for 3000 dwellings for different family types and income groups. This allowed Unwin to experiment with emphasising street-corners and creating street scenes by varying the position of buildings in relation to the plot line.[66] Wood, a member of the Hampstead Garden Suburb Development Company, was commissioned to design the Wellgarth Road gateway, two blocks of houses arranged as two quadrants. Reminiscent of Lutyen's Castle Drogo, Devon, (1911-1930), these were tall buildings in local facing brick with Bath stone copings and doorways, mullioned windows and their parapet concrete flat roofs were accessed by an external spiral stair. They had been orientated and planned to ensure morning light entered the dining rooms. Although unrealised, *The Builder* printed plans and a perspective in 1910.[67]

Possibly influenced by the work of Horsfall, in 1906 Unwin presented a paper at the International Congress of Architects held in London. Citing German town expansions, ancient walled continental towns and the work of Camillo Sitte (1843-1903), (an Austrian architect, city planning theoretician and author of *City Planning According to Artistic Principles*[68]), he proposed the adoption of municipal regulations to control the planning of residential zones in towns, restriction of suburban areas using green space and he disclosed his design strategies for town layouts. Unwin reiterated the importance of studying a site's topography and preservation of natural features and, contrary to Howard's ideas, recommended avoiding the use of symmetry on plan, instead grouping municipal buildings to create a centre that is then framed by the road layout to enable easy navigation and create a sense of openness.[69]

Manchester's garden suburbs

In Manchester prior to the First World War five model urban extensions had commenced in addition to the preparation of plans for Withington. At the 1906

[65] 'A Garden Suburb', *The Builder,* 11th March 1905, p.257.
[66] Raymond Unwin, 'Garden Cities in England', *The City Club Bulletin,* 7th June 1911, vol.4, p.137.
[67] 'Houses, Hampstead Garden Suburb', *The Builder,* 12th March 1910, vol.98, p.297.
[68] Camillo Sitte, *City Planning According to Artistic Principles,* 1889.
[69] Raymond Unwin, 'The planning of the residential districts of towns', *The Builder,* 21st July 1906, pp.99-100.

conference of the Garden City Association, London, Thomas Adams (1871-1940) noted South-East Lancashire's rapid suburban growth making it a vast city equivalent in size to London.[70] Manchester was the first municipality in England to introduce a by-law that restricted the density of residential areas by insisting that houses 1.5 miles outside of the city centre should have at least 20 square yards of land. This was discussed in 1907 at a Garden City Conference, attended by Horsfall and Adams, held in Manchester Town Hall.[71] By 1906 two developments were underway – Alkrington, in north Manchester, and Burnage, in the south. Burnage Garden Village (figure 15) was initiated in 1906 as a prototype to demonstrate how garden city principles could be applied to Manchester's suburban expansion.[72] Modest in size, it was a practical experiment to show how a site could be laid out to provide every house with adequate air and light. A series of three drawings capture its design development. Architect J. Horner Hargreaves prepared the first layout dated June 1907, which uses three avenues running north to south to create two central islands of housing plots. Recreational amenities and allotments were placed along the site's western edge. A month later the *Manchester Guardian* advertised that, as construction was due to commence, there would be an excursion to Letchworth so interested members of the public could experience the first garden city.[73] On the 15th July 1907 three hundred people from Lancashire visited Letchworth to witness the potential of Ebenezer Howard's garden city movement. Approximately 100 of the delegates were from Manchester, accompanied by Mr. Rowbottom, secretary to the Manchester Tenants, who hoped 'the visit would greatly stimulate the development of the new estate at Burnage'.[74] It is likely that this visit influenced design changes and a month later Hargreaves prepared a new scheme with Unwin, C. G. Agate (a Manchester architect who had prepared exhibition cottages for Letchworth[75]) and F. B. Dunkerley as advisors. Unwin's influence can be seen in the site's layout, the reduced number of streets, its low density, increase in open space and the house designs. Unwin had demonstrated these characteristics at the Pixmore Estate, Letchworth, and also Hampstead Garden Suburb. In 1914 *The Builder* reported that Burnage Garden village had been too successful and was now overcrowded.[76]

[70] Thomas Adams, 'Report of Conference', *Housing in Town and Country,* 16th March 1906, London, p.13.
[71] 'Garden City Conference at Manchester', *The Builder,* vol.92, 23rd March 1907, p.374.
[72] 'For clerks and artisans: Manchester housing project', *The Manchester Guardian,* 18th August 1906, p.9.
[73] 'Article 16', *The Manchester Guardian,* 11th July 1907, p.12.
[74] 'Garden City Lessons: Lancashire People at Letchworth', *Manchester Guardian,* 15th July 1907, p.3.
[75] *Housing in Town and Country,* 16th March 1906, London, p.72.
[76] 'Manchester', *The Builder,* vol.106, 23rd January 1914, p.92.

In 1906 an article in the *Manchester Guardian* confirmed the Garden City Association's approval to acquire 712 acres at Alkrington Hall, between Manchester and Oldham, and this was to be developed for garden city purposes (figure 16).[77] The Garden City Association was not able to gain sufficient interest to form a local Garden City Company. Instead Ernest Allen and George Pepler (1882-1959), a member of the Garden City Association who had worked with Unwin at Letchworth, laid out the scheme with Adams, who was critical of the City Beautiful Movement, as expert adviser. Whilst working on Letchworth, Unwin and Parker had become acquainted with Adams, then secretary to the Garden City Association and manager at Letchworth from 1903-6. The development provided 12 houses per acre, ample recreation grounds and open space.[78] Its layout is polycentric with a main avenue running from the east through a main square and terminating as a curved road to the west. In 1909 *The Builder,* in an article reviewing the Town Planning and Housing Exhibition at the Institute at Hampstead Garden Suburb, noted its irregular plan and the placing of key buildings at important junctions and key avenues terminating at a square.[79]

Adams was acquainted with Horsfall and they both were members of an advisory committee for the *Architectural Review's* 'Town Planning and Housing' supplement, which between January 1910 and April 1911 reviewed implications and possibilities following the passing of the 1909 Act. In particular the series promoted planned urban development and progress in Germany. Other committee members included Crane, Unwin and Wood as well as Professor Adshead and Professor Reilly of Liverpool University. In June 1910 an article in the *Architectural Review's Town Planning and Housing Supplement* commended Alkrington's park-like setting out of the western area of the plan with narrow driveways leading to the houses.[80] Horsfall opened the first house in 1911 and in the same year *The Builder* promoted the development as a garden city with 6000 houses.[81] Adams subsequently moved to Canada to become the Federal Government's Town Planning Adviser.

In Oldham in 1907 Mary Higgs and landowner Sarah Lees launched a garden suburb company and commissioned local architectural practice Heywood and Ogden

[77] 'A Manchester Garden City: the purchase approved', *The Manchester Guardian,* 19th October 1906, p.4.
[78] Ewart Culpin, *The Garden City Movement Up-to-Date,* 1913, p.23.
[79] 'The Hampstead Garden Suburb', *The Builder,* vol.97, 24th July 1909, p.89.
[80] 'A recent example of town planning: Alkrington', *Town Planning and Housing Supplement To The Architectural Review,* June 1910
[81] 'Manchester Garden City', *The Builder*, vol.101, 7th July 1911, p.18.

to develop the plan for Hollins Green and design the first phase of housing.[82] Higgs was one of the first Garden Cities Association members, and Lees had established the 'Beautiful Oldham' movement in 1902, which sought to improve living and urban conditions. The 52-acre plot offered houses for sale and rent, arranged along wide tree-lined roads with grass verges that converged to a central high point (figure 17). Three acres were reserved for open spaces. Between 1907-9 Ogden was president of the Manchester Society of Architects and in 1908 became chairman of its town planning committee, which, possibly under the influence of Wood and Unwin, had been appointed to assist the RIBA in connection with the Town Planning Bill. They were tasked with stimulating local interest in the Bill by reviewing potential future suburban developments and liaising with the city architect regarding urgent future suburban expansion. Although it is not clear whether Unwin directly influenced its work, he was aware of their proposals, which he summarised during a lecture in December 1910.

In 1909 the Housing and Town Planning Act was passed. This was a tentative beginning of democratic planning and controlled suburban growth through piecemeal extensions rather than designing whole towns.[83] In an address at the RIBA's 1910 Town Planning Conference, John Burns encouraged town planners to use the Act to disperse the population and unite sprawling suburbs through expansion.[84] To achieve this the Act allowed infrastructure to be constructed as a framework with residential in fills, with restricted density, planned when needed.[85] From the early 1900s the motorcar had provided a great design challenge for planners as rectangular grid layouts complicated diagonal movement across cities. Diagonal boulevards superimposed on the grid, similar to L'Enfant's plan for Washington DC (1793) and Baron Haussman's Paris layout, sought to address this. In 1893 Daniel Burnham (1846-1912) had co-ordinated the World's Columbian Exposition in Chicago which, illustrated Baron Hausmann's Parisian scheme and the Ecole de Beaux Arts' classical and architectural urban design ideals. Images of large white neo-classical buildings surrounded by natural landscape were exhibited and, subsequently promoted in the architectural press, inspired the City Beautiful Movement.[86] Examples such as Burnham's plan for

[82] Clare Hartwell, Matthew Hyde and Nikolaus Pevsner, *Lancashire: Manchester and the South-East,* 2004, p.549.
[83] Patrick Abercrombie, 'Regional planning', *Town Planning Review,* May 1923, p.110.
[84] John Burns, 'Inaugural Meeting at the Guildhall', *Transactions of the RIBA Town Planning Conference*, 1910, p.75.
[85] Patrick Abercrombie, 'International contributions to the study of town planning and city organization', Town Planning Review, July 1913, pp.109-10.
[86] E. Ben Joseph & D. Garden, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol. 5, 2000, p.241.

Chicago (1906-09), which introduced neo-classical civic centres at the diagonal's intersections, remained influential for the next 20 years, although by 1910 their impractical and stylistic approach came under scrutiny.

Organised and curated by Unwin, the 1910 exhibition for the RIBA's Town Planning Conference at the Royal Academy, one of the first of its kind, captured the many different solutions to urban planning at the time (figure 18). German, Austrian and schemes in the United States dominated its content. Geddes exhibited his studies on Folk, Work and Place from his Edinburgh Outlook Tower alongside Burnham's perspectives for Chicago's redevelopment and the Manchester Society of Architect's suburban schemes. Explaining that his exhibit was an example of survey methods being undertaken at the Outlook Tower, Geddes stated that its contribution was to demonstrate the need to understand each town and city prior to determining its redevelopment or improvement potential.[87] During Geddes's conference presentation he acknowledged Councillor Thomas Marr's survey of Manchester and suggested that these studies should acknowledge local and regional origins.[88]

Unwin's presentation at the conference titled 'The City Development Plan' recommended the organisation of city life rather than focusing on suburban layouts allowed by the 1909 Act. This included direction of growth, the positioning of industry, key communication lines, locations of education and cultural centres. He suggested two alternative forms – concentric rings or linked individual townlets connected to a central core. A no-build zone of park or woodland would restrict one settlement's growth merging with another and these individual periphery towns could have their own centre and functions near to its local population.[89] The roads connecting the individual towns and their districts should provide the framework for the extension plan. To demonstrate the potential of Unwin's outline proposal, Arthur Crow, the district surveyor for Whitechapel, exhibited a series of drawings that replanned Greater London to provide ten interconnected cities "of health", each surrounded by open countryside and connected to central London (figure 19).[90]

The Manchester Society of Architect's preparation of schemes across south

[87] Patrick Geddes, 'Outline of a survey of Edinburgh', *Transactions of the RIBA Town Planning Conference*, 1910, p.538.
[88] Patrick Geddes in George Pepler, 'Geddes contribution to town planning', Town Planning Review, April 1955, p.21.
[89] Raymond Unwin 'The city development plan', *Transactions of the RIBA Town Planning Conference*, 1910, p.250.
[90] Arthur Crow, 'Town planning in relation to old and congested areas, with special reference to London', *Transactions of the RIBA Town Planning Conference*, 1910, pp.410-411.

Manchester and interest in international Garden Cities continued. Percy Worthington, President of the Manchester Society of Architects in 1909, visited Germany and shared his experiences with members of the Society.[91] In 1909 the Society produced a design for a substantial new suburban extension based on 20 houses per acre across 650 acres in Withington. Its drawings (figures 20-22), two birds eye views by Edgar Wood, then vice-president of the Manchester Society of Architects, and a master plan, were exhibited as part of the Cottage Exhibition, curated by the Manchester Institution at the Manchester Art Gallery to stimulate interest in suburban architecture and at the Royal Academy, London, in connection with the RIBA's Town Planning Conference of 1910, organised by Unwin, prior to being handed to the Town Planning Committee of the City Council in 1911.[92] *The Builder* published a scathing review of the Cottage Exhibition in Manchester, claiming that the concept of associating country cottages to Manchester's old suburbs was laughable and would only be of interest to ladies who may take a sentimental interest in pretty drawings, but applauded the 'oasis' depicted by Wood's drawings as the beginning of a movement to improve Manchester's suburbs.

An article in the *Architectural Review's Town Planning and Housing Supplement* in September 1910 described Wood's proposals. Reminiscent of modern German planning and Adam's work, it has two nucleated sections separated by a central railway station and three tree-lined principal avenues connecting the city to the countryside. The northern section is square in plan and based on a grid dissected by diagonal main roads radiating from a central crescent to join Alexandra Park and Platt Fields. The diagonal boulevards are reminiscent of Burnham's Chicago scheme (figure 23). A wide central avenue runs north to south, crosses the railway lined with ornamental canals, and terminates as one of the ring thoroughfares of the southern section. The western avenue, which links Alexandra Park with the southern section, dissects a crescent at the centre of a semi-circle of 'ring' thoroughfares and terminates at a feature public hall.[93]

[91] Paul Ogden and Philip Barker, 'Report of the Town Planning Committee for the year 1909-10', *The Kalendar of the Manchester Society of Architects 1910-11,* 9th March 1910, p.58.
[92] Percy Worthington and Philip Barker, 'Report of the Town Planning Committee for the year 1910-11', *The Kalendar of the Manchester Society of Architects 1911-12,* 23rd March 1911, pp.59-60.
[93] Philip Barker, 'A suburban development scheme', *Town Planning and Housing Supplement to the Architectural Review,* September 1910, pp.145-6.

Patrick Abercrombie (1879-1957) gained national and international recognition for his Geddesian approach that associated the town with its context.[94] Born in Ashton-on-Mersey, Manchester, Abercrombie had been articled to Charles Henry Heathcote between 1897-1901 and subsequently worked in Chester where he acquired an appreciation of ancient cities. Charles Reilly (1874-1948), at Liverpool School of Architecture, offered Abercrombie a lectureship (c1902) and as Lever Research Fellow, with access to funding, he travelled to cities such as Vienna, Paris, Berlin and Brussels. Abercrombie recorded his experiences and observations in articles in the *Town Planning Review* from 1910 and noted the exchange of garden city movement ideas between countries. In 1910 he reported during the previous decade Professor Berlepsch-Valendas, an influential advocate of garden villages who designed the Munich-Perlach Settlements in Munich, had studied English garden city layouts and their principles during annual study trips, and German designers adapted these.[95]

In England the Garden City and Town Planning Association, the National Housing and Town Planning Council and the Co-partnership Tenants Housing Council were independently promoting the town planning concept. The Garden City Association established links with similar movements in Germany, France, Holland, Sweden, Italy and America and had been contacted by the Russian Garden City organisation.[96] Reilly noted American interest in town planning and recommended the study of its new townships, which, inspired by French layouts (notably Paris's diagonal vistas radiating from civic centres and architectural landmarks), advocated green space as structuring systems.[97] Reviewing Chicago's 1909 plan prepared by Burnham, Abercrombie criticised the adoption of the grid-iron overlaid by diagonals, instead encouraging inherent radiating layouts, as used by Wren's London plan, to structure growth (figure 24).[98] Burnham had used a similar approach in his design for Washington in collaboration with C. F. McKim, Augustus St. Gaudens and Frederick Law Olmstead, junior, also reviewed by Abercrombie in 1910.[99]

[94] George Pepler, 'Geddes' contribution to town planning', *The Town Planning Review*, April 1955, p.19.
[95] Patrick Abercrombie, 'Some notes on German Garden Villages', *The Town Planning Review,* October 1910, pp.246-7.
[96] Patrick Abercrombie, 'Modern town planning in England: a comparative review of 'Garden City' schemes in England', *The Town Planning Review*, April 1910, pp.18-21.
[97] Charles Reilly, 'Town planning schemes in America', *The Town Planning Review,* April 1910, pp.54-55.
[98] Patrick Abercrombie, 'Town planning schemes in America', *The Town Planning Review,* April 1910, p.58.
[99] Patrick Abercrombie, 'Washington and the proposals for its improvement', The Town Planning Review, July 1910, pp.137-147.

Writing in the *Architectural Review* in 1911, Abercrombie reported that despite the slow progress of British town planning, 70 to 80 towns or districts had adopted the 1909 Act. In a lecture to the Manchester Society of Architects in November that year Abercrombie compared controlled development in Vienna and Paris to illustrate two continental approaches (figure 25). Vienna had retained its medieval core, encircled by two ring-strasses and a green belt restricted its expansion. Paris's growth, later coined by Abercrombie as 'formal monumental town planning'[100] was controlled by vistas.[101] By 1913 Abercrombie became more critical of Britain's lack of contribution to international town planning and stated that 'no nation has been so backward' due to its 'city organisation [being] entirely managed under a system of amateur chairmanship of committees'[102] and he claimed that the few innovative contributions, such as garden villages and garden cities, had been achieved through private enterprise.

In July 1910 an article by W. R. Davidge in the *Architectural Review's* supplement criticised the orthogonal arrangement of the rows of streets of expanding English towns. Davidge promoted the use of generous tree-planted avenues in oblique directions that converge upon important civic buildings to create vistas. Referring to the 'ring system' or circular boulevards which had proved successful in Germany, he recommended that land between the avenues should be arranged to facilitate transit and connect parks and open spaces. Frontage lines could be irregular or concave and public buildings could punctuate long streets.[103] The following month, Unwin published an article reviewing recent town planning proposals for Berlin including entries for the 'Gross Berlin' competition of 1907. Unwin referred to the requirement to regulate its rapid suburban growth by adopting radiating and ring streets and included examples of schemes by Hermann Jansen and Bruno Mohring which were characterised by dominant centralised civic centres, diagonal boulevards, grand squares and linked open spaces.[104]

In 1910 Manchester Corporation's Blackley Estate Special Committee proposed

[100] Patrick Abercrombie, 'International contributions to the study of town planning and city organisation', *The Town Planning Review,* July 1913, p.103
[101] Patrick Abercrombie, 'Town planning notes', *The Architectural Review,* December 1911, pp.356-358.
[102] Patrick Abercrombie, 'International contributions to the study of town planning and city organisation', *The Town Planning Review,* July 1913, pp.105-107.
[103] W. R. Davidge, 'Town Planning Opportunities', *Town Planning and Housing Supplement to the Architectural Review,* 27, July 1910, p.51.
[104] Raymond Unwin, 'Town planning in Berlin', *Town Planning and Housing Supplement To The Architectural Review,* August 1910, p.98.

to extend the estate and launched a competition to obtain the best scheme.[105] A maximum of 20 semi-detached three-bed cottages per acre were required plus recreation facilities, community amenities and pre-determined allotment locations.[106] Of the 23 entries, only seven were by local firms as there was some doubt that the project would be realised. Cooper and Slater of Blackburn won the competition due to their handling of natural features on the site and appropriate use of modern formal planning.[107] Merits of their scheme included maximising views from the dwellings over Alkrington Woods and allowing main routes to converge on a circular civic centre of large public buildings.

By 1914 planned town extensions had gained popularity as a solution to facilitate Manchester's overcrowding. In 1912 the Garden City Association's campaign had gained international recognition and after the annual meeting of the Garden Cities and Town Planning Association *The Times* reported that 'from all parts of the world now there came to the Association inquiries and requests for assistance and advice with regard to all forms of garden cities, garden suburbs, town planning and any movement which had regard to the better housing of the working classes. That morning's post alone had contained inquiries from Sydney, Johannesburg, Rome, Milan, and Berlin.'[108] By 1913 sufficient support warranted the foundation of the International Garden City and Town Planning Association and Howard was the first president.[109] Their first congress, attended by 150 delegates from around the world, was held the following year, two weeks before the First World War began.[110]

Howard's self-contained garden city concept had gained currency prior to the First World War and his second demonstration at Welwyn (1919-20) built on Letchworth's success (figure 26). Despite the garden city's national popularity, Geddes warned that layouts were becoming 'poor examples of town planning, in fact they are becoming fresh delays and new obstacles to City Design'.[111] Responding to an increased demand for new housing during the inter-War years, Howard's vision continued to gain international recognition into the 1930s due to its success at generating industrial growth, social liveliness and outstanding design quality. After

[105] 'The Blackley Estate, Manchester', *The Builder,* vol.98, 5th March 1910, p.267.
[106] 'Blackley Estate, Manchester', *The Builder,* vol.99, 3rd September 1910, pp.264-5.
[107] 'Blackley Estate Competition, Manchester', *The Builder,* vol.100, 14th April 1911, pp.452-3.
[108] 'Garden cities: scheme for the development of London', *The Times,* 6th February 1912, p.6.
[109] 'Housing and town planning: progress of the past year', *The Times,* 23rd August 1913, p.6.
[110] 'Garden cities congress: international delegates at Hampstead', *The Times,* 13th July 1914, p.4.
[111] 'Sir Raymond Unwin, 1863-1940', *RIBA Journal*, September 1963, p.356.

1914 interest in American planning replaced Germany's example and alongside the development of garden cities, communitarian regionalism theories evolved. These became feasible due to technological advances such as the motorcar and electric power. Master plans for decentralisation based on Ebenezer Howard's poly-centric urban planning ideas and Geddes's theoretical regional framework then began to emerge.

> This chapter revealed Manchester's contribution to the international advancement of the garden city and suburb movement prior to the First World War. Manchester's alternative models had been driven by an increased awareness of the interdependency of urban organisation, the need for planned regeneration strategies and sustainable economic growth. The next chapter explains how Unwin, Howard and Geddes progress these ideas through polycentric regionalism. Chapter three will compare an alternative urban extension arrangement to Howard's concentric model, which swiftly develops into the linear city during the inter War years.

Unwin publishes
The Nation's New Homes

Planning becomes compulsary for local authorities of more than 20,000.

Regional Joint Town Planning Committees introduced.

1919

1922

Abercrombie demonstrates polycentric regional growth at Doncaster.

The Foundation Committee on the Plan of New York and its environs invites Unwin to New York where he introduces the concept of functional zoning.

Stein visits Welwyn, England.

Members of the Foundation Committee travel to England to meet Unwin.

Foundation of the RPAA, USA

1923

1924

Stein and Wright visit Letchworth and Hampstead, England.

Howard and Unwin attend the International Town, City and Regional Planning Conference, New York. Pepler exhibits a theoretical decentralisation plan for London

1925

1928

Stein and Wright demonstrate the cul-de-sac and superblock at Radburn, USA.

Parker publishes his hexagonal neighbourhood unit concept.

Unwin become the president of the International Federation for Housing and Town Planning.

Arthur Trystan Edwards publishes *A Hundred New Towns for Britain*

1934

1935

Parker demonstrates superblocks, cul-de-sacs and parkways through his design for Wythenshawe, a satellite town.

Unwin influences the USA's decentralisation strategy that relied on the construction of satellite towns

1936

Stein introduced polycentric regional cities

1938

1937

Parker introduces polycentric regions.

Neighbourhoods, satellites and regionalism

During the inter-War years Unwin developed transatlantic links with urban designers in New York. Following the 1925 International Town, City and Regional Planning Conference in New York, Barry Parker, Clarence Stein and Henry Wright produce schemes characterised by the cul-de-sac, neighbourhood, superblock and parkway. Working independently Parker and Stein progress this as a development of Howard's polycentric regional city. This chapter describes this professional network, the transatlantic interactions and the advancement of polycentric regional planning.

Lancastron

In 1915, during the First World War, Geddes's collection of city studies, which had been exhibited at the 1910 Edinburgh Exhibition, the 1911 Cities and Town Planning Exhibition and 1913 First International Congress of Town Planners Exhibition in Ghent (figure 27), was lost at sea on the way to India. Delegates from 150 towns across the world had attended the 1913 congress and Geddes closed its proceedings by suggesting the contextual study of towns should precede and inform their development.[112] Geddes's collection had been due to join him in Madras where he was staying at the request of its Governor, Lord Pentland. Comprising continental medieval town maps, an array of images, newspaper cuttings and diagrams, the collection showcased Parisian boulevard planning, German town extensions, English garden villages, American civic centres and park systems. On hearing about its loss, Raymond Unwin, George Pepler and H. V. Lanchester (1863-1953) began to reassemble material to send to Geddes. Later that year the reconstructed exhibition debuted in Madras prior to touring other Indian cities until 1923. In 1924 Geddes's son, Arthur Geddes, sent the collection to the Scots College, Montpellier, in France. It remained there until 1947, after Geddes's death, when it was sent to the Town Planning Department at the University of London.[113]

The exhibition and *Cities in Evolution*, 1915, both referred to Geddes's valley section (figure 28), his basic concept of human habitation as seen from the river to the sea. Geddes used this to understand a place's character, its individual civilisation, topography and urban form and he argued that by analysing a city and its region, an

[112] Patrick Abercrombie, 'The first international congress of town planning and organisation of city life', *The Town Planning Review,* October 1913, pp.205-208.
[113] Jacqueline Tyrwhitt in Patrick Geddes, *Cities in Evolution,* 1949, London, Williams and Norgate Ltd, pp.ix-xii.

area's regeneration potential could be identified. In *Cities in Evolution* Geddes recommended Lancashire's survey, which he called Lancastron, to avoid London's congestion. Identifying Liverpool as a seaport, Manchester as market and Oldham and its surrounding factory towns as districts, he noted that the conurbation's format was closer to conglomerations rather than constellations and recommended its aerial observation as well as from the ground.[114] Patrick Abercrombie's brother, Lascelles (1881-1938), a poet and literary critic, criticised Geddes renaming Lancashire, stating, 'I can scarcely suppose, however, that anyone will see the conurbation of Lancashire any clearer for calling it "Lancastron".'[115]

Raymond Unwin's national campaign for better housing

In 1914 Unwin and Parker amicably dissolved their professional partnership. Parker travelled to Portugal (figure 29), then Brazil, and Unwin became a civil servant. Sir Herbert Samuel (1870-1963), a Liberal Party politician, had invited Unwin to join the Local Government Board (now the Ministry of Health) as Chief Town Planning Inspector and then Director of Housing at the Ministry of Munitions where he designed towns adjacent to munitions works, such as Gretna. As a civil servant Unwin was able to nationalise his vision and, by publicly campaigning for slum clearances, he gained support for regional and national planning and the construction of new communities based on ordered pattern, although these did not progress until the mid 1920s because the nation's housing problems took priority immediately after the War.

Unwin returned to the Ministry of Health as City Architect after the War and became Chief Technical Officer for Building and Town Planning. He was a member of Sir Tudor Walter's committee for housing and building construction and contributed to its 1918 report as well as the Ministry's Housing Manual. In 1919 he edited *The Nations New Houses,* a selection of recommended house types and layouts taken from the Committee's report for the Local Government Board. This introduced a universal standard that restricted urban residential density to 12 dwellings per acre and eight per acre in rural districts. As well as preserving natural landscape features such as hedges and trees, this produced larger homes with wide frontages to maximise internal sunlight and air. Cluster layouts were encouraged to avoid monotony, with houses,

[114] Patrick Geddes, *Cities in Evolution,* 1949, London, Williams and Norgate Ltd, pp.12-13.
[115] Lascelles Abercrombie, 'Prolegomena on Professor Geddes' Cities in Evolution', *The Town Planning Review,* October 1915, p.139.

each with private gardens to the front and rear, arranged around greens, quadrangles or additional shared recreation space.[116] Its publication coincided with the 1919 Act that made town planning compulsory for local authorities with a population of 20,000 or more. The Act also enabled local authorities to form Regional Joint Town Planning committees to prepare advisory plans. These allowed local authorities to collectively and voluntarily agree main lines of development across a region and then each authority could independently implement their section. In England, by 1925, 32 Regional Committees had been formed involving 450 local authorities[117] and a number of advisory plans had been prepared.

Patrick Abercrombie's polycentric regional urban growth

In 1914 John Nolen, Cambridge, Massachusetts, planned Geddes's Civic Exhibition in Dublin. Shortly after, with Charles McCarthy of Dublin and Geddes, he judged the international Dublin Town Planning Competition.[118] As Lord Lieutenant of Ireland 1905-1915, the Marquess of Aberdeen, had initiated this to relocate tenement dwellers to Dublin's outskirts, but the 1916 Easter Rising delayed the competition. Sydney and Arthur Kelly and Abercrombie won (figure 30)[119] and the next year Abercrombie replaced Adshead as Lever Professor of Civic Design at Liverpool University, a post he held until 1935. During an introductory public lecture in November 1916 supported by an exhibition of the entries, Unwin introduced city planning as a democratic art and stated, 'as citizens, you should study and discuss the plans… the city should express and provide for the ideals and provide for the needs of the citizens.'[120] Earlier that year Abercrombie had promoted Geddes's intensive surveys as being essential prior to determining a town's growth or reconstruction and he advised that development should be underpinned by planning theory. Criticising existing suburban growth as being too dense with a disregard for landscape or topography, he promoted the use of satellite towns surrounding a central city and separated by open space.[121]

Shortly before the end of the First World War, Lionel Budden (1877-1956), who had been educated at Liverpool University and later, in 1933, accepted the Roscoe

[116] Raymond Unwin (ed.) *The Nations New Houses,* 1919, The Daily News: London and Manchester, pp.4-6.
[117] Raymond Unwin, 'England', *Planning Problems of Town, City and Region,* papers and discussions for the 1925 International City and Regional Planning Conference, New York, p.26.
[118] Lady Aberdeen (Civics Institute of Ireland) in *Planning Problems of Town, City and Region,* papers and discussions for the 1925 International City and Regional Planning Conference, New York, p.33.
[119] 'A new town plan for Dublin', *The Architectural Review,* January 1917, pp.17-22.
[120] 'Dublin town planning competition', *The Town Planning Review,* April 1917, pp.104-5.
[121] Patrick Abercrombie, 'Study before city planning', *The Town Planning Review,* January 1916, pp.171-180.

Professorship, published an article in the *Town Planning Review* that sub-divided Great Britain into seven regions to define survey areas.[122] In the same issue Abercrombie supported Budden's opinion by recommending the formation of a Reconstruction Ministry to co-ordinate Britain's comprehensive reconstruction based on the surveys' findings.[123]

Abercrombie remained critical of the 1919 Town planning act because it only required plans to be made for settlements larger than 20,000 people and it did not address regional needs. He was an advocate of Geddes' and H. V. Lanchester's implementation of preparatory civic surveys prior to large-scale reconstruction of towns in order to take into account surrounding settlements and provide new industry, improved communications and new housing in suitable locations.[124] By the 1920s regional planning had evolved, which strategically organised the development of a wide area, possibly with one dominating centre, by grouping existing towns and developing new settlements to allow for growth and efficient use of the natural environment. He demonstrated this approach alongside the use of surveys when structuring Doncaster's growth in 1921 (figure 31), the country's first polycentric regional plan, designed with Henry Johnson. Its layout is reminiscent of Howard's satellite town theory that had influenced Crow's 'Ten cities of health'.[125] This preceded Abercrombie's Sheffield Regional plan of 1923. To order communities and control growth, Abercrombie recommended development based on four scales: estate, township, region and country.[126] This process could require the co-operation and equal involvement of several local authorities.[127] He advanced this process by popularising aerial photography to assist the surveys as they captured more useful detail than ordnance maps, such as the condition of structures.[128]

Community, neighbourhood and regional design in America

[122] Lionel Budden, 'The regional and civic commemoration of the War', *The Town Planning Review,* April 1918, pp.185-7.
[123] Patrick Abercrombie, 'The need for a regional survey of national resources', *The Town Planning Review,* April 1918, p.210.
[124] Patrick Abercrombie, 'The basis of reconstruction: the need for a regional survey of national resources', *Town Planning Review,* April 1918, p.161.
[125] Gerald Dix, 'Little Plans and Noble Diagrams', *The Town Planning Review*, vol. 49, no. 3, 1978, pp.329-334.
[126] Patrick Abercrombie, 'Regional planning', *Town Planning Review,* May 1923, p.109.
[127] Patrick Abercrombie, 'Regional planning', *Town Planning Review,* May 1923, p.110.
[128] 'Aeroplane photography in town planning', *Town Planning Review,* May 1923, p.99.

Whilst garden suburbs, self-contained cities and early regional theory were being developed in England, community and neighbourhood design challenged planning conventions in America. Sociologist Charles Horton Cooley's (1864-1929) publications on social organisation and process noted that networks found in village life also exist in large metropolitan areas. Led by Clarence Perry (1872-1944), the Community Centre movement progressed Cooley's idea by stating that a shared meeting place could enhance civic life. Placed centrally, this amenity created a new layout known as the neighbourhood unit and this replaced the city block or street as the generator of urban form (figure 32).[129] The Russell Sage Foundation, established in 1907 to improve living standards in American Cities, had employed Perry from 1909 and proactively promoted his ideas. His design for Forest Hills, Queens Borough of New York (1912, figure 33), where he also lived from 1912-1944, tested a suburban neighbourhood prototype that had been informed by English garden cities. Incorporating civic amenities, the development successfully demonstrated good housing in terms of layout, services, conveniences and architectural standards. The community centre movement dissolved around 1920, but it pressed upon designers the need for a building to serve as a focal point. Forest Hills gradually became unaffordable for low-paid workers. By 1922, it was deemed unsuitable to remain under philanthropic control and the Russell Sage Foundation sold its remaining stock to a syndicate of the suburb's residents.[130]

Perry's work for the Foundation provided him with the opportunity to collaborate with other eminent planners such as Clarence Stein (1882-1975), Henry Wright (1878-1936), Lewis Mumford (1895-1990), Catherine Bauer (1905-1964) and Unwin. After the First World War British architects began to establish connections with America, rather than Europe. Influenced by Howards's *Tomorrow: A Peaceful Path to Real Reform,* Perry became familiar with Unwin's work at Letchworth and the importance of the garden environment as a component of community design. In addition, to achieve social cohesion in growing cities, Unwin promoted population distribution using defined social units complete with local amenities.[131]

[129] Lewis Mumford, 'The neighbourhood and the neighbourhood unit', *The Town Planning Review,* vol.24, January 1954, pp.259-261.
[130] 'Forest Hill Gardens', *The Survey,* vol.48*,* 13th May 1922, p.257.
[131] Lewis Mumford, 'The neighbourhood and the neighbourhood unit', *The Town Planning Review,* vol.24, January 1954, pp.261-262.

Both Perry and Unwin became associated with the Foundation Committee of the New York Regional Plan. In October 1922 Unwin visited New York at the invitation of the Committee on the Plan of New York and its Environs, which was being developed in association with the Russell Sage Foundation. In an article published in the *Survey* Unwin advised New York's city-planners to design for the individual and their lifestyle. Echoing his earlier work, he discouraged overcrowding, instead promoting city plans informed by health, efficiency, pleasure and beauty through civic organisation. This included creating autonomous community groups, each with a centre and identity as part of borough, suburban or satellite town planning. Unwin also discussed organised city growth and the need to control urban land use through functional zoning. Due to the scale of city planning he suggested that zoning should be phased; first broadly distributing functions and adding key infrastructure to connect centre to centre, followed by detailed planning to meet demand and suitability of land.[132]

In the summer of 1923 members of the Foundation Committee travelled to England to meet Unwin, who then returned to New York in the autumn. By the end of the year, during a meeting of the National Community Centre Association and the American Sociological Society in Washington, Perry introduced a model that transformed Unwin's concept into the residential neighbourhood unit and this was presented as an integral component to building a whole city. To define the ideal unit, Perry rearranged the modern city by quantifying population to support amenities as well as rearrange street pattern. His model was one of the first to integrate new housing with schools, recreation areas, shops and other neighbourhood facilities. It restricted automobile access and placed amenities within walking distance of the residential areas, with a primary school at the heart of the design alongside open space. Influenced by Cooley, he proposed the local community could also use this after hours to achieve social inter-generational interaction. A population of 5000-9000 residents was recommended to support one primary school and this determined that each neighbourhood needed to cover 160 acres to achieve a density of ten dwellings per acre, with ten per cent of the land allocated to open space. Arterial roads defined the neighbourhood's boundary and the pattern of internal streets adopted curves and cul-de-sacs to enhance street scene and discourage vehicle through-routes. In 1929 Perry

[132] Raymond Unwin, 'The Overgrown City', *The Survey,* vol.48, 15th October 1922, pp.85-6.

incorporated these ideas into a neighbourhood plan (figure 34), publicly disseminated as the *Regional Plan of New York and its Environs,* 1929, funded by the Russell Sage Foundation.[133] This guide included images and plans for Hampstead Garden Suburb and Radburn.

During the inter-War years, Stein also contributed to the government's emerging debate concerning regionalism. His achievements during this time include Radburn, designed with his partner Henry Wright, and he became a consultant to the Greenbelt Town Programme.[134] Al Smith, New York's Governor, who was developing decentralisation strategies, had created the Commission of Housing and Regional Planning, making Stein chairman. In 1922 Stein visited Welwyn, England, and also became acquainted with Howard and Unwin.[135] In 1923, prior to Perry's publication on the neighbourhood unit, Stein and Wright advanced theoretical land and community planning whilst designing an unrealised garden community located on the outskirts of New York (figure 35). They tested this formula, which combined apartments, row houses, communal space, allotments and light industry at Radburn, Chatham Village, the Greenbelt towns and Baldwin Hills.[136] Stein was acquainted with Alexander Bing, a property developer in central New York who specialised in apartment blocks and skyscrapers and Stein suggested that together they could create an American Garden City. In 1924 Bing established the City Housing Corporation and, influenced by Unwin's pamphlet *Nothing to be gained by overcrowding*, their first experimental project, Sunnyside (1924-8, figure 36), used New York's rigid city grid to efficiently plan neighbourhoods for 1,202 family units whilst preserving open space and providing play areas and meeting halls.[137] Lewis Mumford resided at Sunnyside for 11 years.

Stein claimed that the Radburn Estate (1928-34, figures 37 and 38), New Jersey, 24 kilometres from Manhattan and designed as a collaboration with Wright and Perry, was the first demonstration of the neighbourhood concept. In this scheme Stein progressed community design ideas previously demonstrated at Sunnyside alongside five elements: the cul-de-sac American superblock separated by green parkways (inspired by Welwyn, Letchworth and Hampstead Garden Suburb); a hierarchical road

[133] Larry Lloyd Lowdon, 'The neighbourhood unit: physical design or physical determination', *Journal of Planning History,* May 2009, pp.111-121.
134 Kristin Larsen, 'Cities to come: Clarence Stein's postwar regionalism', *Journal of Planning History*, vol.4, February 2005, p.36.

[135] Clarence Stein, 'Toward new towns for America' Town Planning Review, Vol.20, October 1949, p. 203.
[136] Clarence Stein, 'Toward new towns for America', *The Town Planning Review,* vol.20, Oct 1949, pp.203-4.
[137] Clarence Stein, 'Toward new towns for America', *The Town Planning Review,* vol.20, Oct 1949, p.206.

system based on use; pedestrian and vehicular segregation, orientation of living spaces to open space and a large continuous park to structure the layout.[138] Each superblock, (30-50 acres) formed from repeated cul-de-sac housing clusters, prioritised pedestrians by restricting vehicular through-routes and incorporating narrow pathways between each cluster to access green space, a playground or school. Before the estate was complete Thomas Adams had included the layout in a preparatory background report to the New York Regional Plan Association. Radburn was intended to be a complete Garden City for 25,000 people but, following the Wall Street collapse in 1929, purchased land had to be resold and industry could not be secured. Despite this the constructed superblocks demonstrate Radburn city principles on a suburban scale.[139]

Simultaneous to progressing the neighbourhood unit, Stein was also instrumental in advancing regionalism. In 1923 he had chaired the first comprehensive regional survey of New York State's emergency housing prior to campaigning for the New York State Plan.[140] In the same year, together with Lewis Mumford, Stuart Chase (1888-1985), Charles Whittaker (1901-1973), Henry Wright, Benton MacKaye (1879-1975), Frederick Ackerman (1878-1950) and Perry, he co-founded the Regional Planning Association of America, a small group of multi-disciplinary practitioners and theorists who discussed regional development, geotechnics and new communities. To structure decentralisation they advocated a framework of multiple interconnected distinct individual new towns in harmony with nature.

In 1924, Stein returned to England with Wright to visit Letchworth and Hampstead Garden Suburb. The following year Howard and Unwin attended the International Town, City and Regional Planning Conference in New York, a significant event that formalised the exchange of transatlantic ideas.[141] At the conference Unwin reported that Britain's focus was changing from developing rural land to re-planning failing towns and there was sufficient demand for a new town planning bill to support this.[142] He advocated controlled expandable layouts and, supported by an illustration by George Pepler (figure 39), recommended the sub-division of a town's predicted growth into inter-connected compact self-contained

[138] Clarence Stein, 'Toward new towns for America', *The Town Planning Review,* vol.20, Oct 1949, pp.225-6.
[139] Clarence Stein, 'Toward new towns for America', *The Town Planning Review,* vol.20, Oct 1949, p.223.
140 Clarence Stein, 'State of New York: report of Commission of Housing and Regional Planning to Governor Alfred E. Smith', 22nd December 1923.
[141] 'The regional community', *The Survey,* 1st May 1925, p.129.
[142] Raymond Unwin, 'England' *Planning Problems of Town, City and Region,* papers and discussions for the 1925 International City and Regional Planning Conference, New York, p.27.

wards each with a local identity.[143] Shortly after the conference *The Survey* dedicated an edition to regional community planning concepts by publishing a series of articles authored by the RPAA's core members. Acknowledging Geddes's geo-technics and Ebenezer Howard's Garden Cities, the journal promoted the interdependence of town and country and suggested that, by controlling population distribution across land, a new pattern for inhabitation could evolve.

Mumford contributed two articles. The first, titled the 'fourth migration', campaigned for a new humane dispersed settlement pattern, which was now achievable following technological advances such as the car, telephone, radio and electricity.[144] In his second paper 'Regions – to live in' (figure 40) he presented a philosophy that encouraged designers to consider the city as one element of a whole region. He stated that population and a range of cultural, social and civic amenities should be distributed to nurture and reinvigorate regional growth, rather than destroying natural resources or providing facilities that could only be enjoyed by the prosperous in the city centre. Later, in 1927, he presented his regionalism concept as a theoretical strategy at the National Conference on City Planning.[145]

Illustrated by a diagram prepared for the New York Commission of Housing and Regional Planning (Epoch III), Henry Wright's article described a network of towns that each had a clear function. The accompanying section (figure 41), which is reminiscent of Geddes's valley section, shows three growth strands. In a linear configuration defined by infrastructure, a series of linked cities sit within an inner zone (figure 42). Beyond this on either side, a motorway limits the outer zone. Wright's article introduced community planning and cooperative forms of ownership as adopted by the Co-partnership Tenants Ltd, England, (at Hampstead) and he discussed the efficient layout of low-cost working class neighbourhoods at three scales – cluster, community and town. A central open amenity space provided a focal point for each scenario. Wright also described 'six planks of a housing platform': the orientation of all dwellings to give adequate sunlight, air and an outlook; emphasis on ownership with fair occupancy levels that allowed for future changes to a family unit's size; incorporation of the motorcar; close proximity of civic facilities; easily accessible

[143] George Pepler and Joseph Brix, 'Arterial roads', *Planning Problems of Town, City and Region,* papers and discussions for the 1925 *International City and Regional Planning Conference*, New York, p.84.
[144] Clarence Stein, 'Dinosaur cities', *The Survey,* 1st May 1925, pp.130-138.
[145] Lewis Mumford, 'Regions – to live in', *The Survey,* 1st May 1925, pp.151-152.

industrial sites and the sharing of public and private utilities (such as power supplies).[146]

MacKaye's article discussed a worldwide trade network for manufacturing, commerce and transportation routes and he argued that, to be efficient, infrastructure should follow geographic features. He claimed that a designer's personal discovery of a location's natural characteristics should inform planning and noted regional planning's potential to strategically control development and population movement. To achieve this it was necessary to identify the region and then create a harmonious plan rather than construct a region.[147] In his decentralisation manifesto *The New Exploration: A Philosophy of Regional Planning,* 1928, he introduced three connected 'elemental environments' – primeval, rural and urban, and argued that the isolation of one would have detrimental consequences for the other two. His manifesto echoed garden city principles by placing industry alongside town and country to form a self-contained community and he produced a series of dispersion diagrams that used streams of urban development and inter-towns to channel growth on a regional scale.[148] In an article published by the *Sociological Review* in 1928 MacKaye claimed decentralisation of industrial and residential development could be strategically placed to control 'flow of population', and, although not acknowledging Mumford, he proposed this could solve the 'fourth migration', congestion,[149] by moving population from the parent town to smaller self-contained, autonomous localities separated by natural landscape (figure 43). His theory, distinguished by the controlled expansion of existing settlements rather than a new development on a green-field site, also gave each location a function or identity.[150]

English polycentric regions and satellite towns

In England, in an article published in 1937, Barry Parker introduced polycentric regions with park systems linked by parkways that did not transverse with traffic streets (figures 44 and 45). The following year, in a lecture titled 'Cities of the Future', Stein had applied this idea on a regional city scale to connect polynucleated settlements, each with a specific function, joined by town-less highways and

[146] Henry Wright, 'The road to good houses', *The Survey,* 1st May 1925, pp.167-8.
[147] Benton MacKaye, 'The new exploration: charting the industrial wilderness', *The Survey,* 1st May 1925, pp.153-157.
[148] Emily Talen, 'Beyond the front porch: regionalist ideals in the new urbanist movement', *Journal of Planning History,* vol.7, February 2008, pp.20-39.
[149] Benton MacKaye, 'Regional planning, *Sociological Review,* Vol. 20, October 1928, p.295.
[150] Benton MacKaye, 'Regional planning, *Sociological Review,* Vol. 20, October 1928, p.297.

surrounded by open space (figure 46). His concept adopted MacKaye's town-less highways to efficiently bypass and connect each satellite location and he promoted the organisation of the neighbourhood key social unit to construct a city, around educational, community and shopping needs.[151] During the early 1930s, as a propaganda campaign, serviceman J47485 (A. Trystan Edwards, 1884-1973) had introduced the idea of self-contained new towns as an alternative to urban expansion and renewal by publishing a pamphlet titled *100 New Towns for Britain* (figures 47 and 50). Reilly, Adshead and Abercrombie had taught Edwards civic design from 1911 at Liverpool University, prior to him serving with the Royal Navy during the First World War. Edwards had qualified as an Associate of the RIBA with a distinction in town planning in 1919 before working with Unwin on the Government's state housing programme. Later, during the 1930s, he became acquainted with Thomas Sharp. Similar to Ebenezer Howard's garden city principles each new town would integrate industry and housing and their layouts would be compact, ordered and flexible.[152] The town's industrial layout used a river as a datum, from which zones for recreation, shopping, residences and commerce radiated from a core (figure 49). Three years earlier, Edwards had applied functional zoning in a refined geometric diagrammatic scheme. Roads radiated from a central civic core to optimise travel and define each zone (figure 48).[153]

Alongside Edward's theoretical satellite new towns and Stein's Radburn experiment, Parker provided a practical demonstration of housing clusters to form superblocks in his design for Wythenshawe, Manchester (figure 51). During the previous decade, Wythenshawe's construction beyond the City became necessary because Manchester's extensive suburban housing schemes had occupied almost all available land. At the time Manchester was by far the largest regional committee covering 448,000 acres and involving 73 authorities.[154] Abercrombie had proposed there may be scope for developing a South-East Lancashire or north Cheshire park system based on 250 people per acre to create a series of open spaces.[155]

[151] Kristin Larson, 'Cities to Come: Clarence Stein's postwar regionalism', *Journal of Planning History*, vol.4, February 2005, p. 38.
[152] N. E. Shasore, '"A stammering bundle of Welsh Idealism": Arthur Trystan Edwards and principles of civic design in interwar Britain', *Architectural History,* no.61, 2018, pp.177-178, 192.
[153] A. Trystan Edwards, 'A "model town designed for traffic"', *The Town Planning Review,* May 1930, pp.31-41.
[154] Patrick Abercrombie, 'Regional planning', *Town Planning Review,* May 1923, p.112.
[155] Patrick Abercrombie, 'Regional planning', *Town Planning Review,* May 1923, p.116.

Manchester's satellite town

Despite the City's need for more housing, the Council's acquisition of Wythenshawe was protracted.[156] Shortly after the First World War, Manchester City Council attempted to purchase 3000 acres of unspoilt agricultural and woodland at Wythenshawe, Cheshire, from the Tatton Family.[157] This, together with an additional 1500 acres adjacent to the Estate, would allow the City's area to be increased by one fifth. In 1920, in an advisory report Abercrombie stated, 'this Wythenshawe scheme is considerably larger than Letchworth, and anyone who has visited the latter place may gain some idea of the great opportunity which is afforded by development on so comprehensive a scale.'[158] Because the site is close to Manchester's city centre, Abercrombie had recommended the design of a satellite residential garden suburb supported by a neighbourhood centre instead of an independent self-contained community like Letchworth. Two years later the *Manchester Guardian* supported this concept by reporting that 'the Wythenshawe Estate would make a fine garden city, and 30,000 or 40,000 houses could be built on it'. The article also noted that green belt would separate the 'country community' from Manchester's existing southern suburbs.[159]

Following T. E. Tatton's death in 1924 his heir, Robert Tatton, offered the estate to the Corporation for £358,850, but the Housing Committee subsequently voted against the purchase.[160] It was not until 1926, by which time 48,760 new homes were required, that the development progressed. Lord Ernest Simon, former Mayor of Manchester 1921-22, purchased Wythenshawe Hall and 250 acres of parkland from the Tatton family and donated it to the people of Manchester to be used as open space. The Council's purchase of the remainder followed.[161] 100 acres of parkland opened to the public on the 2nd June 1927, but the remaining land continued to be temporarily tenanted by farms.[162]

[156] 'Wythenshawe: the next stage: Finance Committee's report for purchase', *Manchester Guardian,* 30th April 1926, p.13.
[157] 'The Wythenshawe Estate: Manchester's ambitious scheme', *Manchester Guardian,* 17th January 1921, p.5.
[158] Cited in 'Future of Wythenshawe Estate: experts' reports to City Council' *Manchester Guardian,* 2nd January, 1926, p.11.
[159] 'A garden city on the Wythenshawe Estate: Lord Mayor's suggestion', *Manchester Guardian,* 16th October 1922, p.16.
[160] 'Wythenshawe and Manchester's future needs: is the Trafford Park blunder to be repeated?', *Manchester Guardian,* 24th December 1925, p.11.
[161] 'The Wythenshawe Estate: Manchester takes possession', *Manchester Guardian,* 30th September 1926, p.11.
[162] 'Manchester's new park: how Wythenshawe cab be reached' *Manchester Guardian,* 1st June 1927, p.13.

Unwin and Parker's involvement in the Wythenshawe proposals had commenced during the mid 1920s. Unwin was an inspector for the public inquiry in October 1926 to consider the Corporation's request to borrow funds[163] and Parker, who had been appointed by Manchester Corporation's Wythenshawe Special Committee, presented his schematic layout at the House of Commons. Parker recommended that the masterplan should account for all land included in the development, rather than just the estate, and presented a scheme he had prepared in late 1926 for a self-contained town for 100,000 inhabitants on the 5500 acre site. This included 3030 acres for 28,000 homes and 550 acres for non-residential buildings as well as additional roads, a new railway line connection to Manchester and locations for schools, open spaces and industry.[164] Located south of the River Mersey, outside the City's boundary, its geographical position complemented plans already in existence that linked this area to Manchester via a series of bridges, arterial roads and express tramways that crossed a protected green belt.[165]

Wythenshawe's layout is based on three principles: the superblock as a neighbourhood unit; the Radburn cul-de-sac to separate vehicles and pedestrians; and the express parkway. Amongst the first in England to use the neighbourhood unit as a system to organise residential provision, a permanent agricultural belt of 1000 acres separated the satellite town from the city of Manchester. Within the town's boundary there was one acre of open space to 50 people. Its concept is reminiscent of Howard's 'Social Cities' diagrammed and outlined in *Tomorrow: a Peaceful Path to Real Reform,* with Manchester being the parent city.[166] Parker's scheme zoned functions and parkways connected these zones. Large sections of land, defined by traffic routes, were allocated for housing and each had a school at the centre. Green strips planted with trees lined the main roads to provide a buffer in front of housing. Shopping districts were positioned at the corners of each section on the junctions of secondary roads every three-quarters of a mile. Set back from main roads to allow for parking, these served multiple neighbourhood units.[167]

[163] 'Wythenshawe's value for housing: Ministry of Health Inquiry', *Manchester Guardian,* 22nd October 1926, p.13.
[164] 'Proposed extension of Manchester: town-planning expert's evidence' *Manchester Guardian,* 12th April 1927, p.13.
[165] 'Wythenshawe Estate. Manchester and compulsory powers: the Southern Housing Scheme', *Manchester Guardian,* 28th November 1919, p.8.
[166] p.138-150.
[167] Wesley Dougill, 'Wythenshawe: A modern satellite town illustrated', *Town Planning Review,* vol.16, 1935, p.213.

Theoretical hexagonal planning for community expansion and regional growth

Hexagonal planning, as employed by A. R. Sennett and, in Canada, Noulan Cauchon (figures 52-54) informed Wythenshawe's revolutionary road layout.[168] Parker was one of the first designers to promote tessellated hexagonal urban pattern in Britain. Historically ordered layouts that deviated from a rectangular grid include Christopher Wren's unbuilt plan for London following the Great Fire of 1666, illustrated by Unwin in *Town Planning in Practice* (1909), which included a hexagonal form; Edinburgh New Town's designed by James Craig in 1767, characterised by an octagonal square and crescents to break the grid's monotony; and Bath Crescents designed by John Wood the Younger, 1767-1775. A. R. Sennett had proposed cities with a hexagonal layout capable of phased growth in 1905 and Unwin and Parker had also adopted diagonals and triangular clusters in their garden suburb layouts, such as Hampstead.

In 1937, Barry published a housing hexagonal model to demonstrate efficient road layouts (figure 55).[169] Economy and safety had fuelled Canadian and American interest in theoretical hexagonal planning between 1904 and 1934. Layouts remained primarily theoretical and unconstructed despite becoming a popular alternative to the rectangular grid. Their advantages included a central large space within each block for civic use, they required 10% less road length and they posed fewer potential collision points. Charles Lamb (1860-1942), the renowned New York architect and art historian who advocated the application of arts and crafts to architecture and city planning, produced a hexagonal plan in 1904. Lamb and Edgar Wood, who was acquainted with Parker, both frequented international arts and crafts circles. Although relatively unknown in Manchester, by the turn of the century Wood had obtained significant standing elsewhere and had exhibited examples of his domestic schemes in 1900 at the Architectural League, New York. Lamb promoted the practical, economic and artistic advantages of hexagonal planning in an article in *The Craftsman* in 1904 accompanied by a theoretical city plan capable of growth (figure 55).[170] Austrian engineer Rudolf Muller copied the efficiency of Lamb's plan in 1908 in his version of a hexagonal city layout for the purposes of water and sewer systems (figure 56).[171]

[168] Wesley Dougill, 'Wythenshawe: A modern satellite town illustrated', *Town Planning Review,* vol.16, 1935, p.212.
[169] Barry Parker, 'Site planning as exemplified at New Earswick', *The Town Planning Review,* February 1937, p.93.
[170] Charles Lamb, 'City Plan', *The Craftsman,* vol.6, April 1904, p.5.
[171] E. Ben Joseph & D. Garden, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol. 5, 2000, pp.237-245

Arthur Comey, a landscape architect trained by Frederick Law Olmsted Jr, was as an advocate of regional planning and became a lecturer at the Department of Regional Planning at Harvard University. Comey accurately predicted that English garden cities were not sustainable as populations would grow, congestion would increase and agricultural land would eventually be consumed by suburban growth. In 1923 he prepared a regional multi-directional growth pattern based on a hexagonal network with functional zones connected by radial transportation lines. Similar to satellite town proposals this was hierarchical with smaller urban areas connected to larger town to form a metropolitan area. If adopted, the nation would have become a web of interconnected city-regions (figure 57). This precedes Walter Christaller's contribution to European and North American regional geography.[172] Comey also attended the 1925 International Town, City and Regional Planning Conference in New York and during a discussion noted Ciudad Lineal in Madrid, a linear settlement that was under construction, as an example of an arterial route to connect settlements.[173]

In 1914 Thomas Adams, secretary of the garden City Association and founding president of the Town Planning Institute in the UK, had moved to Canada to become the federal government's town planning advisor. As founding president of the Town Planning Institue of Canada (TPIC) and the Civic Improvement League, he promoted the adoption of planning legislation. It is through these activities that he became acquainted with Noulan Cauchon, a railway engineer, who later took over Adam's role at the TPIC. Cauchon preferred three-way road junctions, rather than four-way, as their wider sight lines improved safety. He introduced his diagrammatic hexagonal planning theory at The International Town, City and Regional Planning Conference in New York in 1925, also attended by Stein, Wright, Parker and Unwin. Probably influenced by Unwin's *Town Planning in Practice*, his plan included a speedway and a comparative evaluation of rectangular and hexagonal blocks. Parker, who was interested in efficient layouts, met Cauchon at the International Town, City and Regional Planning Conference in New York in 1925.[174] Writing later in 1935, Parker cited Cauchon's hexagonal layouts and, agreeing they were beneficial in terms of sight lines both for road traffic, he also noted the houses' aspect, looking down a road rather than across, and the communal spaces formed by the groups.[175]

[172] E. Ben Joseph & D. Garden, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol. 5, 2000, p.249.
[173] Arthur Comey in *Planning Problems of Town, City and Region,* papers and discussions for the 1925 International City and Regional Planning Conference, New York, p.76.
[174] E. Ben Joseph & D. Garden, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol. 5, 2000, p.252.
[175] Barry Parker, 'Site Planning', *The Town Planning Review,* February 1937, p.91.

Cauchon's plan was well received and he published further reiterations, culminating in a hexagonal city, Hexagonopolis (1927, figure 58), which was equivalent in scale to Le Corbusier's Ville Contemporaine (1922). Exhibited at the International Town, City and Regional Planning Conference in New York, 1927, Hexagonopolis' efficiency, requiring ten per cent less roads and creating a large green space in the centre of each block, was comparable to other schemes. Despite interest in North America, not one hexagonal development had been built there by 1930. [176]

Hexagonal layouts and the Radburn example impressed Parker. In 1928 he published a theoretical paper and tested his ideas at Wythenshawe (figure 59). Parker and Unwin had mastered the suburban cul-de-sac, but Parker was keen to progress the US neighbourhood unit model, as seen at Radburn, on a larger scale. Although Wythenshawe's Roundwood Estate incorporates three-way junctions, Parker only incorporated one pure hexagon, Calder Avenue, into the finished Wythenshawe scheme.

Despite Wythenshawe's construction, by 1935 30,000 houses were condemned and ultimately 80,000 would be demolished. This was equivalent to half of Manchester city centre's houses. [177] Abercrombie saw this as an opportunity to develop a comprehensive plan that reached beyond the city based on three considerations: clearing whole areas to allow urban remodelling; external growth of towns to accommodate mandatory decentralisation plus natural population increase; and country planning to provide wider forms of urban extension. Other factors also needed to be considered such as the completion of the main electric grid; the distribution of industry; water supply in rural areas; the regeneration of depressed areas; preservation of national parks and the upgrading of road infrastructure to take people directly to where they want to go. [178]

After the publication of the New York Regional Plan in 1929, Harvard University appointed Adams to undertake research on efficient city planning. With Robert Whitten, president of the American City Planning Institute, Adams prepared

[176] E. Ben Joseph & D. Garden, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol. 5, 2000, pp.245-250
[177] Patrick Abercrombie, 'Slum clearance and planning: the remodeling of towns and their external growth', *Town Planning Review*, June 1935, p.195.
[178] Patrick Abercrombie, 'Slum clearance and planning: the remodeling of towns and their external growth', *Town Planning Review*, June 1935, p.196.

economic comparative studies on residential layouts (figure 60). To disguise the fact that Parker's scheme was more efficient than the preferred Radburn layout, he adapted Parker's hexagonal model by elongating the cul-de-sacs and adding more open space to inflate costs. He also increased the density of his neighbourhood unit by adding residential blocks to ensure the cost per unit was favourable. The cul-de-sac and loop system was subsequently widely adopted in North America as an alternative to grid layouts.[179]

In 1928 Unwin retired from the Ministry of Health and for the next three years succeeded Howard as President of the International Federation for Housing and Town Planning. From 1929 he became technical adviser to the Greater London Regional Planning Committee, retiring in 1934. During this time Unwin's son, Edward (c.1894-1936), worked with his father on large-scale planning schemes and contributed to the Committee's two reports.[180] Raymond Unwin began to publish papers promoting regional planning and the organisation of human activity on a mass scale, often relating his work to both the new town concept and Beautiful England Campaign. Writing for the *Journal of the Royal Sanitary Institute* in 1929 he noted that infrastructure made city boundaries less onerous as planning could now be applied regionally, informed by the study and understanding of an area's conditions and character that govern its population distribution, industry, business, recreation and traditions. Unwin saw the potential of regional planning as being able to control the dispersal of city growth to balance open and built-up areas and maintain the efficient and economic inter-relationship between different parts of the city.[181]

Unwin defined beauty as 'a quality or value springing from the relations with which things are placed' and he stressed that harmonious relation and proportion could relate to the disposition of buildings on a hillside or regional development. Claiming regional planning was the design of large-scale whole areas where utilities should be expressed beautifully, he stated that 'regional planning …is a design of human dwellings, industries and urban development laid out on a background of lands constituting scenery, partly natural, partly artificial. This approach is the right one. It is fundamental to success. But at present the Town Planning Act is framed for the opposite approach.' Unwin's examples included the relationships between new

[179] E. Ben Joseph & D. Garden, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol. 5, 2000, pp. 261-3.
[180] Raymond Unwin, 'Edward Unwin, ARIBA, MTPI', *Journal of the Royal Institute of British Architects,* 18th January 1936
[181] Raymond Unwin, 'Regional Planning', *Journal of the Royal Sanitary Institute,* no.4, 1929, p.229.

industrial areas to the worker's dwellings; population and playing fields; urban and open space; the size of community units and provision of local amenities and services to ensure a civilised life; population and communications.[182] Unwin became President of the RIBA from 1931 to 1933, coinciding with a period of economic recession and unemployment. As visiting Professor of Town Planning at Columbia University, USA, from 1936, he influenced its decentralisation strategy through the construction of satellite towns.[183]

During the interwar years through international connections, designers progressed Ebenezer Howard's garden city ideas into concepts for extensive parklands as green belts, the super block, functional zoning, segregation of pedestrian and vehicular traffic and the neighbourhood unit. As self-contained complete new settlements, these were tested at a range of scales from cul-de-sacs to new towns to the regional city. From 1928 CIAM discussed the technological advancement of town planning and, after the Second World War, urban order and phased growth through repeated units were principles adopted as part of the British Mark III new town programme.

> By the start of the Second World War polycentric regions, garden cities and urban satellites had been demonstrated in Britain and America. Wythenshawe was a ground breaking contribution because, connected to Manchester, it demonstrated Ebenezer Howard's regional city complex. This is significant because Robert Matthew and Percy Johnson-Marshall designed Central Lancashire New Town as a regional industrial complex connected by infrastructure. Equivalent urban extensions had also progressed in Europe, albeit in a different configuration. These are described in chapter three.

[182] Raymond Unwin, Transcript for a talk on Regional Planning for a Campaign for 'Beautiful England, 2nd April 1930, John Ryland's Special Collections.
[183] Frances Collingwood, 'Sir Raymond Unwin (1863-1940): A pioneer town planner', *The Builder,* 8th November 1963, p.950.

1880

Soria publishes a theory for linear urban extensions

1923

Internationale de Amenagement du Monde established

1928

CIAM established

1929

International Association of Linear Cities established

1930

At CIAM 3 Unwin and Parker exhibit Letchworth; Stein and Wright exhibit Radburn.

1932

Professor Milutin prepares Stalingrad plan.

Ernst May prepares plan for Magnitogorsk.

Lubetkin emigrates from Russia and establishes Tecton in London.

1933

MARS Group established and they present their survey of London at CIAM 4

Athens Charter published.

1935

Frank Lloyd Wright exhibits Broadacre City at the Rockerfeller Centre, New York.

Corbusier designs Zlin.

1937

Revised linear MARS plan for London exhibited at CIAM 5.

1942

MARS plan for London completed by Korn, Samuely and Fry and printed in the *Architectural Review*.

1943

Abercrombie and Forshaw prepare the Greater London Plan

Linear cities

In 1925, at the International Town, City and Regional Planning Conference in New York, George Pepler exhibited a theoretical scheme to expand a radial urban layout. Twelve years later, the MARS Group, associated with CIAM, proposed an alternative London plan to restrict radial growth and instead used ribbons of development to extend the city. Progressed during the Second World War as an alternative to Abercrombie's London Plan, this exercise concluded as a linear decentralisation strategy for London that allowed future growth based on hierarchical social units. Percy Johnson-Marshall, one of the initial designers of Central Lancashire New Town, contributed to the MARS plan's design from 1938 and this demonstrates his interest in linear and regional planning during the inter-War years.

Ciudad Lineal, Madrid

Through the design of Ciudad Lineal, Madrid, Spanish engineer Don Arturo Soria y Mata (1844-1920) founded modern linear planning. Inspired by Henry George (1839-1897), an American political economist and journalist, Soria's prototype preceded Ebenezer Howard's garden city ideas and remained internationally influential into the 1960s (figures 61-65). An entrepreneur with a scientific background, Soria had previously worked in communications inventing telegraphic apparatus. He had initiated one of Madrid's first tramways and, concerned by its unhygienic over crowded conditions, advocated linear urban patterns that followed surface transport routes. His pilot project Ciudad Lineal highlighted the economic advantages of city master planning as a means to structure growth and this approach provided precedent for Russia's five year plan (1928), Frank Lloyd Wright's (1867-1959) Broadacre regional plan (1930), the British MARS's London plan (1933-42) and Le Corbusier's (1887-1965) work with Ascoral Associates (CIAM 1942).

From 1880 Soria published articles on linearism prior to putting his theories into practice. In 1882 in *El Progreso,* a Madrid newspaper, he described a regional plan capable of stretching between Cadiz and St. Petersburg or Peking and Brussels. Extending through undeveloped rural land to connect existing nucleated cities, he envisaged a network capable of stimulating agricultural production.[184] Urbanised strips of land, 500 metres wide and of infinite length, could join existing cities together into a metropolitan network. A single main street, 40 metres wide, provided a spine

[184] Ivan Boileau, 'La Ciudad Lineal: a critical study of the linear suburbs of Madrid', *Town Planning Review*, October 1959, p.230.

and this was intersected every 300m by 20 metre-wide secondary streets to form superblocks. The spines provided routes for surface transport; water, gas and electricity and offered locations for civic amenities.[185] Similar to Ebenezer Howard's garden city movement, Soria's town incorporated green zones, low-density housing and every family would have a private orchard and garden.

In 1887 Soria moved to Chamartin de la Rosa, at the north end of the future Ciudad Lineal, and, concerned by Madrid's congested centre, five years later he began to advertise Ciudad Lineal's construction details. Although Soria's linear community was shortened to 55 kilometres in length, he had secured a licence for a new tramway as its datum. This would arc all around Madrid, linking villages and connecting them to its centre and suggests Soria's idea was to design a town extension to unite Madrid's regional context rather than a self-contained satellite town. From 1894 Soria sold shares to fund the building work and by 1897 his journal, which was published fortnightly and circulated internationally, stated that the town's life style would offer low-cost workers' housing in close proximity to commercial and local amenities as well as countryside. Soria's vision was only partly realised. Because the town's length was significantly further reduced again to 22 kilometres (only a quarter of which was built up) and its course was straightened due to lack of capital, Soria was unable to test his vision on a regional scale and witness its impact. The completed section was an experimental garden suburb in character and, because it did boost the economy of undeveloped land, services were installed in agricultural areas.

Soria had a number of followers who promoted his linear city ideas. His scheme was presented at the 1908 First Pan American Scientific Congress in Santiago, Chile,[186] and Hilarion Gonzales del Castillo, lawyer and diplomat, supported Soria's campaign by lecturing and pamphleteering around the world. Printed layouts were exhibited at the 1913 International Congress at Ghent and the Exposition of Modern City Planning at Lyon in 1914-15. From 1913, after Castillo had compared garden and linear cities during a lecture for the Ateneo of Madrid, the inside cover of the journal *La Ciudad Lineal* began to regularly feature a summary of both approaches. In the same year members of the English garden city movement held a debate with

[185] George R. Collins, 'Cities on the Line', *The Architectural Review*, vol.128, November 1960, pp.341-346.
[186] George R. Collins, 'Linear planning throughout the World', *Journal of the Society of Architectural Historians,* vol. 18, October 1959, p.74.

Soria and Castillo on city planning. [187] This coverage inspired similar ventures including, in 1912, Carlos Carvajal's proposal for Chile's Ciudad Lineal, followed five years later by Castillo's version for Belgium's War-damaged areas (figure 66). Carvajal's and Castillo's linear cities were precursors to regional planning as they were based on masterplans that had been prepared prior to construction. Evoking Soria's Madrid concept, typically they spanned countryside to connect older urban centres and used regular geometry to set out city blocks. They provided self-contained residential units with private outdoor space and adopted equitable land distribution. Designed as extensions they connected the suburbs of two cities to boost the yield of deserted or underdeveloped land in the immediate vicinity.

Castillo advanced linear city theory by applying modern zoning principles. He suggested that two parallel longitudinal streets could be placed either side of a wide central avenue (60 metres) and if sufficiently spaced these could accommodate residential, business, administration and industrial zones in between. Along the city's 2340m length, Castillo added plazas (the principal square being called the Forum) to encourage community interaction for the 60,000 inhabitants.[188] Castillo often wrote about the benefits of planning and claimed that a network of linear garden cities might solve London's planning problems.[189]

Georges Benoit-Levy, a French garden city promoter acquainted with Soria, unified global interest in linear planning by establishing the Association Internationale de Amenagement du Monde in 1923 and the International Association of Linear Cities in 1929 (which later merged with the French Garden Cities Association). Previously he had championed linear cities at planning conferences and he envisaged a world-wide web of linear settlements. The League of Nations published minutes of the International Association of Linear Cities' annual meetings. Unwin and Parker had been connected with the League of Nations Society since 1915 and following its merger with the League of Free Nations Association in 1918 to form the League of Nations Union, Unwin became a proactive executive member. [190] Benoit-Levy maintained professional connections in the United States and was present at the 1925

[187] George R. Collins, 'Linear planning throughout the World', *Journal of the Society of Architectural Historians,* vol. 18, October 1959, pp.74; 79-80.
[188] George R. Collins, 'The Ciudad Lineal of Madrid', *Journal of the Society of Architectural Historians*, vol.18, May 1959, pp.38-53.
[189] George R. Collins, 'Cities on the Line', *The Architectural Review*, vol.128, November 1960, p.343.
[190] Barry Parker, 'Sir Raymond Unwin', *Journal of the Royal Institute of British Architects,* 15th July 1940.

Regional Planning Conference, also attended by Unwin. Two years later Benoit-Levy produced a layout for Paris based on parallel lines of industry, greenery and housing and, aware of a linear scheme for London by Castillo, presented this at the International Housing and Planning Congress, 1935, in London.[191]

In England in 1909 Captain J. W. Petavel, an engineer, had published a plan that utilised cheap and rapid commuter trains to relieve urban congestion. Comprising four populated ribs radiating from a central city it is reminiscent of MARS's later London plan. Petavel had been associated with Soria from 1913, and Soria printed his scheme in his *La Ciudad* journal.[192] After the War, Soria's scheme was exhibited at the Reconstruction Exposition in Brussels in 1919 and the International Housing and Planning Congress in Gothenberg in 1923. The following year Britain's National Housing and Town Planning Council visited Madrid's Ciudad Lineal and each attendee received a pamphlet translated into English that outlined 'vertebrate' city principles and challenged English Garden City theory.[193] The English *Garden Cities and Town Planning* journal summarised the scheme later that year and Charles Purdom included a review in *The Building of Satellite Towns,* 1925.[194] Subsequent exposure at the International Housing and Planning Congresses includes Vienna (1926), Berlin (1931) and London (1935).

In 1927 Aranda and Garcia Cascales, architects for the Ciudad Lineal, Madrid, reflected that Soria's plan was superior to English satellite garden cities at Letchworth and Welwyn as it was based on a regional plan. In their publication for Ciudad Lineal, Madrid, they compared it with plans for Letchworth and Welwyn as well as a diagram of possible satellite towns surrounding London that had been printed in *Town Theory and Practice* in 1921 (figure 67).[195] Castillo regularly debated the suitability of linear planning for London's redevelopment following Unwin's *Greater London Regional Plan* of 1928 by publishing fortnightly articles in *La Construccion Moderna* from May 1930.

Russian linear cities

[191] George R. Collins, 'Linear planning throughout the World', *Journal of the Society of Architectural Historians,* vol. 18, October 1959, pp.81-2.
[192] George R. Collins, 'Cities on the Line', *The Architectural Review*, vol.128, November 1960, p.343.
[193] Harold Gimeno, 'The Lineal City by Arturo Soria y Mata', *Books Abroad*, Vol. 2, January 1928, pp. 41-42.
[194] George R. Collins, 'Linear planning throughout the World', *Journal of the Society of Architectural Historians,* vol. 18, October 1959, pp.77 & 80.
[195] Charles Purdom, William Lethaby, George Pepler and Raymond Unwin, *Town Theory and Practice,* 1921, London, p.40.

In post-revolutionary Russia, a five-year plan (1928-33) attempted to order cities with infinite linear strips of communal housing rather than using the family as an individual social and economic unit. Russia was undergoing rapid development as a 'powerfully equipped agro-industrial system'[196] due to electrification. By the time its second five-year plan had been completed, the USSR would have 60-70 million kilowatts of energy, twice that of America. There were two approaches to growth. The Right-Wing theory proposed the extension of existing towns and the preservation of culture found in the town centres. The Left Wing believed that new settlements, based on regional ribbon development with nodal agricultural and industrial centres, could be linked together by communications and distributed throughout the country.[197]

Industry dictated zoning and, adopting a linear model, Professor N. A. Milutin prepared two notable schemes for socialist towns in Russia during the 1930s (figure 68). At Stalingrad, his design for a linear city for a tractor factory created settlements restricted to 100,000 and 200,000 people, with parallel zones for housing, industry, green space and transport. Milutin adopted a similar approach at Magnitogorsk also. During the early 1930s Ernst May, a German specialist in linear planning who had trained with Unwin and Parker, travelled to Russia to work on Magnitogorsk (figure 69). 25 German architects, known as the 'May Brigade,' accompanied him and his team included Arthur Korn (1891-1978), an architect and urban planner.[198]

By the 1930s linear planning had been popularised, culminating in Frank Lloyd Wright's and Le Corbusier's linear regional plans.[199] Frank Lloyd Wright applied a agricultural linear concept in his theoretical project for Broadacre City (figure 70), exhibited at the Rockefeller Centre in 1935. This low-density decentralisation model allowed for growth. In America after the First World War, two articles reviewed Soria's linear city. 'The Spanish Linear City' in the *Journal of the American Institute of Architects,* which introduced the Madrid scheme as a forerunner to the English garden city, followed 'Garden Cities in Spain' in *Housing Betterment,* 1920.[200] Frank Lloyd Wright's design for an ideal community at Broadacre allowed the self-sufficient family who owned a vehicle to work their land whilst living alongside arteries of green space. Transportation was by high-speed monorail, a light remote-controlled aircraft

[196] 'Recent developments of town planning in the USSR', *The Architectural Review,* May 1932, p.209.
[197] 'Recent developments of town planning in the USSR', *The Architectural Review,* May 1932, p.213.
[198] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.44.
[199] George R. Collins, 'Cities on the Line', *The Architectural Review*, vol.128, November 1960, p.344.
[200] George R. Collins, 'Linear planning throughout the World', *Journal of the Society of Architectural Historians,* vol. 18, October 1959, p.77.

called an 'aerotor' or multi-level super-highways. Wright's neighbourhood unit model, accommodating 1400 families in one acre, demonstrated the grouping and complete integration of small-scale housing, agriculture, factories, school and laboratories. It could be applied infinitely through repetition across a region and adapted to topography.[201]

During the mid 1930s, coinciding with MARS's development of the London plan, Stanley Freese, an artist, and Reverend William Drury, a writer on economics and social matters, founded the English Linear Cities Association (ELCA) to promote assembly-line principles for towns. In 1932 in his book *The Ten-Year Plan: a Dream of 1940,* Freese outlined a linear scheme for London's reconstruction. Although the *Architects' Journal* reviewed Freese's book shortly after print, it dismissed its potential contribution to modern town planning.[202] The following year Drury published *Linear Cities: the Streamline Towns of the Future*. Through expanding local and international networks and maintaining contact with Madrid's and France's linear city associations, in 1933 Freese and Drury met Berthold Lubetkin (1910-1990), an expert on Russian linear planning. During the 1920s Lubetkin had become acquainted with Le Corbusier and Ernst May whilst working in Paris and Berlin.[203] In 1931 Lubetkin had emigrated from the Soviet Union and the following year established an architectural firm called Tecton in London with Godfrey Samuel and helped to establish MARS in 1933. Samuel was a pro-active MARS member prior to the Second World War and progressed its London plan during the 1940s.

In his plan for an ideal contemporary city for 3,000,000 inhabitants (1922), Le Corbusier had synthesised numerous planning visions from the previous 50 years with current technological advances such as transport, skyscraper construction and multi-level environments (figure 71). The city adopted a symmetrical layout with a central multi-level business and transport complex, identifiable in plan by a cluster of cruciform skyscrapers, surrounded by residential areas. In section, the skyscrapers rose from a plinth for automobile traffic, which has a railway concourse below. To one side are areas for cultural and civic buildings, and then the city park; to the other,

[201] Frank Lloyd Wright, 'Broadacre: a new community plan', *The Architectural Record,* April 1935, pp.243-254.
[202] 'Literature: a Plan for London', *The Architects' Journal,* 9th November 1932, p.594.
[203] R. Furneaux Jordan, 'Lubetkin', *The Architectural Review,* 1st July 1955, pp.36-44.

warehousing and industry. Many of these elements were subsequently continued in the Voisin Plan for Paris (1925).

Congrès Internationaux d'Architecture Moderne

In 1928 in Switzerland a group of European architects, including Le Corbusier, Gabriel Guevrekian, Sigfried Giedion and members of the Swiss Werkbund founded CIAM (Congrès Internationaux d'Architecture Moderne), an anti-neoclassicism avant-garde. They had seen the chaos the industrial revolution had caused and were concerned by its potential threat to European cities, towns and countryside. They sought to stop this through the architectural Modern Movement that had developed across Europe during the 1920s by regenerating urban life using advanced construction and technology.[204] Eminent European architects and planners were early members and it swiftly became a growing international forum for ideas, created by uniting individual practitioners and people who shared its ambition.[205] During its 30-year lifespan CIAM debated, tested and showcased town planning's capability to organise functions of community life in both urban and rural contexts. Built examples influenced by CIAM's functional city include Brasilia and Chandigarh, which demonstrate rigid functional zones connected by an express highway system.

CIAM's members attended regular international congresses, intercepted by smaller selective preparatory meetings called CIRPAC (Comité International pour la Résolution des Problèmes de l'Architecture Contemporaine), the first of which was held in 1928. Of the ten CIAM meetings four were pivotal: CIAM 4, CIAM 6, CIAM 8 and CIAM 9. Subjects for the CIAM congresses varied in scale, for example the Radiant City or mass-produced low cost housing. The themes reflect pertinent concerns at that point in time and the resulting reports capture the social and economic situations and technological interests of each of the participating countries.[206]

The Declaration of the First Congress for Modern Architecture in 1928, attended by 24 architects from eight countries, focused on the Functional City's economics, buildings and town planning.[207] It tested metropolitan-scale urban pattern to achieve social transformation through four categories that became basic components of

[204] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.10.
[205] E. M. Fry, 'The MARS Group Plan of London' *Perspecta Thirteen,* 1971, p.165.
[206] John Voelcker, 'Team X', *Arena: Architectural Association Journal,* June 1965,
[207] Alison and Peter Smithson, 'Cluster City: a new shape for the community', *Architectural Review,* November 1957, p.333.

CIAM's Functional City: dwelling, work, transportation and recreation. For the event Le Corbusier prepared two versions of a Work Program, each with six debates: modern architectural expression, standardisation, hygiene, urbanism, primary school education and governments and the modern architecture debate. By 1928 functional planning had gained popularity, particularly following its promotion through the publication of the *Regional Plan of New York and Environs*. Partly informed by his knowledge of Unwin's garden city projects, Le Corbusier was critical of nineteenth century suburban corridor sprawl, but his intentions differed from Ebenezer Howard's model as he proposed high-density central developments to free up space for infrastructure and recreation. In the second draft of the work program he expanded his point on urbanism by proposing planning on an international scale. He suggested that in cities and regions, large areas of land could be released for redevelopment using generic development laws. [208] Drastic re-organisation of existing urban layouts was necessary to achieve this because his vision incorporated orthogonal ordering principles and clear community functions.

Early meetings were informal and during the 1930s CIAM was incredibly proactive, resulting in buildings that often accommodated multiple urban programmes, for example Le Corbusier's Swiss Students Hostel, Paris. In 1929 CIAM 2, held in Frankfurt, focused on minimum dwellings and the following year at CIAM 3 in Brussels, themed 'Rational Site Development', Unwin and Parker's Pixmore Hill project at Letchworth and Stein and Wright's Radburn scheme were exhibited. Sigfried Giedion subsequently published both in *Rationelle Bebauungsweisen,* although Radburn's layout was commended as being an organised version of the English garden city.[209]

As CIAM membership gradually increased, the meetings became more structured and were often summarised as reports or publications, such as the 1933 *Athens Charter* or Sert's *Can our Cities Survive?* (1942). Between 1931-39 the revolutionary theoretical concept of the functional city progressed. The Rotterdam based engineer Cormelis van Eesteren and city planner Theodor Karel van Lohuizen (1890-1956) proposed coherent planning for entire cities during an organisational meeting in Zurich in 1931. Van Eesteren considered it necessary for a designer to

[208] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, pp.14-15, 25.
[209] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, pp.54.

understand a city's functional connections and adopt an analytical scientific approach to urban planning based on physical and demographic data. Uniformly scaled colour-coded plans showing workplaces, housing, recreational areas and major transport routes were produced to disseminate findings. Van Eesteren and Van Lohuizan had introduced guidelines for analysis and graphic presentation for the CIAM 4 congress, "Functional City", during a CIRPAC meeting in Berlin in 1931. They had used this process to prepare a scheme for Amsterdam's development and future expansion, which was later completed in 1933. National groups who were due to attend CIAM 4 were asked to prepare three maps communicating equivalent city data for their country under the themes of work, recreation, dwelling and transportation which became known as the 'four-fold typology of functions' to allow international comparative evaluation.[210] These categories align with Patrick Geddes's divisions of social activity – work, relaxation, shelter and communication.

The Modern Architectural Research group

The British MARS (Modern Architectural Research group) delegates focused on London and over a ten-year period that followed, their conclusions flourished from analysis and a diagram into an extendable reconstruction scheme based on hierarchical functional rationalisation that received attention into the 1940s. Developed as propaganda, rather than a final master plan, their proposals utilised analytical research methods to produce conceptual solutions. Initially closely aligned to CIAM, MARS had started as a small avant-garde group whose aim was to advance interest in modern architecture. Its establishment in 1933 coincided with preparations for CIAM 4 and its founding members, Wells Coates, Maxwell Fry, Philip Morton Shand (architectural critic and friend of Gropius and Le Corbusier) and David Pleydell-Bouverie, invited London-based young practitioners to prepare a theoretical diagram which, following a series of planning exercises and further reiterations during the inter-war years, was published in June 1942 when the city's post-War reconstruction was pertinent. In addition to Fry, contributing architects to the scheme's development included Godfrey Samuel (Lubetkin's colleague at Tecton), William Tatton Brown, Arthur Ling, Percy Johnson-Marshall, landscape architect Christopher Tunnard and, as Chairman, Arthur Korn who had relocated. Although based on London's problems, the MARS plan,

210 E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, pp.60-66.

informed by Miliutin and Ernst May's ideas, offered a socialistic and utopian alternative model to re-organise any city.

Previously London had repeatedly been the subject of extensive reorganisation and reconstruction plans including Sir Christopher Wren's scheme following the great fire of 1666, John Nash's 1812-27 improvements and the London Society's proposed comprehensive remodelling during the First World War. The London Society's unachievable scheme proposed to encircle the city with green belt and used parkways to penetrate the core. In 1927 the Greater London Regional Planning Committee, with Unwin as advisor, reviewed popular trends for satellite towns and demanded open spaces for leisure use. The freeing up of land was not enforceable until 1938 when London's Green belt Act was passed. This enabled 25,000 acres to be acquired by the end of the Second World War, with a further 51,500 acres awaiting adoption.[211]

Members of the MARS Group attended CIAM 4, which was held in 1933 on a Mediterranean cruise ship, SS Patris II. During the congress the ship sailed from Marseilles, France, to Athens, Greece. CIAM 4's aim was to compose a physical environment to meet civilisation's emotional and material needs. Le Corbusier observed that the assembled analytical maps, exhibited on the promenade deck, illustrated the "biology of the world".[212] The British submission comprised a summary of London's historical development, predicted future growth patterns, nine transport maps and a large map of London and its region. The congress' concluding text entitled "Constatations", published after CIAM 4, suggested cities should be split into four functions and increased building heights could resolve traffic problems and create green recreation space.

Le Corbusier employed some of the CIAM 4 principles in 1935 in an extension plan for the industrial city of Zlin, Czechoslovakia (figure 72). The town's population was rapidly expanding due to the success of Tomas Bat'a's shoe manufacturing enterprise. Le Corbusier's plan adopted a linear formation, using a transportation route as a datum to connect a new airport with the old town and arrange industrial and residential zones along Zlin's hillside slopes. This layout wasn't built due to land costs and instead new production units and settlements were set up across Czechoslovakia.

[211] Dennis Sharp, 'Concept and interpretation: the aims and principles of the MARS plan for London', *Perspecta Thirteen*, 1971, p.167.
[212] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.77.

Through this process Bat'a had established an architectural office that also undertook planning exercises. They developed a neighbourhood model based on a restricted residential population; separate residential zones for unmarried workers and families; separation of industrial and residential areas using green belt and local amenities such as shopping and schools dotted throughout.

After the Second World War land became available to extend Zlin and, informed by Corbusier's 1935 plan, its layout developed into a regional scheme connecting the town to the city of Batov, the location of another Bat'a factory (figure 73). The master-plan allowed decentralisation by placing industry, manufacturing and housing in a chain-like arrangement along the valley. Three types of housing were provided: three-storey family units; eight-storey apartment blocks and communal unites, all surrounding parks. The neighbourhoods were based on a model developed in 1941 by Jiri Vozenikek, Zlin's chief planner, for a competition for collective industrial workers' housing at Most. In 1943 the Architectural Review noted that Zlin was a spectacular example of an industrial town planned in finite detail. It cited its elongated centre punctuated by 70 factories and surrounded by planned housing and hillside woodland. [213] Later in 1947 the *Architectural Record* reviewed Zlin and enthusiastically described conditions as 'here is electric power, here are assembly lines turning out cheap shoes, here are prefabricated houses and multi-storey buildings raised by efficient, standardised construction methods. Most exciting of all, here is modern graciousness and decency. Here is order. The green of surrounding hills reaches into the heart of the city. Meaningfully proportioned outdoor spaces heighten the feeling of integration between places of work, decent living quarters, and other components of community life. Here is the achievement of advanced methods of planning and construction applied to industrial plant and housing alike.'[214]

In 1936, after forming the MARS Town Planning Committee to experimentally explore an alternative articulation of city open space and form, Hubert de Cronin Hastings and William and Aileen Tatton Brown continued work on London's reconstruction plan. Hastings, editor of the *Architectural Review* and *Architects Journal* from 1927 who occasionally published using the pseudonym Ivor de Wolfe, was interested in social, commercial and intellectual interactions that occurred within

[213] 'The planner's workshop', *The Architectural Review,* April 1943, p.105.
[214] Jan Pokorny and Elizabeth Hird, 'They planned it that way', *Architectural Record,* August 1947, pp.68-71.

urban conditions. Opposed to radial city forms and instead preferring linear cities based on high-speed transport spines with residential strips either side, he commissioned the Tatton Browns to pursue these ideas. William Tatton Brown attended the CIRPAC meeting in La Sarraz prior to CIAM 5 with other MARS delegates including Fry, Samuel and Shand.[215] The resulting polemic diagrams for London, exhibited at CIAM 5 in Paris (1937) and known as the 1937 MARS plan, reorganised London's existing urban grain into strips capable of dynamic linear growth (figures 74 and 75). Based on Perry's idea of using the neighbourhood unit to form a city, each strip repeated identical curvilinear modules for 6,000 people along a central road. Each node, separated by green space, offered a range of housing in close proximity to employment, playing fields, social and shopping amenities and two schools. In addition to the application of the neighbourhood unit, the plan's significance is that the Tatton Browns also reorganised central London by allowing for the migration of its existing population from slums areas into new zones. Linear strips could then be extended into the core with green space in between.[216] This is reminiscent of Pepler's diagram of Unwin's theory prepared for the 1925 International City and Regional Planning Conference in New York (figure 67).

CIAM 5 aimed to highlight the potential of town planning in producing a cohesive society and stressed the connection between environment, topography and leisure and, echoing Le Corbusier's simultaneous rationalisation of rural life, it used Szymon Syrkus's "Functional Warsaw" regional plan to demonstrate distinction between rural and urban areas.[217] Giedion, who considered England and the United States to be appropriate locations to develop CIAM ideas, had suggested to Coates that Sert should discuss the resulting Functional City publication with MARS and in November 1937 Coates, Fry, Yorke, Samuel and Korn met Sert and Giedion in London along with J. M. Richards, editor of the *Architectural Review*.[218]

The MARS Town Planning Committee, who had briefly suspended work on the plan, reconvened in December 1937. It had been Korn's idea to revisit the scheme and he, together with Arthur Ling, William Tatton Brown, Felix Samuely and Christopher Tunnard, met at Maxwell Fry's office. Korn, Ling and Samuely led the design's

[215] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.92.
[216] John R. Gold, 'The MARS plans for London. 1933-1942: plurality and experimentation in the city plans of the early British modern movement', *The Town Planning Review,* vol.66, July 1995, pp.243-253.
[217] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, pp.110-112.
[218] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.117.

development and other subsequent contributors included Godfrey Samuel, Jane Drew, Percy Johnson-Marshall and Erno Goldfinger. Experienced in town planning, Korn was acquainted with members of European modernist groups including Mies Van de Rohe, Walter Gropius, Max and Bruno Taut and Erich Mendelsohn. Familiar with Unwin's *Town Planning in Practice* (1909) and his reports for the *Greater London Regional Planning Committee* (1929 and 1934), Korn, a German Jewish architect and member of Ernst May's 'May Brigade', had visited England in 1934 prior to moving to London as a refugee in 1937 from Yugoslavia. A rationalist, previously he had collaborated with Lubetkin and in 1929, whilst in the USSR, he had met Miliutin and this influence can be seen in his scheme for the Greater Berlin Plan (1934). He had collaboratively contributed to exhibition material for MARS prior to moving to Britain. Felix Samuely, Korn's colleague and a structural engineer, who had arrived in Britain in 1933, had also worked for other modern movement architects including Coates. As chairman of the subcommittee on transport and economics, he was responsible for the rail layout.

At the time Ling was completing a town-planning diploma thesis supervised by Abercrombie, entitled 'Social Units', and working in Maxwell Fry's office. Illustrated by diagrams (figure 76), Ling's thesis proposed a coherent hierarchical arrangement of settlements based on five different sized units: residential (1000 people), neighbourhood (6000 people), town or borough (50,000 people) regional city (500,000) and capital city (5,000,000 people). Although developed later by MARS as part of their theoretical London plan, it was Ling's intention that the diagram could also be adapted to topographical conditions.[219]

By 1938 the MARS group had approximately 60 members including architects, engineers and writers.[220] In January that year they curated a propaganda exhibition called 'New Architecture', at the New Burlington Galleries, London (figure 77). Aimed at the general public, it presented 'elements of modern architecture' and criticised the industrial revolution's rapid uncoordinated growth. An accompanying catalogue contextualised their campaign by stating 'the mischief is done. The monstrous town enmeshes our life and wealth. We regret, we condemn. But what can we do?'[221] Successful examples of recent work were displayed to explain the spirit of

[219] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.122.
[220] MARS Group, *New Architecture: An Exhibition of the Elements of Modern Architecture,* 11-29th January 1938, pp.5-6.
[221] MARS Group, *New Architecture: An Exhibition of the Elements of Modern Architecture,* 11-29th January 1938, p4.

the movement and demonstrate solutions to construction problems. The exhibition included the 1937 London plan and it explained that the scheme demonstrated how decentralisation could benefit and control future planning of the metropolis by 'draining London of its parasitic elements by means of arterial roads, the historical centre could be given freedom to breathe'.[222]

In February 1938 Korn outlined four criteria for the MARS plan in a letter to the MARS Group's Executive Committee. These were 'housing and work combined with leisure connected by transport and carried out according to the economic and political powers of the day'.[223] The resulting 1939 MARS plan (figure 78) continued their exploration of linear cities, CIAM's four-fold typology of functions and adopted apartment blocks and mass transport. Ten linear districts were positioned perpendicular to a wide central spine that ran along the River Thames. The core contained the historic centre, main administration and cultural functions, with an industrial area located in the east. Education facilities formed the community cores – nurseries for residential units; primary school for neighbourhoods; secondary schools along with a library and town hall for the boroughs. [224] A highly concentrated east-west arterial transport route connecting each zone served the city's pattern. Secondary train lines and roads dissected this main route to form a grid. Each home needed to be within close proximity to small play areas and amenities and no more than half a mile from continuous open leisure space.[225]

From September 1939, on the advent of War, progress was temporarily hindered for 18 months when Korn was interned to the Isle of Man due to his German citizenship. In December 1941, shortly before Korn's return, Felix Samuely summarised the plan's key principles as being separation of home and employment. The scheme's scale was revised again, increasing the size of the city units to accommodate 600,000 people, but green space remained within 10 minutes' walk. A train service, part of a comprehensive multi-level transport network, would be the main

[222] MARS Group, *New Architecture: An Exhibition of the Elements of Modern Architecture,* 11-29th January 1938, p.12.
[223] Dennis Sharp, 'Concept and interpretation: the aims and principles of the MARS plan for London', *Perspecta Thirteen*, 1971, p.168.
[224] Dennis Sharp, 'Concept and interpretation: the aims and principles of the MARS plan for London', *Perspecta Thirteen*, 1971, p.171.
[225] Dennis Sharp, 'Concept and interpretation: the aims and principles of the MARS plan for London', *Perspecta Thirteen*, 1971, pp.172-173.

mode of transport for the linear districts routes and intersections would occur in open space.[226]

Korn returned in 1942 and, together with Samuely and Fry, he finalised the plan (figure 79). Although not fully supported by MARS because it was considered to be too suburban, the *Architectural Review* published the plan in 1942. Based on Ling's hierarchical framework, the number of districts (600,000 people) had risen to 16 to increase the overall city's population to 10,000,000 and the scheme allowed for further future extension using small satellite towns of 25,000 people. 14 acres of green space per 1000 residents, divided into wedges, separated each district and permeated the spine. Each district would have 12 boroughs and each borough would have four to eight neighbourhoods. Excluding civic administration, employment that was not centralised or location specific would be evenly distributed across the city. In each borough schools and public buildings were located in green space and the railway station was at the heart of the local centre next to the town hall, shopping centre and museum. The neighbourhood unit supported inter-generational living by providing housing in unite-style apartment blocks that clustered around a local nursery, primary and secondary schools as well as retirement homes, all within half-a-mile of green space. A grid-based diagram was selected for the transport network that segregated public, private domestic and goods transport along primary, secondary arteries and intermediate routes.[227]

The MARS plan's pattern deviated from the garden city model by adopting sequential hierarchical social units, similar to Clarence Perry's theory, to construct and conceptualise a logical framework for decentralisation. Writing in 1966 Percy Johnson Marshall reflected that 'it was a bold, schematic plan, quite unrelated to the existing conditions of London, but nevertheless a fine study of great value as a demonstration of planning ideas.'[228] Fry later supported this statement by recalling that the plan was a first attempt to 'analyse, diagnose and prescribe' the reconfiguration of London using a CIAM method. Later Fry published the process and plans in his publication *Fine Building* and he revealed these had been completed whilst stationed with the Royal Engineers in Wakefield (figures 80 and 81).[229]

[226] John R. Gold, 'The MARS plans for London. 1933-1942: plurality and experimentation in the city plans of the early British modern movement', *The Town Planning Review,* vol.66, July 1995, pp.254-258.
[227] 'Destruction and reconstruction: bomb damage to notable buildings: a master plan for London', *The Architectural Review,* vol.91, June 1942, pp.143-150.
[228] Percy Johnson-Marshall, *Rebuilding Cities,* 1966, Edinburgh University Press, p.177.
[229] E. M. Fry, 'The MARS Group Plan of London' *Perspecta Thirteen,* 1971, p.166.

Korn's theoretical MARS plan, considered too radical and reminiscent of Soviet dis-urbanist schemes, failed to gain full support from RIBA and MARS members[230] and it was overshadowed in 1944 by the publication of the *County of London Plan* prepared by Abercrombie and J. H. Forshaw based on Howard's principles. Adopted by 1946, this proposed a green belt around London and the planning of new satellite towns.[231] Maxwell Fry published the final MARS plan drawings in *Fine Building* in 1944.[232]

Linear neighbourhoods

Later, during the 1950s, J. Lewis Womersley combined a Radburn layout with a linear neighbourhood at Eastfields (1954), Northampton (figure 83). Womersley was Northampton's Borough Architect and Planning Officer prior to moving to Sheffield to become the City Architect in 1953. Influenced by Gordon Stephenson's example at Dallington, also in Northampton (figure 82), spine roads, cul-de-sacs and enclosed green spaces characterise Eastfield's layout, which also adopts a segregated network of pedestrianized footpaths.[233] On a larger scale and inspired by Stein, Wright and Unwin, Stephenson designed the Queens Park Estate at Wrexham (1954, figure 84). Composed of neighbourhood superblocks defined by traffic ways, its layout followed site contours and emphasised natural features. Within each neighbourhood, housing is arranged as cul-de-sac clusters. Accessed by eight-feet-wide footpaths, these provide play space for children and open onto interior parks with central civic amenities.[234]

Prior to the Second World War linear planned development gained popularity and was tested at a range of scales from suburban community clusters to the regional city. Employed in Britain by the MARS Group for an alternative London plan, this controversial example provided precedent for later arrangements optimised for the automobile and zoning. During the 1960s the Ekistics movement's interest in linear growth and change informed theoretical British Mark 2 and Mark 3 new town diagrams, specifically Central Lancashire New Town's.

[230] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.123.
[231] Forshaw and Abercrombie, *County of London Plan,* 1943 and Abercrombie, *Greater London Plan,* 1944.
[232] Maxwell Fry, *Fine Building,* pp.83-114.
[233] J. Lewis Womersley, 'Housing experiments on Radburn Principles', *The Town Planning Review,* October 1954, pp.182-187.
[234] Gordon Stephenson, 'The Wrexham experiment', *The Town Planning Review,* January 1954, pp. 271-298.

This chapter identified Percy Johnson-Marshall's contribution to the MARS plan for London. PJM's interest in urban renewal, community design and linear planning will be explored in Chapter 4, which will include his biography to identify his links with CIAM's international network and MARS's members. The debate surrounding the suitability of concentric satellite, linear or hybrid frameworks for urban regeneration or extension during the 1940s and the post War reappraisal of CIAM's agenda and purpose, will allow evaluation of Percy Johnson-Marshall's contribution to Central Lancashire New Town's concept both in terms of regional planning and the arrangement of township centres.

Part 2

Part two focuses on the regeneration of mid-Lancashire to counter balance the urban density of Merseyside and Manchester. It examines a range of solutions developed after the Second World War including Preston's renewal to Mark I and II new towns. Key practitioners who informed Central Lancashire New Town's planning are introduced and the in impact of CIAM's evolving agenda is explored.

1935

Percy Johnson-Marshall graduates from Liverpool University. Influenced by Abercrombie, Geddes and Stein.

1938

Gibson and Percy Johnson-Marshall prepare a redevelopment scheme for Coventry based on a pedestrianised civic core.

Percy Johnson-Marshall begins work on the MARS Plan for London.

Lewis Mumford publishes an aerial view of New Hall Lane, Preston in *Culture of Cities.*

1942

Percy Johnson Marshall is mobilised into the Royal Engineers and travels to India.

1943

Abercombie and Forshaw publish the *Greater London Plan.*

Ralph Tubbs's exhibition 'Living in Cities' arrives in Preston and is shown alongside George Grenfell Baines's scheme for the redevelopment of Preston and Thomas Sharp's model town. Chitty reviews Grenfell Baines's scheme in the *AJ*.

1944

Percy Johnson-Marshall attends Trywhitt and Rowse's town and country planning course.

1945

Corbusier demonstrates the pedestrian civic core and compact neighbourhoods through the design of St. Die.

1946

Percy Johnson-Marshall joins London County Council's architecture department.

1947

New towns proposed at Leyland, Coppull and Adlington and Parbold, Lancashire.

CIAM 6 takes place at Bridgwater, England.

1949

Ling and Matthew recruit Percy Johnson-Marshall into London County Council's planning division responsible for the rebuilding of bombed areas.

The heart of the city

> In 1915 Geddes had promoted the use of aerial photography to understand a place's character and had recommended Lancashire's survey. Twenty years' later, his disciple, Lewis Mumford publishes a birds-eye view of mill-workers' terraced housing in Preston, Lancashire. Later this image becomes a iconic reference point at the start of the town's urban renewal schemes and also to support campaigns against unplanned urban growth. Simultaneous to this, after the Second World War, and following Coventry's example, pedestrainised civic cores are popularised to separate vehicles from people and to advance humanist and community schemes progressed in America during the inter-War years.

After Ebenezer Howard's death in 1928, C. B. Purdom and F. J. Osborn slowly progressed the garden city campaign. Although the American RPAA had dissolved during the 1930s, its ideas were welcomed in Europe, particularly England, which was already accustomed to Ebenezer Howard's garden city model. The Ministry of Health implemented large-scale planning decisions in England, rather than local authorities. In addition a new government department was established to resolve the declining economy of some regions, such as Lancashire, that had high unemployment. Local authorities focused on gaining public support for planning and pressuring government for the necessary legislation, but small-scale planning of new suburban areas remained generally un-coordinated and unrelated to civic amenities and places of employment. By the end of the 1930s, the prospect of War and aerial attack heightened concern about concentrated urban areas. Planned decentralisation, that moved people to garden cities, became a plausible and attractive solution[235] and the strategy was formally introduced in 1939 by the Commission on the Distribution of the Industrial Population's *Barlow Report.* This document also recommended the formation of a Ministry of Planning and the introduction of a compensation and betterment scheme to acquire large areas of land.

Bombing during the Second World War and the clearance of vast expanses of devastated city-centre land overturned public resistance to planned development. Because the Ministry of Health's administrative support was insufficient to process the potential forthcoming planning problems, the Ministry of Works and Planning was formed, under the direction of Lord Reith who inaugurated the Commission on the Distribution of the Industrial Population, chaired by Sir Montague Barlow. In 1941

[235] Lloyd Rodwin, *The British New Town Policy,* Harvard University Press: Cambridge, 1956, p.17.

the County of London Plan was published and an Expert Committee on Compensation and Betterment, chaired by Lord Uthwatt, was formed. The following year the 'Uthwatt' Report became available, which recommended that planning authorities' powers should increase to include controlled development, compulsary purchase orders and recompense. From 1943 land use and development in England and Wales was overseen by the Ministry of Town and Country Planning to ensure consistent application of the national policy. Its headquarters, located in London, and regional offices became centres for urban planning research. The 1943 version of the London plan prioritised the most damaged areas for reconstruction, for example South Bank (figure 86) and Stepney, and the latter adopted a model based on local community amenities and the neighbourhood unit. These examples were designed as part of a master plan that positioned three-dimensional forms in large areas to steer development.[236] The 1944 Town and Country Planning Act enabled comprehensive development by allowing planning authorities to acquire blighted land for designation and reconstruction. [237]

The pedestrianised civic centre

Coventry was one of the first cities to require major reconstruction after the Second World War (figures 87 and 88). It had expanded rapidly during the inter-War years due to its motorcar, engine and aircraft industries, but its urban development had been undertaken on a piecemeal basis until the establishment of the City Council's Architectural Department in 1938, created under a Labour council to comprehensively re-plan its central area to improve amenity provision. Donald Gibson (1908-91), who had been Deputy City Architect at the Isle of Ely, was the department's first City Architect.[238] He was a humanist and he required all staff at the department to adopt a social approach to their work. [239] Born in Scotland, Gibson had studied at the University of Manchester and, during his third year, he toured Italy funded by a scholarship. After graduating, he travelled to America prior to lecturing at the University of Liverpool.

[236] Percy Johnson-Marshall, *Rebuilding Cities,* 1966, Edinburgh University Press, pp.177-8.
[237] Percy Johnson-Marshall, *Rebuilding Cities,* 1966, University Press, pp.161-2.
[238] 'News from Coventry', The architects' Journal, 10th November 1938, p.750.
[239] Mark Crinson, interview with Percy Johnson-Marshall, part 1, 25th January 1990, British Library, National Life Story Collection: Architects' Lives.

At the Architectural Department in Coventry, Percy Johnson-Marshall (1915-93), who had been a student of Gibson, became his assistant and together they spent evenings unofficially developing a more ambitious scheme than originally requested. This comprehensively considered and arranged urban elements such as neighbourhoods, precincts, sectors as well as a city region. Their radical scheme incorporated the first traffic-free shopping centre in Britain and functional zoning. Percy Johnson-Marshall experimentally advanced prefabricated housing types and designed neighbourhoods and communities to receive the influx of people moving to Coventry seeking employment (figure 89). Influenced by Unwin, Parker and Abercrombie, he believed that environment could improve health and recreation. Similar to Parker's Wythenshawe model, Coventry's communities were separated by linear parks and linked by parkways. Designed for 30,000-40,000 people, each had a local cultural amenity. Homes were grouped as cul-de-sacs to form a neighbourhood, with green pedestrian walkways leading to open space.[240]

Stirrat Johnson-Marshall, Percy's brother, was a year ahead studying architecture at Liverpool University and had introduced Percy to the discipline. Stirrat's interest had been fuelled by their childhood and experience of developing cities. Both brothers were born in India where their father worked as a civil servant. Although the family moved to Plymouth for three years, they returned to India after the First World War. Their father was then transferred to Baghdad for a year, but, because they could not speak Arabic, the brothers were unable to attend school. Instead, their father and his colleagues, including British archaeologist Charles Woolley (1880-1960) frequently took them to historic sites, such as Babylon. In 1927 the family returned to Britain and in 1931 Stirrat commenced his architectural training at Liverpool University.[241]

Educated by Reilly and Abercrombie, Percy Johnson-Marshall graduated from Liverpool University in 1935. During his studies he had toured Belgium, Holland, Germany, Denmark and Sweden and he reflected his education had introduced him to the modern movement leaders and their ideas. Reilly had invited Walter Gropius and Mies van de Rohe to the School and, taking part in critical reviews, they had introduced

[240] Mark Crinson, interview with Percy Johnson-Marshall, part 1, 25th January 1990, British Library, National Life Story Collection: Architects' Lives.
[241] Mark Crinson, interview with Percy Johnson-Marshall, part 1, 25th January 1990, British Library, National Life Story Collection: Architects' Lives.

students to German architectural movements and the Bauhaus's educational model based on function relating to people. Lectures by sociologist Ruth Glass (1912-1990) reinforced this approach and tutors Gordon Stephenson (1908-1997), Reilly and Abercrombie encouraged students to look beyond techology and adopt a social approach to their design work. Percy became aware of Geddes's and Clarence Stein's regional planning through Abercrombie's teaching.

To involve the public in the planning process, Gibson and Percy Johnson-Marshall exhibited models of Coventry's reconfigured central area and invited William Holford, Thomas Sharp and Clough Williams Ellis to introduce town planning concepts to the public through a series of talks. This successfully secured interest in the scheme prior to the city's devastation during the War. Coventry was one of the first British cities to experience bombing and during the November 1940 blitz it lost 97 per cent of its central buildings plus 5,566 homes. People were evacuated from its centre and this created an opportunity to reconstruct the city. At the time Gibson was engaged in War service as a Gunner, but after the blitz returned to Coventry to assist with its reconstruction programme.[242]

By December Gibson had outlined his ideas to the Royal Society of Arts in London and Coventry's City Redevelopment Committee was established. Gibson and Ernest Ford, the City Engineer, became joint planning officers and they each submitted separate proposals. In 1941, two months before a further air raid devastated the city, the Council had selected Gibson's plan and, following Ford's retirement, he became the sole planning officer. Percy Johnson-Marshall and Gibson enthusiastically developed a bold plan shortly before Percy was mobilised into the Royal Engineers, initially working in India, in 1942, then Burma, where he continued to produce sketch schemes for Coventry's public buildings.[243] Because Lord Reith intended to use the scheme to inform reconstruction legislation for the 1944 Town and Country Planning Act,[244] he then began to encourage its citizens to support Gibson's Coventry scheme, stating it could be 'a test case, not for me and my authority, but for the Government and for England.'[245] Reith, who considered Coventry to be a landmark project in the

[242] 'Coventry architectural and planning department: city architect and planning officer, D. E. E. Gibson', *The Architects' Journal,* 8th October 1953, p.435.
[243] Robert Gardner-Medwin, 'Obituary: Professor Percy Johnson-Marshall', *Independent,* 16th July 1993. https://www.independent.co.uk/news/people/obituary-professor-percy-johnson-marshall-1485196.html
[244] D. Rigby Childs and D.A.C.A. Boyne, 'Coventry', *The Architects' Journal,* 8th October 1953, p.434.
[245] Lord Reith in Chris Arnot, 'Architecture: Cluttering up Gibson's Coventry: Councillors say the Fifties shopping centre is tatty, but others feel a gem is being ruined by redevelopment', *The Independent, 2nd September 1992, p.*

reconstruction of British cities, advocated decentralisation because it enabled cities to be cleared and replanned using functional zoning.[246] Gibson developed his plans until 274 acres of land were purchased through compulsory purchase orders in 1947 and construction works commenced the following year.

Inspired by the Rows in Chester and department stores, Gibson and Percy Johnson-Marshall's plan incorporated a pedestrianised shopping and leisure precinct (Broadgate House), which included restaurants, cafes and a hotel.[247] One of the first in Europe, pedestrian access was via raised or subterranean walkways to ensure complete segregation from traffic. The precinct fronted a series of wide pedestrianised squares, which, aligned to the Cathedral's spire, provided cultural space for the local community to congregate and enjoy.

During the War, on the way to India, Percy Johnson-Marshall and other architects and town planners, many of whom were connected with MARS or CIAM, formed a discussion club that focused on the problems and prospects of cities as well as the state of British architectural education. Because the group included graduates from all British architecture schools it was possible to survey the practices of each institution to determine improvements needed in architectural education. The army education core encouraged this activity because it boosted morale and the group continued to meet in India whilst Percy served with the camouflage unit. Also attracting humanists, philanthropists and Indian colleagues, they debated Calcutta's redevelopment. Whilst in service in different locations, members were encouraged to establish new groups. At the end of the War Percy cofounded an education establishment that offered short courses to soldiers and invited A. A. Rowse to lecture. Percy was then invited to prepare an architectural syllabus for Calcutta University's new Faculty for Planning, Design and Technics. Based on Abercrombie's and Rowse's example, a combination of teaching and applied research underpinned his proposals.[248] Later Percy and William Tatton Brown used the Calcutta model to inform a report to advise the RIBA's Board of Education.

[246] 'The rebuilding of Coventry: opportunity for a great zoning scheme', The *Manchester Guardian*, 22nd November 1922, 1940, p.4
[247] Percy Johnson-Marshall, *Rebuilding Cities,* 1966, Edinburgh University Press, p.72.
[248] Mark Crinson, interview with Percy Johnson-Marshall, part 2, 25th January 1990, British Library, National Life Story Collection: Architects' Lives.

On returning to Britain, Percy Johnson-Marshall attended a short town and country planning course, run by Rowse and Jacqueline Tyrwhitt, which offered architects a foundation in the Town and Country Planning Act. This provided Percy with a sound international town planning background. Percy, who had just returned from Burma, considered Rowse to be a philosopher and admired his approach. Rowse was well travelled with an acute awareness of developing countries and had also served in India where he also met political leaders such as Jawaharlal Nehru and Mahatma Gaudi. He taught students how to approach the task of urban renewal and encouraged them to become technical planning experts by first observing and appreciating how people across the globe lived and then relating buildings to their immediate and metropolitan contexts.

Preston, Lancashire: a focus for urban renewal

In 1938 Mumford had published *The Culture of Cities* as a guide to renewal and 28 years later, in *Rebuilding Cities,* Percy Johnson-Marshall acknowledged its impact on his practice. Immediately after the War, he had found it more relevant than Le Corbusier's *City of Tomorrow* because at the time high buildings and multi-level communications were not considered appropriate or economically viable.[249] In *The Culture of Cities* Mumford had included an aerial view of India Mill, New Hall Lane, Preston (figure 90). The image was titled "Coketown", the town name previously used by Charles Dickens in *Hardtimes,* and Mumford described Preston as,

'Coketown, alias Smokeover … Here, Preston: a cotton town in England. The factory units in the centre, and the gas tanks on the right pre-empt the space: by the inefficient utilization of coal in the steam engine and domestic earth, the smoke of the chimney covers the landscape, blotting out the sun, rasping the lungs. Rows of workers' houses crowd close under the shadows of the factories and scatter into the distance: no zoning, no open spaces except the railroad yards in the distance or the mean streets, with their meanly standardized and wretchedly planned dwellings: no parks, no gardens, no playgrounds. The poor mechanical order of foreground and violated, even on its own terms, by the disorder of the background.'[250]

[249] Percy Johnson-Marshall, *Rebuilding Cities,* 1966, Edinburgh University Press, p.294.
[250] Lewis Mumford, *The Culture of Cities,* 1938, London: Secker and Warburg, p.196.

In 1940, shortly after Gibson's and Percy Johnson-Marshall's initial designs for Coventry, Ralph Tubbs (1912-1996), prepared the exhibition 'Living in Cities', which toured the country and arrived at Preston's Art Gallery in 1943. Tubbs was a member of the RIBA's Reconstruction Committee, had been secretary to MARS from 1939 and was a member of the Architectural Association's Council. He did not serve during the War due to a medical condition; instead he volunteered for the 'night watch' at St. Paul's Cathedral and progressed city reconstruction ideas, publishing two books *Living in Cities* (1942), a sequel to the exhibition, and *The Englishman Builds* (1945). On graduating from the Architectural Association in 1936, Tubbs worked for Erno Goldfinger where he became acquainted with Henry Thomas Cadbury-Brown (1913-2009), a relation of the Cadburys at Bournville, who had also studied at the Architectural Association (1930-35). An active member of MARS, Cadbury-Brown had also collaborated on the 1938 MARS Burlington exhibition with Percy Johnson-Marshall. Later Tubbs became Vice-President of the Architectural Association 1945-47 and was a member of the RIBA Council 1944-51.[251]

'Living in Cities' outlined suggested key principles for future town planning. Supplemented by an illustrated book it recommended distinction between town and country; the adoption of ribbon park systems for central London (figure 91); the planning of civic cores around squares; and residential neighbourhoods with high density and terraced housing arranged around landscaped quadrangles. Appropriate means of transport included air, railway, high-speed by-passes and raised roads within towns.[252] Tubbs later reiterated civic core cluster arrangements by including an illustration in *The Englishman Builds* (figure 92).[253]

Attracting two thousand visitors per week as part of its northern tour, the 'Living in Cities' Preston exhibtion was accompanied by a scheme by George Grenfell Baines and Partners for the town's redevelopment and also Thomas Sharp's model towns. In 1943 Thomas Sharp (1901-1978) was Senior Research Officer at the Ministry of Town and Country Planning. Born in Durham, he was a town and planning consultant and had authored *Town Planning* (1940). Between 1927 and 1931 he had prepared the regional planning scheme and report for South West Lancashire and, focusing on the Liverpool, this was the largest produced for an industrialised area in the country at that

[251] 'Ralph Tubbs; obituary', *The Times,* 25th November 1996, p.27.
[252] Ralph Tubbs, Living in Cities, Harmondsworth: Penguin Books, 1942.
[253] Ralph Tubbs, *The Englishman Builds,* 1945*,* Harmondsworth: Penguin Books, p.57.

time. Sponsored by the Bournville Village Trust (founded by George Cadbury), Sharp's model town was a satellite for 8,000-10,000 people, connected to a larger city by a regional artery that straddled green belt. Its layout incorporated arcaded shopping, three-storey housing blocks, a 14-storey apartment block and it prohibited industrial traffic crossing the town centre (figure 93).[254]

Born in Preston, George Grenfell Baines (1908-2003) had trained at Lancashire County Architects' department and studied architecture at the Harris Institute, Preston, prior to moving to Bradshaw Gass and Hope, Bolton, in 1930. He graduated from The University of Manchester in 1936, winning the Heywood medal for outstanding academic work, and established his own practice using prize money he had won from an international design competition held that year. Grenfell Baines had been a student of Reginald Cordingley (1896-1962), who, as Chair in Architecture at the University of Manchester from 1933, progressed its town planning research. In 1938 Grenfell Baines formed a partnership with George Broadbent and Harry Walters to create the Grenfell Baines Group.

During the War the group received several commissions from the English Electric Company to design aircraft factories and runways and this work caught the attention of Anthony Chitty (1907-76) and other London Modernists.[255] Chitty, a co-founder of Tecton with Godfrey Samuel and Berthold Lubetkin, reviewed Grenfell Baines's Preston scheme in an article published by the *Architects' Journal*. Its layout demonstrated many of exhibited Tubbs's principles, notably parklands; parkways; high density buildings and open space; and zoning. Two master plans accompanied the article: an area of housing along New Hall Lane and the town centre redevelopment. The proposed New Hall Lane housing complex replanned the area Mumford had identified in *The Culture of Cities* to provide accommodation for the same number of people as the existing terraces but, because the housing was arranged in blocks, between two and 26 stories high, it occupied just five acres and freed 26 acres for green space (figures 94 and 95). Grenfell Baines had achieved this by applying Cordingley's formula for a typical town, which allowed for schools, creches, restaurants and a community centre at the heart of the neighbourhood plan. A full-size

[254] Thomas Sharp, 'Model Town', *The Architects' Journal,* 4th February 1943, pp.93-5.
[255] Christopher Ratcliff, 'Sir George Grenfell-Baines', *The Guardian,* 27th May 2003, p.19.

furnished show flat was also exhibited as an attempt to 'raise standards of domestic taste through example'.[256]

Grenfell Baines' municipal centre plan for Preston eliminated congestion by encircling the area with a ring road linked to the main existing thoroughfares (figures 96-98). Tall buildings, occupying 35 per cent of the ground area, wide green spaces and covered pedestrian walkways characterised the scheme, which also employed a multi-level transport interchange and car parking system and, whilst preserving some of the existing civic buildings, cleared land for a new public hall, covered market, offices and restaurants.[257]

Grenfell-Baines' thesis for a diploma in Town Planning included the aerial photo of New Hall Lane used by Mumford in *The Culture of Cities*. Titled 'Plan for Preston', Grenfell-Baines' thesis aimed to present a viable option for the reconstruction of an urban industrial area. Key proposals for the town include wide belts of open space surrounding industrial areas and the re-routing of the north-south by-pass as an elevated road to link the aerodrome at Inskip, the main road to Blackpool, Higher Walton and the Darwen Valley. For the town centre he suggested the complete pedestrianisation of the town centre and the addition of an inner ring-road connected to underground service roads plus a ceremonial route between the Old Guild Hall and a new public hall to replace the Miller Arcade; the construction of a new multi-storey market hall; the re-instatement of gardens at Cheapside and the introduction of linked green spaces that intersect the heart of the town. Housing was either three storeys high with roof-gardens to achieve 40 people per acre or high-density apartment blocks (six-storeys to house 60 people per acre or ten-storeys to house 80 people per acre) known as 'open-air flats' due to their garden terraces. These were arranged as neighbourhood units with central community amenities.

Although reconfigured, some of these ideas feature in *Prouder Preston,* a book of preliminary proposals prepared by Granville Berry, the Borough Surveyor, and published in 1946 by its Town Planning and Development Committee to highlight the town's redevelopment challenges (figures 99-101). The book accompanied an

[256] Anthony Chitty, 'Preston replanning scheme by George Grenfell Baines and Partners', *The Architects' Journal,* 22nd April 1943, p.272.
[257] Anthony Chitty, 'Preston replanning scheme by George Grenfell Baines and Partners', *The Architects' Journal,* 22nd April 1943, pp.269-272.

exhibition at Preston's Harris Art Gallery and a summary in the *Manchester Guardian* illustrated its recommended planning principles rather than providing a solution.[258] The *Architects' Journal* also reviewed the proposals and claimed that, by implementing an unusual fan-shaped road pattern, Berry's plan aimed to resolve traffic congestion that had been caused by Preston's position, midway between London and Edinburgh, at a crossing point on the River Ribble along a busy north-south through route.[259] Two ring roads were proposed although these would not fully encircle the town. The outer road crossed the river to the west and the inner road by-passed the town centre. The central area would be pedestrianised and was redesigned as a civic, commercial and shopping precinct. Similar to Grenfell Baines' scheme a wide processional route fronted by education and health amenities linked a new civic hall and municipal buildings.

Berry estimated that one sixth of Preston's housing would need to be demolished under the Slum Clearance Scheme and 4,874 new homes were required.[260] Because there was a shortage of land Berry re-organised the existing mix of housing and factories into zones to create new trading estates and neighbourhoods, each with primary schools and community facilities. The potential of Preston's river frontage, in close proximity to the centre, warranted a sports centre, comprising a stadium, open-air theatre and swimming pool, and a University College opposite Avenham Park. These ideas were not progressed and by 1947 a plan had been prepared for four new towns at Leyland, Coppull, Addlington and Parbold, Lancashire.

CIAM's post-War reformation

Simultaneous to the 'Living in Cities' exhibition, the *Architectural Review* promoted civic core multi-level complexes and city growth strategies. Aileen and William Tatton-Brown had proposed two models to resolve traffic congestion for a city quarter on a hypothetical site. The first was a transport interchange and shopping precinct that integrated large 24-storey buildings into the town plan (figure 102). Its infrastructure straddled roads and incorporated continuous pedestrian arcades above a bus station and car parking.[261] Second they cited Le Corbusier's model of large buildings surrounded by overhead roads. In 1943 the journal compared concentric and

[258] 'Making a "Prouder Preston": outline of redevelopment plans', *The Manchester Guardian,* 3rd October 1946, p.3.
[259] 'Physical planning supplement: Preston: proposals for planning and redevelopment', *The Architects' Journal,* 21st November 1946, pp.369-372.
[260] Preston's Town Planning and Development Committee *Prouder Preston,* 1946.
[261] Aileen and William Tatton Brown, 'Three-dimensional town planning', *Architectural Review,* September 1941, pp.82-83 and January 1942, pp 17-20.

linear growth frameworks by presenting the Ministry of Town and Country Planning's research alongside five maps by the 1940 Council's *Ground Plan of Britain* (figure 103). Citing Geddes's regional co-urbations it evaluated two alternative theoretical urban growth diagrams: satellites or an adapted 'humanised' version of the MARS plan. Both used green space to define settlements, but the author warned that green space would be eventually infilled on the former, yet it could penetrate the heart of the city on the latter. The article concluded by citing Amsterdam's expansion as suitable precedent for improving existing cities such as London.[262]

During the War, individuals such as Tubbs, Gibson and Sharp advanced and popularised town planning ideas in Britain, although international contact between CIAM's groups members had loosened. Le Corbusier established ASCORAL in 1942 and following the publication of the *Athens Charter* they collaborated to publish other books on urbanism including *Les Trois Etablissements Humains.* Published in 1945, but based on concepts established prior to the War, this advocated concentric cities linked by industrial linear cities along transportation routes, surrounded by ordered areas of agricultural land.[263] In the US, Giedion and Sert had continued to promote CIAM's agendas. Sert published two books *Can Our Cities Survive?*, 1942, and *The Human Scale in City Planning*, 1944, which stressed the need for pedestrian and cultural civic centres and compact neighbourhood units. Le Corbusier applied these in his 1945 plan for the French town of St. Die, whose civic centre was designed as an open platform with free standing buildings to provide an auditorium, café, museum and, in high-rise buildings, administration. This demonstrates Corbusier's move to a freer design approach where, similar to Gibson's Coventry scheme, he carefully related individual civic buildings around a large square. Two self-contained apartment blocks provided residential accommodation and later Le Corbusier proposed a similar housing type for Marseille's redevelopment in 1947. The buildings were arranged to generate social atmosphere and demonstrate the core's potential political role as a public gathering space.[264] As an iconic example of the *Athen's Charter*, St. Die (figure 104) provided precedent for CIAM's post-War work and Le Corbusier exhibited the scheme at the Rockefeller Centre, New York, in 1945.[265] Neither schemes were approved, but one Unite was built in the outskirts of Marseille.

[262] 'The planner's workshop', *The Architectural Review,* April 1943, pp.103-106.
[263] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.155.
[264] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.152.
[265] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.156.

In Britain, in December 1944, the MARS Group held a 'lively, controversial and critical'[266] public meeting at the RIBA, chaired by Professor Sir Charles Reilly. To widen discussions and critical debate, the MARS Group had begun to invite the public to their sessions and these became forums for discussing architectural and planning problems amongst the 'most advanced section of the architectural profession'. Its report, 'What is Modern Architecture', edited by Erno Goldfinger, was issued in July 1945 and this stated that 'part of architecture is the marshalling of social and technical forces in the field of shapes….Crystallised technic and a static society create architectural classicism, immutable forms. Our technics are in their infancy and society is more fluid than ever. Our architecture is the mirror of our environment.'[267]

The Second World War had interrupted contact between MARS and CIAM due to their members being in exile. The first reunion, CIAM 6, held in September 1947 at the Arts Centre in Bridgwater, Somerset, England, marks a move away from the inter-War political agenda and its debate digressed beyond the established four functional categories of the 1933 *Athens Charter*. Originally the congress had been due to meet in New York, but the cost of air travel was considered too expensive in a time of austerity and instead the newly opened Arts Centre at Bridgwater, England, funded by the Arts Council was selected.[268] A decade had passed since the CIAM members' last meeting so it was considered appropriate to redefine aims in light of post-War circumstances. Politically, economically and socially, the World had changed and some territories urgently required rebuilding following War damage. In Britain alone 74,000 bombs had fallen. Technical advances had accelerated during the War and planning processes had been introduced in some countries, some of which had gained socialist organisation. There was an air of optimism and a desire to raise living standards in developed and undeveloped countries. One of the urgent new aims of CIAM was to ensure that the highest human and technical standards were achieved in community planning regardless of scale.[269]

By 1946 the MARS Group had approximately 100 members from across the architectural, engineering and technical professions. It had become a club-like

[266] Erno Goldfinger (ed.), 'MARS Report No.3: what is modern architecture?', July 1945, p.1.
[267] Erno Goldfinger (ed.), 'MARS Report No.3: what is modern architecture?', July 1945, p.2.
[268] http://www.ciam6.co.uk/project/on-this-day-in-history-friday-12th-september-1947-ciam6-comes-to-bridgwater/
[269] 'MARS', *The Architects' Journal,* 12th February 1948, p.155.

institution and many of its members held influential positions in Government Departments, architectural education and the RIBA council. Considered to be a preparatory meeting for CIAM 7, the MARS group, now internationally recognised as a proactive and influential group led by the *Architectural Review's* editor J. M. Richards, arranged proceedings with a focus on reuniting contacts made prior to the War.

Eighty leading architects from the USA, Africa, Europe, India and South America attended Bridgwater and British delegates included Percy Johnson-Marshall; Mark Hartland Thomas; William Holford; Richard Llewelyn Davies; Leslie Martin; Jacqueline Tyrwhitt (who organised the conference); Maxwell Fry; Erno Goldfinger; Arthur Ling; Wells Coates; William Tatton-Brown; J. M. Richards; Godfrey Samuel; H. T. Cadbury-Brown; Peter Shepheard and Jane Drew. Other delegates included J. B. Bakema; conference Chair, Cornelius Van Eesteren (Czechoslovakia); Sigfried Giedion (Switzerland); Jose Luis Sert (CIAM Chairman); Walter Gropius, Christopher Tunnard (USA); Le Corbusier (France) and Helena Syrkus (Poland). MARS had also made links with MARG, an Indian Progressive group that aspired to become the Indian division of CIAM. Percy Johnson-Marshall had achieved the rank of Major during the War and worked with William Tatton-Brown as advisor to the Burmese Government on Burma's reconstruction. As a pro-active member of the Service's Architect's Technical Organisation, he wrote and lectured on Planning.[270] In 1946 Percy joined the London County Council's architecture department, which was led by John Forshaw, who from 1943 had collaborated with Abercrombie to produce the Greater London Plan.

Before the congress each group was asked to report on the current situation in their country. Illustrated by maps, plans, photographs or exhibition material and with no prescribed theme, their observations needed to assess the extent CIAM's principles had been achieved to evaluate how CIAM's future work might emerge. This formalised a step away from the functional city idea and acknowledged the desire to relate to the emotional, spiritual and tangible needs of man. In the absence of a set agenda, a CIRPAC meeting launched the congress to determine sessions or commissions. Commission III, chaired by Le Corbusier and Jacqueline Tyrwhitt, then Director of Studies at the School of Planning, London University, focused on

[270] https://archiveshub.jisc.ac.uk/search/archives/19596a3c-5096-3380-bb67-4b71ac0e6db9

urbanism. Gropius, who had just returned from Germany, contributed and his talk advocated decentralisation into new neighbourhood units located in the countryside to release space for city parks, communal facilities and a rudimentary network of traffic arteries as a means to coherently reorganise society. [271] At the congress it was agreed that CIAM would continue and many of its members, the 'hard core veterans of the modern movement,'[272] had positions of authority as planners, municipal architects and professors. A number of younger architects also attended and, although he did not attend CIAM 6, John Voelcker (1927-72), a Prestonian completing his first year at the Architectural Association, noted that their contributions were 'explosive' because they believed that CIAM's analytical methods from 1939 were irrelevant in 1945. Voelcker claimed that Van Eyck from Holland, and probably Bakema and Candilis, steered this argument.[273]

After Bridgwater, CIAM's council met at Sigtuna, Sweden, to summarise the congress' events and agree a programme of work. During the following CIRPAC meeting, Le Corbusier proposed that ASCORAL should produce a town-planning grid based on 21x33cm panels and capable of being assembled into large screens to co-ordinate the study of town planning. Providing a themed and colour-coded classification system, this format was trialled at CIAM 7, 1949, in Bergamo, Northern Italy, to display thirty projects.[274] Lewis Silkin, British Minister of Town and Country planning attended CIAM 7[275] and, after the congress, at a summer school, held at Bedford Square, Voelcker was introduced to CIAM by working as a draftsman for some of the groups.[276] After Bridgwater, Drew, Fry, Giedion, van Eesteren, Rogers, Holford, Percy Johnson-Marshall, Cadbury-Brown and van der Goot (UNESCO) progressed the idea.

Arthur Ling and Robert Matthew recruited Percy Johnson-Marshall into the LCC's planning division in 1949, responsible for the rebuilding of bombed areas. Matthew succeeded Forshaw in 1952 and Percy co-ordinated the Comprehensive Development Areas, notably Lansbury, Stepney, South Bank and the Barbican. Alongside urban renewal strategies, the British new town movement had commenced

[271] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, pp.168-179.
[272] John Voelcker, 'Team X', *Arena: Architectural Association Journal,* June 1965, p.11.
[273] John Voelcker, 'Team X', *Arena: Architectural Association Journal,* June 1965, p.12.
[274] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.180.
[275] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, p.184.
[276] John Voelcker, 'Team X', *Arena: Architectural Association Journal,* June 1965, p.12.

with new concentric settlements of fixed populations on green belt characterising the Mark I type.

After the Second World War CIAM and MARS Group members reiterated the importance and potential role of the civic core and this began to inform British townscape and renewal projects. The idea was widespread and influenced proposals and the debate concerning the arrangement and image for Preston's redevelopment. Preston would become the main township for Central Lancashire New Town and the identification, design and construction of its township civic cores and pedestrianized zones would begin in the early 1960s prior to designs for Central Lancashire New Town's designation.

> This chapter introduced George Grenfell Baines, a Preston based architect, and his early redesign of Preston town centre. Grenfell Baines's involvement in Central Lancashire New Town's plan and regional renewal strategy is continued in Part 3. The initial scheme based on a pedestrian civic core, and publically exhibited, received national media attention following Chitty's review. Shortly after, in 1947, four new town locations were proposed for Lancashire. The next chapter will outline the change in regional strategy to accommodate population displacement from Manchester and also introduce other architects and urbanists involved in Central Lancashire New Town's design and their connection to CIAM.

1945

New Towns Committee established.

1947

Country Planning Act passed.

Harlow New Town designed.

1951

Preliminary Plan for Lancashire proposes Leyland, Parbold and Garstang as potential new town sites.

CIAM 8 congress 'Heart of the City'.

Voelcker, Derbyshire and Crooke prepare the Zone

1954

Team 10 prepare the Doorn Manifesto

1956

CIAM 10

1957

The Smithsons prepare Cluster City.

CIAM's groups, commissions and Councils are dissolved

1959

Final CIAM meeting

British New Towns and the micro region

After completing Letchworth's design Raymond Unwin and Barry Parker continued to advance planned development by demostrating community clusters, satellite towns and regional development. Three years after the International Town, City and Regional Planning conference held in New York (1925), CIAM was formed. MARS members, associated with CIAM and many of whom worked for Britain's county councils, applied garden city ideas to the Mark 1 new towns. These were characterised by separate low-density neighbourhoods similar to Radburn and Wythenshawe. This chapter introduces the first British new towns and outlines Lancashire's decentralisation strategy during the 1950s. CIAM's evolving post-War agenda and the involvement of the Architectural Association is also discussed, specifically its sub-division to form Team 10. This chapter introduces key characters who later contribute to Central Lancashire New Town's design.

After the Second World War the principle of population displacement to facilitate the redevelopment of Britain reignited interest in new towns. A New Towns Committee, established in 1945, considered their delivery and configuration, and the passing of two revolutionary Acts – the New Towns Act 1946 and the Town and Country Planning Act 1947, followed. The 1947 Country Planning Act required each authority to produce a development plan by July 1951 and also requested areas for comprehensive development to be identified.

British new towns

A new town can be defined as an economically self-contained unit that is capable of providing the everyday needs of its citizens including industrial and commercial requirements. Usually built on green belt or as a development of an existing small settlement, their location needed to meet exact conditions such as good communications, favourable topography without constructional difficulties, and they had to be geographically and economically separate from existing urban areas. Conceived following regional advisory plans, their construction was administered by a development corporation appointed by the Minister and, because they were financed by the Treasury, they posed an attractive solution to overspill problems because the cost of housing people in ideal living conditions was subsidised.[277] Urban expansions remained an attractive alternative as existing services and amenities were already in place.

[277] Arthur Ling, 'The newest towns', *New Society,* 9th July 1964, p.10.

Collectively, the new towns became the biggest building enterprise in Britain after the Second World War.[278] The need for 20 new towns had been identified and between 1947 and 1950 fourteen had been started – twelve in England (eight to relieve London) and two in Scotland. The first series of new towns, the Mark 1's (1946 – 1961), were low density, self-sufficient, satellite extensions of their parent conurbations. Welwyn became part of the first generation when a government-appointed Development Corporation adopted it under the New Towns Act in 1948. Early examples are typically refined versions of the garden cities of Letchworth and Welwyn – they were limited in size by a fixed pre-determined boundary reinforced by a substantial green belt and offered a complete urban environment comprising housing, employment and leisure. Generally populations of post-War new towns were initially set at 50,000, an ideal figure proposed by Ebenezer Howard during the early 1900s to ensure sufficient amenities, although this was often exceeded.[279] Once fully populated, these towns remained static without growth or change for several generations. Social groups were encouraged by arranging housing to form neighbourhoods, each separated by landscape and each with its own local centre. Their design involved the arrangement of zoned land uses within the boundary to achieve a logical and aesthetically pleasing town. The town's road network was centralised, connecting its core to the national network. Traffic was free moving, but slowed by traffic lights or roundabouts.

Harlow: a Mark 1 new town

An example, Harlow (1947, figure 105), Essex, planned by Frederick Gibberd (1908-1984), was the first whole new town, including its public buildings, to be completed.[280] The fourth satellite new town to accommodate London's overspill, it had been proposed as part of the 1944 Greater London Plan. Its concept was experimental and, located 23 miles from London, it was designed to accommodate an independent isolated community of 80,000 people.[281] Influenced by Ebenezer Howard's Garden City ideas, its civic core surrounded by defined neighbourhoods, each with a local centre, characterised its layout. Reminiscent of Raymond Unwin's garden suburbs achieved prior to the First-World War, Harlow's layout had been

[278] J. M. Richards, 'Failure of the new towns', *The Architectural Review,* 1st July 1953, p.32.
[279] Arthur Ling, 'The newest towns', *New Society,* 9th July 1964, p.10.
[280] J. M. Richards, 'Failure of the new towns', *The Architectural Review,* 1st July 1953, p.31.
[281] Lloyd Rodwin, *The British New Towns Policy,* 1956*,* Harvard University Press, Cambridge, p.110.

prepared based on the theory that a modern town's individual character should be informed by its site's existing undulating topography and natural features. The valleys running north to south and east to west divided the designated areas into four sections. Each residential area was planned to complement the existing hedge and field pattern. Main means of transport (road, rail and water) followed the valley along the north site boundary and this connected 13 small residential clusters for 3040 to 6498 people, each separated by landscape, to the town centre and industrial areas.[282] Pedestrian and cycle routes, separate to the road network, allowed access throughout the town. The cultural centre was designed as a coherent group, with landscaped gardens, 'a series of outdoor rooms', joining the civic squares to the landscaped valley.[283] Gibberd also worked as a private architect on the scheme and the Development Corporation appointed other architects including Maxwell Fry, Jane Drew, Richard Sheppard, H. T. Cadbury Brown, Ralph Tubbs and F. R. S. Yorke to collaboratively design its housing.[284]

Manchester's overspill strategy

In Lancashire, a regional strategy to accommodate Manchester's overspill had existed since 1947 shortly after the passing of the New Town Act. In 1937 the County Council had recommended to the Minister of Transport the construction of a high-speed north-south route through Lancashire and the 1949 Special Roads Act, which granted the construction of motorways, enabled this. Lord Silkin, the Minister of Town and Country Planning, had proposed four sites for new towns in 1948 [285] and two years later he asked Lancashire County Council to confirm locations for new towns and town extensions to accommodate 47,500 people from congested county boroughs.[286] Viable sites needed to be within travelling distance of Merseyside and Manchester, pose few constructional difficulties and be of sufficient distance from existing urban areas to ensure economic and geographic independence.

By 1950 the number of people living in devastated Lancashire industrial towns and cities, in particular from Manchester and Liverpool, who needed to be rehoused due to post-War housing shortages and slum clearances, had increased to 639,000.

[282] Frederick Gibberd. 'Harlow New Town', *The Builder,* 19th December 1947, p.700.
[283] 'Physical planning supplement: Harlow new town: the master plan', *The Architects' Journal,* 5th February 1948, pp.128-130.
[284] D. Rigby Childs, 'New towns: no.6', *The Architects' Journal,* 16th November 1950, p.391.
[285] Letters to Manchester authorities. Peter Grimshaw, *Growthpoint Garstang: a Report on Garstang, Lancashire,* 1967, p.3.
[286] *The Manchester Guardian,* 14 November 1950, p.5.

The strategy to solve this included significant expansions to eight towns and minor expansions to forty areas in the region plus, to accommodate 132,800 people, potential new towns at Parbold, Garstang and Leyland (figure 106).[287] County Planning Officer, G. Sutton Brown, outlined these in a preparatory document for the post-War official mandatory Statutory Development Plan in 1950. Titled *A Preliminary Plan for Lancashire* this document captures the character and scale of the region's problems, such as population redistribution, industrial development, housing needs and conservation of agricultural land and outlined future approaches. Its foreword, written in March 1950 by the County Councillor A. E. Higham, Chairman of the County Planning and Development Committee, described the current conditions,

> anyone who lives in Lancashire must realise the extent to which a once lovely countryside has been largely transformed into a densely populated industrial area. That in itself was probably inevitable, but the way in which it has occurred is in the most cases a sad story of untidy, unhealthy, overcrowded and unplanned development, both in regard to housing and industry.[288]

Initially Parbold had been favourable because it is a pretty village to the west of the county on the Leeds-Liverpool Canal and it is framed by hills to the north-east and south-east. The plan suggested that its context would meet the New Towns Committee's social and architectural civic aspirations and this in turn could attract up to 45,000 people.[289] Five neighbourhoods were proposed, each between 300 and 540 acres, supported by a town centre with facilities such as schools, playing fields and parks. Industrial facilities could be either within the new town or at Appleby Bridge. Parbold's disadvantage was that it was not in close proximity to good communications routes and because of this by November 1950 it had been substituted by nearby Skelmesdale.

Because Leyland and Garstang were adjacent to the proposed new north-south infrastructure route, for the next 15 years, their viability as new town locations was debated. Leyland's expansion had been suggested repeatedly since 1947 due to its rail links to Manchester. It also potentially offered high levels of employment in motor manufacturing industries, primarily at British Leyland, and land was available to

[287] 'Housing Lancashire's: three new towns', *Manchester Guardian,* 3rd March 1950, p.8.
[288] G. Sutton Brown, *A Preliminary Plan for Lancashire,* 1951, p.vi.
[289] 'New town sites in South Lancashire: inquiry reaches a decisive stage', *Manchester Guardian,* 14th November 1950, p.5.

provide residential areas and amenities.[290] The River Lostock to the west, the M6 to the east and existing industrial units to the north defined 2230 acres for development. Because the town's size needed to be trebled, a new town corporation was appointed to manage its redevelopment. Seven areas could be identified around Leyland's town centre, the main being residential districts to receive 32,900 more people, 23,300 from Manchester, adjacent to and south of Worden Park.[291]

Silkin had proposed Garstang, a market town with a population of 5,000 surrounded by agricultural land of the Fylde plain and Bowland Fells, as being extendable. By incorporating Carnforth and Inglewhite its predicted capacity, as a self-supporting settlement complete with industry, was 50,000-60,000 inhabitants across 5,350 acres. Lancashire's County Planning Officer, G. Sutton Brown, claimed Garstang was a first-class site with good economic opportunities, but by 1951 no development areas had been agreed, probably due to its distance from south Lancashire and its development being reliant on high quality agricultural land. Despite this, proposals outlined in the *Preliminary Plan* expanded the existing town to the north and straddled the proposed M6 motorway. 3,400 acres were allocated for general urban development, 450 acres for industry and 1,500 acres for open space and the town centre. Eight residential units, each between 380 and 480 acres, could be built around existing communities at Garstang, Bowgreave and Catterall. Industrial sites, west of the by-pass and between the motorway and railway, were positioned alongside additional residential areas and civic and open spaces.[292]

Despite the inclusion of three new towns in the Preliminary Plan, they were later omitted from the approved Lancashire County Council's development plan of 1956, but the road infrastructure went ahead as part of the national expanded road programme. In 1953 the Minister of Transport proposed the first section, the Preston By-pass, between Bamber Bridge and Broughton. Construction commenced in 1956 [293] and its opening in 1958 marked the beginning of a new motoring era in Britain.[294] The second section, the Lancaster By-pass, swiftly followed two years later, opening in 1960.[295]

[290] Lancashire Archives. Central Lancashire New Town Proposals, 1st February 1968, file note NTC/4/1/82,
[291] G. Sutton Brown, *Preliminary Plan For Lancashire, 1951,* p.120.
[292] G. Sutton Brown, *Preliminary Plan For Lancashire, 1951,* pp.115-6.
[293] Ministry of Transport and Civil Aviation, *Preston By-Pass*, 5th December 1958, p.3.
[294] Ministry of Transport and Civil Aviation. *Preston By-Pass,* 5th December 1958, p.4.
[295] Ministry of Transport. *Lancaster By-Pass*, 11th April 1960, p.3.

The Mark 1's low-density layouts proved too suburban in character and their insufficient urbanity was quickly criticised as achieving little architectural effect.[296] Writing in 1953 in the *Architectural Review* J. M. Richards claimed that, with the exception of Harlow, the new towns failed socially, economically and architecturally as their public buildings, needed to form coherent communities, were not built initially and industries did not quickly establish themselves in the locations.[297] Instead funding was spent building housing estates, to relieve the post-War accommodation shortage. The voids in the urban grain, awaiting public buildings, created vast spaces between the residential areas and their layouts became mocked as 'prairie planning'.[298]

Simultaneous to the launch of the new town programme, studies into motor transport had advanced and this allowed new town layouts to incorporate highway design to allow for predicted future traffic predictions and avoid congestion even at peak times. Transport networks became fixed generators of urban forms and began to dictate town layouts through sub-division into districts and neighbourhoods, often poorly connected by bridges or tunnels. Designed as part of a national system, the road layouts required substantial investment and, once approved, could not be easily changed. The transport system now had two networks – primary (urban motorways that allowed traffic to flow quickly across grade-separated intersections) and secondary (major roads) and their intersection infrequently occurred.

CIAM

International attention soon returned to the design of the town centres, continuing the work of Gibson at Coventry. CIAM 8's theme "The Heart of the City", focused on pedestrianised civic cores, a subject Sert had highlighted in his 1944 essay "The Human Scale in City Planning". This had examined what made a city, identified recognisable characteristics of urban and rural form and aimed to observe social change. It was particularly pertinent and appealing to MARS's members because Stevenage's civic centre had been completed and Coventry was being reconstructed. Le Corbusier had also begun Chandigarh's design. The MARS Group organised the congress, which took place in July 1951 at High Leigh, a manor house, in Hoddesdon, London. Jacqueline Tyrwhitt, who had been a MARS member since 1941 and its

[296] Richard Llewellyn Davies, 'Town Design', The Town Planning Review, vol.37, October 1966, p.158.
[297] J. M. Richards, 'Failure of the new towns', *The Architectural Review,* 1st July 1953, pp.29-31.
[298] Gordon Cullen, 'Townscape: prairie planning in the new towns', *The Architectural Review,* 1st July 1953, p.33.

assistant director since 1949, played an instrumental role in arrangements. A visiting lecturer at the New School for Social Research in New York since 1948, she met Sert, the post-War president, and Giedon in 1950 to agree the congress' title. Tyrwhitt was already acquainted with Giedion, who she had met at CIAM 6 and had assisted in preparing his publications including *Mechanization Takes Command.*[299] In spring 1951, the MARS Group agreed sessions for the congress' agenda. Contributors included Arthur Ling and Peter Shepheard chairing "Town Planning" and Tyrwhitt chairing "Social Background of the Core".[300]

Despite the popularity of the theme, it highlighted the opposing approaches of CIAM's members. John Voelcker, who was involved in the running of the congress, claimed that the established members, who favoured empiricism, were reluctant to accept alternative planning methods proposed by new mainly Architectural Association trained architects, who later reshaped CIAM to become Team 10. Up to CIAM 8 the image of avant-garde CIAM had been predominantly technological – the framed building (Le Corbusier's Domino House), the multi-level high-rise city (Le Corbusier's Ville Contemporaine) and Mies van de Rohe's glass towers. Le Corbusier's 'Urbanisme' (1925) and the 'Three Human Establishments' had described a clear programme for complete urban and rural renewal based on functions – to dwell, to work, to move around - resulting in visions for radial cities for 3,000,000 people, linear industrial towns and centralised farming co-operatives. Voelcker considered CIAM's established planning approach to be prescriptive, stating 'any situation was pulled apart, laid out on the grid of Establishments and resolved using the building components of the modern movement.'[301]

The division between CIAM members worsened during CIAM 9 (1953), held in Aix-en-Provence, near Marseilles, in the south of France. This was the largest congress and it again focused on the civic centre and a new communications infrastructure based on Le Corbusier's V system, with Coventry and St. Die amongst the exhibits. Tensions arose because Alison and Peter Smithson (1928-1993 and 1923-2003 respectively) and Aldo Van Eyck (1918-1999) diverted debate away from the four functions by claiming they were no longer applicable. Wanting to add a

[299] Sigfried Giedion, *Mechanization Takes Command: a Contribution to Anonymous History*, 1948, Oxford University Press: New York.
[300] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, pp.202-5.
[301] John Voelcker, 'Team X', *Arena: Architectural Association Journal,* June 1965, p.12.

contextual approach to architecture and urbanism, they steered conversation towards hierarchical clusters of generic densities to structure urban growth. Voelcker and Bakema were also in attendance and, together with emerging architects such as Ernesto Rogers, formed Team 10 after the tenth CIAM congress as an activist minority.

Although the attendees' and CIAM members' interests were diverse and their projects had different contexts, they were all concerned with social structure. The Smithsons, affiliated with MARS since 1953, had just completed their Golden Lane project that emphasised site and identity, circulation, adopted hierarchical community elements and expressed human habitation at different scales – house, street, district and city. [302] They were interested in English industrial urban street patterns and for CIAM 9 Alison Smithson had produced a diagram for a city based on districts, each with a different function. [303] Candilis and Woods, who were associated with Le Corbusier, were working in Mexico looking at traditional ways of living in the Moroccan climate; Howell was working on Stevenage; Van Eyck, who had been travelling the Sahara, was identifying building types around which social associations occurred; Bakema was studying the geometric clarity of the polders flat reclaimed land; and Voelcker, Andrew Derbyshire and Pat Crooke had collaboratively completed their "Zone" project, which was exhibited at the congress (figures 107 and 108).

Zone

The AA was becoming a focal point for MARS. A large proportion of its members, including the Smithsons, taught there, and it was used regularly as a venue for meetings. [304] Around this time a number of students took over the School's Student Association magazine, *Plan,* and used it as a means to promote modernism. Voelcker, Howell and Crooke sat on the publication's editorial board. "Zone" had been prepared between 1951-52 as an Architectural Association thesis project. The AA used vertical studios to structure their programme and Voelcker, Derbyshire and Crooke worked closely with another group of students, Howell, Macfarlane, Gill Sarson, John Killick and Hugh Morris, who were two years ahead of them. This team had used Stevenage New Town as their starting point and Howell had already exhibited the outcome at CIAM 8, Hoddesdon, England. [305] Supervised by Korn and Goldfinger, Zone was

[302] Reyner Banham, 'The New Brutalism', *Architectural Review,* December 1955, p.360.
[303] Alison Smithson (ed), *Team 10 Primer,* 1968, Studio Vista: London, p.55.
[304] Joshua Mardell, ;Far from the madding crowd: John Voelcker and the ruralism of architecture', *AA Files,* No.66, 2013, p.93.
[305] Joshua Mardell, 'Far from the madding crowd: John Voelcker and the ruralism of architecture', *AA Files,* No.66, 2013, p.89.

acknowledged by Herman Hertzberger as being the first city-scale project in line with Team 10 principles. It demonstrated Corbusier's philosophies as published in the fourth volume of *Oeuvre Complete* including a hierarchical organisational system and utopian interaction and interdependence of countryside and town. Based on a micro-region, it aimed to achieve more intimate living patterns by allowing for movement and connectivity and respected the ecological guidelines adopted by the Geddes Valley section. At the time of its design, the British New Town programme was developing. Its layout was a looser version of Le Corbusier's cartographic Ville Contemporaine (1922), and offered an alternative to the Mark 1 New Towns such as Stevenage, which were characterised by low-density planning comprising neighbourhoods separated by vast green spaces. Although mainly agricultural, Zone's generic city-scale network was regarded as a turning point and reflected the preoccupations of AA students during the early 1950s. [306] Through its design, Voelcker, who was credited as being the philosopher behind the project, influenced Andrew Derbyshire.[307]

Voelcker, who became known for his interest in rural urbanism and socialistic vernacularism,[308] had been born in Preston, Lancashire, and commenced his studies at the AA in 1944. He had a keen interest in history, social action, ecology, the vernacular and humane literary. His architectural education was postponed during his second year when he was enlisted to the armed forces and he completed his studies at the AA between 1948 and 1953. Following his attendance at CIAM's Bergamo meeting in 1949, he became acquainted with like-minded practitioners such as Bakema and van Eyck and was elected into MARS at the same time as the Smithsons. He became associated with Reyner Banham, who credited Voelcker with introducing him to the megastructure concept. After Voelcker's death in 1972, Banham dedicated his book *Megastructure,* to Voelcker and included the Zone project. [309] Voelcker supported 'Formalist' views aligned with Le Corbusier and Mies Van de Rohe. Formalists opposed the 'Empiricists' and this division was apparent at the London County Council's planning department. Although not an employee of LCC, it is likely that, through his connections with MARS, Voelcker would have been aware of the content and later, in 1956, he contributed to 'This is Tomorrow', an exhibition at

[306] James Gowan (ed.), 'The Zone: Pat Crooke, Andrew Derbyshire, John Voelcker, 5th year, 1952', *Projects: Architectural Association, 1946-71,* 1972, p.21.
[307] Suzanne Frank, 'John Voelcker: redefining his place in Team 10 and post-war British architectural culture', *Architectural Research Quarterly,* vol.16, no.1, 2012, p.65.
[308] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, pp.225-8.
[309] Reyner Banham, *Megastructure: Urban Futures of the Recent Past,* 1976, Thames and Hudson: London, pp.142-3.

Whitechapel Art Gallery supported by the Independent Group. Founded in 1952, the Group believed the arts, including architecture, were perpetually reinvented and J. M. Richards, Reyner Banham and Nikolaus Pevsner directed its architectural agenda.[310]

Proposed for a 72 square mile site in Hertfordshire, Zone provided accommodation for 72,000 people through interrelated groups that increased in size as they extended outwards. Scales of habitation were defined as dwellings (up to 5 people), street (120 people) and quarter (10,000 people).[311] Across the region it distributed 60,000 people in the town and 12,000 on agricultural land. A variation of the CIAM grid, the Zone Grid project demonstrates Team 10's interest in Geddes's section and the interdependence of countryside and urban contexts with cities nestled in valleys, with isolated agrarian habitation sited on higher ground. Instead of using CIAM's four functions, the scheme promoted interactions between unique groups, such as children, farmers and professionals, whilst maintaining their individual identities.[312] Voelcker reflected that 'we had observed on a very banal level that people are individuals and that they associate with one another to do different things. We were concerned in our projects with maintaining the identity of individuals whilst establishing a social structure through building and establishing identities of groups, those associations between individuals which had made the streets, villages, towns and cities of the past extensions of individual experience. And this could be developed at the present.'[313]

Inspired by American infrastructure, its road network, comprising express elevated roads with regional intersections and secondary elevated inter-zonal roads, was arranged in grid format to straddle the region's centre. Rail lines and pedestrian links supplemented communications. Farming fuelled Zone's economy, but cultural amenity was limited to a single theatre. Housing was Corbusian in style, arranged as 12 storey super blocks of suspended prefabricated modular units, arranged on a grid to form courtyards. This formed a multi-storey complex linked by pedestrian street decks with community spaces at the junctions. [314]

[310] Suzanne Frank, 'John Voelcker: redefining his place in Team 10 and post-war British architectural culture', *Architectural Research Quarterly,* vol.16, no.1, 2012, pp.59-61.
[311] Joshua Mardell, ;Far from the madding crowd: John Voelcker and the ruralism of architecture', *AA Files,* No.66, 2013, p.89.
[312] John Voelcker in Suzanne Frank, 'John Voelcker: redefining his place in Team 10 and post-war British architectural culture', *Architectural Research Quarterly,* vol.16, no.1, 2012, p.61.
[313] John Voelcker, 'Team X', *Arena: Architectural Association Journal,* June 1965, p.12.
[314] Suzanne Frank, 'John Voelcker: redefining his place in Team 10 and post-war British architectural culture', *Architectural Research Quarterly,* vol.16, no.1, 2012, pp.63-65.

On graduating from the AA in 1953, Voelcker and Derbyshire were employed by Farmer and Dark on the Marchwood and Belvedere power stations alongside Ramsay Short. Voelcker's and Derbyshire's employment came to an abrupt end as they sought to humanise the power station's functionality through scale and colour coding. Their intentions challenged William Halcrow and Partners's, the appointed engineers, technical concept and consequently proved unpopular.[315] The following year Voelcker and his wife moved to rural Kent to set up their practice, which they ran from home. Its main ethos was to use architecture to update agrarian society in an attempt to reverse rural poverty and their projects, which were village scale, utilised farm and barn typologies. Their approach was reminiscent of Le Corbusier's rural versions depicted in his Radiant City idea and his agrarian settlements in 'The Three Human Establishments'.

Team 10

In addition to meetings by CIAM national groups such as MARS, a series of small international meetings in London, Paris, La Sarraz, Holland and Belgium followed CIAM 9 to reflect on the congress and plan for CIAM 10. During a meeting in London in 1953, the Howells, Smithsons and Voelcker agreed a series of categories based on the Geddes section. In January 1954 the Smithsons, Voelcker and Bakema attended the Doorn meeting in Holland where the results of CIAM 9 were summarised. Le Corbusier, considered an ex officio Team 10 member due to his support of CIAM's radical re-evaluation, was kept informed of proceedings.[316] At this meeting the differences between CIAM and the younger architects, who became Team 10 in 1954, were discussed. This resulted in the 'Doorn Manifesto', a 'Statement on Habitat', which was issued together with a Geddes Valley style section that dismissed the Athens Charter and emphasised human associations in settlements of differing complexity (figure 109). The Manifesto, which provided a framework for CIAM 10 in Dubrovnik, advised that communities of appropriate density according to population should be positioned along the valley section. Team 10 progressed this by promoting socially driven clusters with emphasis on uniting rather then sub-dividing parts of a community. It aimed to preserve each unit's identity whilst integrating it into a complete urban framework. As urbanist architects, and referencing the Ville

[315] Joshua Mardell, 'Far from the madding crowd: John Voelcker and the ruralism of architecture', *AA Files,* No.66, 2013, p.93.
[316] Brian Brace Taylor, 'Team 10 + 20', *Art et Architecture Aujourd'hui*, January and February 1975.

Radieuse model, they aspired to create ideal habitats based on human association using density scales of isolate, village, town and city. Their proposal would accommodate dynamic growth and change.[317]

The CIAM Council and Team 10 met in Padua prior to CIAM 10, the final congress, held in Dubrovnik Modern Art Gallery in 1956. Bakema, Woods and Voelcker attended. Le Corbusier did not, instead he forwarded a letter to Sert requesting that the generations, 'the founders and those that achieve it', should split after the congress.[318] It is during this conference that Team 10 members moved away from CIAM analytical themes and created a new set of descriptive classifications: cluster, mobility, growth and change, and started to explore how architecture could respond to the needs of different sectors of society using social associations and topographical characteristics. Voelcker exhibited a series of analytical grids for a village expansion and the Smithsons promoted the need for architecture and town planning to adapt, change and add vitality to communities.[319] The need for flexibility and renewal continued into the 1970s.

In July 1955 the MARS Group had exhibited 'Turn Again' at the Royal Exchange, London. Its curators included H. T. Cadbury Brown, Jane Drew, Maxwell Fry, Erno Goldfinger, W. Howell, Arthur Korn, J. M. Richards and the Smithsons. By showing examples of other developments from across the world, they objected to proposed design standards for the City of London, which were considered unsatisfactory for contemporary life.[320] In 1956 Team 10 proposed an alternative to the English new town model as they criticised it as being too rigid. They proposed that the only fixed element should be infrastructure; simple in layout, giving equal access to all parts and allowing the network to define zones. The Smithsons explored this further in their Cluster City idea and entry for the Berlin Plan.[321] Similar to Geddes's principles, Team 10 began to match certain occupation categories with landscape types and the Smithsons suggested that each cluster belonged to a distinct framework.[322] Team 10, who believed building height should increase as population expanded, favoured cities with a close assemblage of high-density buildings. To

[317] E. Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT Press: London, pp.247-252.
[318] Le Corbusier in John Voelcker, 'Team X', *Arena: Architectural Association Journal,* June 1965, p.19.
[319] Alison and Peter Smithson, 'Cluster City: a new shape for the community', *Architectural Review,* November 1957, p.333.
[320] The MARS Group, 'Turn Again', catalogue, July 1955.
[321] Alison Smithson (ed), *Team 10 Primer,* 1968, Studio Vista: London, p.52.
[322] Alison and Peter Smithson, 'Cluster City: a new shape for the community', *Architectural Review,* November 1957, pp.334-336.

maintain mobility, these were arranged as multi-level complexes with raised pedestrian decks to enable easy transition between spaces. This approach contrasted with CIAM's urban centres and neighbourhood units that employed freestanding community structures, for example the Unite.[323]

During the next three years small meetings were held in Switzerland, Brussels and Paris and a committee, chaired by Bakema was established to re-organise CIAM. In May 1957 Voelcker was one of the signatories of a letter to Giedion proposing CIAM's dissolution and in late summer at La Sarraz he met with CIAM's Council, represented by Giedion, Tyrwhitt and Wogenscky. Voelcker was deputising for Peter Smithson and William Howell on the Reorganisation Committee. It was decided that CIAM was to continue but its old groups, commissions and councils were to be dissolved. Later that year the Smithsons published an article in the *Architectural Review* that described the concept behind the Cluster City. Although they appreciated the vision behind the functional city, they criticised its cartographic mechanisation, specifically the 'crushing banality' of the geometry of Le Corbusier's Ville Radieuse.[324] Instead they were more interested in city flow and they defined the Cluster concept as a 'close knit, complicated, often moving aggregation' with a distinct structure. The Cluster concept does not have a clear centre – it had many based on industrial and commercial hotspots, each connected by motorways to residential dormitories. They concluded the article by advising that clarity through growth could be achieved by giving each location a structure.[325]

James Stirling and James Gowan designed a housing cluster with a shared central space at Avenham Street, Preston in 1957 (figure 110). Stirling, who studied at Liverpool School of Architecture after the Second World War, had exhibited a village scheme at CIAM 10. This has a similar elevational expression approach to Lubetkin's unrealised Peterlee new town's housing. Influenced by Le Corbusier, Stirling was interested in vernacular regionalism and at Preston he adopted similar forms and rooflines to the surrounding Victorian and Georgian terracing.[326]

[323] Alison Smithson (ed), *Team 10 Primer,* 1968, Studio Vista: London, p.76.
[324] Alison and Peter Smithson, 'Cluster City: a new shape for the community', *Architectural Review,* November 1957, p.334.
[325] Alison and Peter Smithson, 'Cluster City: a new shape for the community', *Architectural Review,* November 1957, p.336.
[326] Mark Crinson, 'The uses of nostalgia: Stirling and Gowan's Preston Housing', *Journal of the Society of Architectural Historians,* June 2006, pp.219-223.

The next and final CIAM meeting in Otterlo, Netherlands, in 1959, entitled 'Group Research of Social and Visual Inter-relationships' was a working congress for 40 invited attendees. The Smithsons presented their ideas on association, cluster and mobility. These are generally structuring techniques used in planning and involve examining spatial connections at human scale. This concept is characteristic of Candilis and Woods and Bakema's work also.

During the end of the 1960s Voelcker's practice was adversely effected by cuts to the Farm Improvement Scheme, which was abandoned totally by 1969. Voelcker's career steered towards education and he was appointed director of senior studies at the AA in 1965.[327] Four years later he became Professor of Architecture at Glasgow University, devoting his time solely to education until his death, three years later, aged 45.

Despite the demise of CIAM's congresses, Team 10 and Constantinos A. Doxiadis, a Greek architect and city planner, continued its practices and activities. Many of the original CIAM objectives and new ideas by Team 10, such as functional zoning, categorisation by occupation, mobility, growth and the move towards examining human habitation at different scales can be seen in the initial studies prepared by Andrew Derbyshire for Central Lancashire New Town.

> After the eighth congress CIAM's agenda began to shift from their technological and functional approach associated with the Athens Charter to regional frameworks influenced by topographical context and based on hierarchical clusters of density. Their new principles aimed to structure growth, allow different social interactions and a choice of environment to live and work. As an alternative to the Mark 1 and Mark 2 new towns Central Lancashire New Town, designated as a Mark III, adopted this approach. Its completed township centres, designed as pedestrianized zones, demonstrate Team 10's agenda by connecting vehicles to infrastructure through multi-level complexes. Central Lancashire New Town's built and unrealised civic schemes are described in Part 3.

[327] Joshua Mardell, ;Far from the madding crowd: John Voelcker and the ruralism of architecture', *AA Files,* No.66, 2013, p.97.

1941

Doxiadis develops Ekistics

1949

Matthew establishes London County Council's new reconstruction areas group and is teaching at Edinburgh University.

PJM is teaching at Edinburgh University and is also appointed to lead Matthew's reconstruction group.

Abercombie and Matthew publish the Clyde Valley Regional Plan.

1956

Cumbernauld designated: the first Mark II to be built. Designed by Hugh Wilson.

Hugh Bennett moves to LCC and starts work on Hook with Cox and Shankland.

Matthew and Stirrat Johnson-Marshall found RMJM.

1957

Doxiadis and Tyrwhitt begin to publish the journal *Ekistics*.

1958

Grenfell Baines organises a symposium on urban renewal - PJM arranges the programme.

1959

Doxiadis starts to plan Islamabad working with Matthew and PJM.

1960

Hook scheme abandoned.

PJM opens Percy Johnson-Marshall Associaes in Edinburgh.

1961

Planning for a New Town published.

1966

Irvine designed by Wilson and Womersley

1967

Mark III new towns at Peterborough and Milton Keynes designated

1968

Northampton designated

1970

Central Lancashire New Town designated

Urban renewal and Ekistics

In 1941 Doxiadis conceived Ekistics, the science of human settlements, which later progressed into the dynamic city. The following year Stein published his regional city concept (figure 46 and introduced in the Part 1) based on constellations. Both proposals connected to a high-speed transport route and sought to structure regional growth. Later, from 1959, Doxiadis, Matthew (who was acquainted with Stein) and PJM collaborate on the design of Islamabad, which epitomised Team 10's urban principles. Linear growth strategies reinvented the new town typology and, known as the Mark IIIs, these examples are characterised by polycentric linear configurations to accommodate growth and change. Examples such as Peterborough are also reminiscent of Howard's regional social city based on township clusters and offered a city lifestyle in a rural environment. This chapter provides a typological context for Central Lancashire New Town, a sub-regional complex, but designated as a British Mark III new town.

Robert Matthew and Percy Johnson-Marshall

In 1924 Robert Matthew commenced his full-time architectural education at Edinburgh College of Art, whose curriculum, influenced by Geddes, had a humanistic approach to urban regeneration. Frank Mears (1880-1953), Geddes son-in-law, taught the students philosophy and architectural history with an emphasis on historic-based renewal. In 1925 the curriculum expanded to include planning studies and city planning.[328] Mear's partner, H. A. Rendal Govan, replaced E. A. A. Rowse, who had joined the College in 1928, when he moved to the AA in 1933, later establishing the School of Planning and Research for Regional Development (SPRND) with Tyrwhitt. In the same year Matthew became acquainted with Lionel Budden, Patrick Abercrombie and William Holford when he attended Liverpool University's town planning summer school. During the First World War, Abercrombie had promoted Geddes's intensive surveys as being imperative prior to determining a town's growth or reconstruction and he advised that planning theory should underpin development. Criticising existing suburban growth as being too dense with a disregard for landscape or topography, he promoted the use of satellite towns surrounding a central city and separated by open space.[329] Shortly before the end of the First World War, Budden (1877-1956), who had been educated at Liverpool University and later, in 1933, accepted the Roscoe Professorship, published an article in the *Town Planning Review*

[328] Miles Glendinning, Modern Architect: the Life and Times of Robert Matthew, 2008, RIBA Publishing: London, p.26-7.
[329] Patrick Abercrombie, 'Study before city planning', *The Town Planning Review,* January 1916, pp.171-180.

that sub-divided Great Britain into seven regions for this purpose.[330] In the same issue of the *Town Planning Review* Abercrombie supported Budden's proposal by recommending the formation of a Reconstruction Ministry to co-ordinate Britain's comprehensive renewal based on regional surveys.[331]

J. M. Forshaw, London County Council's architect, and Sir Patrick Abercrombie had prepared the County of London Plan and shortly after the end of the War Robert Matthew took Forshaw's position. The LCC was the country's largest public authority, responsible for co-ordinating planning and architecture on a vast scale and it employed MARS members in senior positions including Holford, who was also Professor at UCL, as technical adviser. In 1949 Matthew, who had been employed as an architect at LCC from 1946, established a new Reconstruction Areas Group, specialising in the rebuilding of bombed areas. He was also teaching at Edinburgh University. From 1949 Percy Johnson-Marshall also taught at Edinburgh and, appointed by Matthew, Arthur Ling and Leslie Martin, he had joined the LCC to lead Matthew's Reconstruction Group. During this time he lived in Hampstead Garden Suburb, designed by Unwin and Parker, which had matured into an outstanding example of residential planning. The LCC formed eight reconstruction zones to provide the opportunity to freshly layout large urban areas. It exhibited public relations plans, notably at the 1951 Festival of Britain, and visited schools as a means to persuade the public to accept their proposals. Its achievements include the Barbican, a complex of office towers united by a podium with pedestrian walkways on the top level, planned with the City Corporation Planning Officer's Department and designed by Chamberlin, Powell and Bon (1965-76), and the Stepney Poplar Area.[332] Overseen by William Holford and his former tutor, Gordon Stephenson, Percy Johnson-Marshall worked alongside Peter Shepheard on Stepney Poplar, a scheme based on individual neighbourhoods separated by green space. Stephenson, a MARS member, was chief technical advisor at the Ministry of Town and Country Planning and had exhibited his design for Stevenage New Town at CIAM 8 in 1951 alongside Le Corbusier's St. Die, two months after the Festival of Britain.[333]

Abercrombie and Matthew had also prepared the Clyde Valley Regional Plan, published in 1949. This generic plan for the Clyde Basin provided local authorities

[330] Lionel Budden, 'The regional and civic commemoration of the War', *The Town Planning Review,* April 1918, pp.185-7.
[331] Patrick Abercrombie, 'The need for a regional survey of national resources', *The Town Planning Review,* April 1918, p.210.
[332] Percy Johnson-Marshall, *Rebuilding Cities,* 1966, Edinburgh University Press, p.18.
[333] Eric Mumford, *The CIAM Discourse on Urbanism, 1928-1960,* 2002, MIT: Massachusetts, pp. 169; 203; 209.

with a framework to overlay their schemes. It proposed a regional authority to prepare a master plan for an area extending from Greenock and Helensburgh to Cumbernauld and Larkhall. The authority would oversee the distribution and diversification of industry across strategically positioned industrial complexes as well as the decongestion of areas by moving people into new towns and by extending existing settlements. Greenbelt separated the communities and protected rural land and the region boasted fast-moving motorways and the creation of regional centres. 250,000 people would be housed on the outskirts of the city in planned communities and a further 150,000 in four new towns at East Kilbride, Houston, Bishopton and Cumbernauld. The remaining 100,000 would be accommodated outside of the area in new sub-regions formed by extending small towns around Dundee and another located on the Tweed Valley, a plan for which had been prepared by Mears as part of the Central and South-Eastern Regional Plan (1946).[334]

Post-War hierarchical regionalism

Regional planning had also progressed in America during the 1940s. Stein had resurrected the RPAA and invited some of its original members, Mumford, MacKaye, Bing and Ackerman to form the Regional Development Council of America. They introduced hierarchical regionalism by interlocking distinct communities arranged around city centres. The siting and design of major settlements to complement a mobile, growing and dynamic population would efficiently meet the communities' social, political and economic needs. This echoes Mumford's regional outlook, outlined in *The Culture of Cities,* based on dynamic societies providing a foundation to planning, housing and urban renewal policy.[335] Shortly before the Second World War, during a lecture titled 'Cities of the Future', Stein had described his regional city idea as poly-nucleated garden cities surrounded by nature and his approach now took advantage of new technologies.[336]

After the Second World War Stein encouraged the American government to adopt the regional city model to accommodate new growth, address inner city decline, facilitate dispersal and build new housing as complete community units. He progressed the Radburn idea into a conceptual hierarchical diagram alongside writing

[334] 'The Clyde Valley: a regional plan', *The Architects' Journal,* 6th October 1949, pp.375-379.
[335] Lewis Mumford, *The Culture of Cities,* Lund Humphries: London, 1946, p.305.
[336] Kristin Larson, 'Cities to Come: Clarence Stein's postwar regionalism', *Journal of Planning History*, vol.4, February 2005, p. 38.

an unfinished manuscript 'The Regional City'. A lecture in January 1945 titled 'The form of future cities' outlined his strategy to enable residents of small towns to benefit from cultural and educational facilities of a large city by giving each of the towns a specific different function. By 1949 Stein had suggested to the Senate that depleted existing green belt towns could be revived through expansion as new towns.[337] Kitimat (figure 111), a new town for the Aluminium Company of Canada (ALCAN), was Stein's only postwar commission and this enabled him to demonstrate his concept whilst working with a private developer. Employed as a consultant, he collaborated with his assistant Roger Willcox, community architect; architects Albert Mayer and Julian Whittlesey; and MacKaye, who provided topographical studies based on river bank and regional land use strategies. Initially the intention was to expand the town to accommodate 6,000 people by 1955 but Stein provided for 35,000-60,000 through phased construction.[338] His aim was to provide a 'flexible setting for good living that is open to continuous growth and expansion.'[339] Designed as an industrial town on a site 66 square miles, it eventually would have a population of 50,000. Its layout provided community facilities, schools and public buildings. Housing was Radburn-style superblocks composed from low-density cul-de-sac groupings orientated around parks and civic centres.[340]

British Mark II new towns

In Britain a six-year pause new town selection followed Corby's designation in 1950. During this moratorium, the concept of designing for growth and urban renewal became accepted and, with a new emphasis on pedestrian connectivity, alternative forms were sought for neighbourhoods, civic centres, towns and urban renewal. After the Second World War Percy Johnson-Marshall had visited European war-torn cities. The scale and quality of building in Holland, its experimental neighbourhood layouts and the adoption of prefabricated construction had impressed him and he noted Rotterdam's centre as being contemporary and potentially one of the finest in the world. Similar to Le Corbusier's Ville Radieuse, a new framework of major road infrastructure and multi-level complexes that used subway crossings and pedestrian decks had been completed there. This included Grothandelsgebauw designed by Tijen and Maaskant; and Lijnbaan (1953), the first pedestrianized shopping centre in Europe

[337] Kristin Larson, 'Cities to Come: Clarence Stein's postwar regionalism', *Journal of Planning History*, vol.4, February 2005, p. 40.
[338] 'Kitimat: an interim report', *The Canadian Architect,* 1st March 1956, p.19.
[339] J. Russell Baxter, 'Kitimat: the first five years', *The Canadian Architect,* 1st March 1956, p.23.
[340] Kristin Larson, 'Cities to Come: Clarence Stein's postwar regionalism', *Journal of Planning History*, vol.4, February 2005, pp. 44-46.

by Jo Van de Broek and Joseph Bakema. Percy Johnson-Marshall recommended these as suitable precedents for large civic buildings.[341] These influences can be seen in a competition entry prepared by Percy Johnson-Marshall in 1958, in collaboration with Colin Buchanan, Paul Boissevain (1922 – 2014) and Barbara Osmond (1922-2010), for the renewal of Berlin's centre (figure 112). Boissevain, who had been born in Hilversum, taught at the AA between 1950-1, when Voelcker was completing his Zone project. Their scheme attempted to simplify highway arrangements by employing a comprehensive network of roads and walkways that divided the central area into rectangular 50-acre blocks rising from an elevated first floor podium. Similar to the Barbican, pedestrians moved between the blocks using a network of lightweight bridges. Each block was inserted into the grid of dual carriageways operating on reverse-flow and vehicles, parking and services were kept separate from people below the podium.[342] The Buchanan, Boissevain, Osmond and Johnson-Marshall entry was unsuccessful, but the Smithson's scheme, which enabled fluid growth of individual buildings as well as its master plan, received third prize.

From the mid-1950s the *Architects' Journal* published the University College London's Town Planning Department's student schemes that abandoned the neighbourhood unit and used linear layouts and blocks to strengthen social cohesion by increasing density and reducing open space within central areas (figure 113). One student, Mayer Hillman, claimed, 'it is generally agreed that the time has come to reconsider the principles and practices followed in the planning of the new towns, as outlined in the New Towns Act, 1946, and as executed in Harlow, Crawley, Stevenage and elsewhere.'[343] These schemes accommodated the same population as Stevenage (60,000) but in one-third of the area and had been presented at a meeting chaired by Holford at the Housing Centre. Theoretically, technological and industrial expertise, limited to a specific function and supported by training and research centres, would establish the towns a national identity.[344] They were either fully or part pedestrianized with segregated vehicular routes.[345]

[341] Percy Johnson-Marshall, 'Rotterdam: how it is being rebuilt', *The Architects' Journal*, 27th October 1955, pp.557-570.
[342] 'A plan for a two-level city', *The Architects' Journal,* 1st October 1959, pp.285-7.
[343] 'Project for a linear new town', *The Architects' Journal,* 4th April 1957, p.503.
[344] 'A compact new town with a specific function', *The Architects' Journal,* 22nd November 1956, pp.734-8.
[345] 'An alternative town', *The Architects' Journal,* 22nd November 1956, pp.738.

Similar themes characterised Mark 2 new towns (1961 – 1966), which were larger and denser than their predecessors. Cumbernauld (figure 114), designated in 1956 to relieve Glasgow's congestion, is an iconic example and was the first Mark 2 new town to be built. 80 per cent of its initial 50,000 population came from Glasgow and the town was expected to grow to 70,000. Its layout, characterised by a compact urban centre, extensive road network and the elimination of neighbourhoods, aimed to establish a balanced community. Two industrial areas provided employment. Its compact multi-level linear town centre ran along a hillside ridge to take advantage of the topography and natural site levels. Hugh Wilson, Chief Architect and Planning Officer, designed its phased road layout to allow for peak hour traffic increases for the next 15 years.[346] Connections from the town to the national road system were limited and followed a hierarchical road network. Roads and car parks were placed at low level so they could be approached from the main radial road system. Above this, pedestrian decks sought to improve connectivity across the town. [347] A shopping complex vertically connected separate pedestrian and vehicular circulation systems. Despite two-thirds of its population living in high-density housing within 10 minutes walk of the commercial and civic core (with a portion of housing located above the shopping area), one car per household was allowed.[348]

In 1958, on behalf of the RIBA and in collaboration the Society for the Promotion of Urban Renewal, George Grenfell Baines organised a Symposium on Urban Renewal, which was held the following year in Spring.[349] Eric Lyons, Leonard Vincent and Percy Johnson-Marshall determined and ran its programme and nominated speakers including Percy Johnson-Marshall, Holford (Chair), Matthew, J. L. Womersley, Lionel Brett, Ling, Hugh Casson, Walter Bor and Buchanan.[350] Its purpose was to demonstrate to provincial town councillors and planners physical aspects of redevelopment such as civic design or large-scale architecture.[351] A period of experimentation followed, but no clear approach or set of principles emerged. Scientific and architectural journals continued to debate the relationship between transport and urban planning with emphasis on linear arrangements. In 1960, in an article published in the *Architectural Review,* George Collins stated that linear growth

[346] L. Hugh Wilson, 'A plan to master the motor car', *The Architects' Journal,* 1st October 1959, p. 267.
[347] Richard Llewellyn Davies, 'Town Design', The Town Planning Review, vol.37, October 1966, p.168.
[348] A. K. Gibbs, 'Cumbernauld new town, mark II', *The Architects' Journal, 1st* October 1959, pp. 278- 284.
[349] Letter from George Grenfell Baines to Arthur Ling, 24th July 1958, Lancashire Archives.
[350] Letter from Colin Nears (RIBA) to George Grenfell Baines, 30th July 1958, Lancashire Archives.
[351] Letter from George Grenfell Baines to William Holford, 7th February 1959, Lancashire Archives.

was fact, not theory[352] and the exhibition of 'Metro-linear' (figure 115), a continuous city with alternate civic and industrial cores, designed by Reginald L. Malcolmson of Illinois's Institute of Technology, at the Museum of Modern Art in New York, demonstrated interest in infinite transport routes forming spines in new cities.[353]

Hook, Hampshire

In 1956 Hugh Bennett (1909-2000) moved from West Riding County Council's architects' department to replace Leslie Martin as chief architect at the LCC.[354] During his term (1956-70), his team prepared initial part-completed studies for a new town at Hook, Hampshire (figure 116). Although abandoned in 1960, its layout remained influential throughout the 1960s. Cumbernauld and the theories of sociologist Ruth Glass, Frederick Gibberd, Thomas Sharp, William Holford and Arthur Trystan Edwards influenced its designers, Graeme Shankland (1917-84) and Oliver Cox (1910-2010). Although Cox had left LCC by 1960, shortly after the project had stopped, to join the MOHLG's Development Group, he reflected, 'Hugh Wilson (Chief Architect and Planning Officer at Cumbernauld New Town) called us 'the boys', Graeme and me, at that time, because we were continually watching what he had been doing at Cumbernauld and were very much guided by that.'[355]

After demobilisation and whilst studying at the Architectural Association, Shankland, who had worked for Holford prior to the Second World War and was a founding member of the Society for Promotion of Urban Renewal, visited Vallingby, Sweden, and this suburban new town informed Hook's planning.[356] A continuation of Clarence Perry's neighbourhood unit, Vallingby, an ABC-town (Arbete, Bostad, Centrum or Work, Dwelling, Centre), was promoted as 'the most modern town in Europe, possibly the world, and was dubbed 'a machine to live in'.[357] Previously, until 1950, Cox had designed schools for Hertfordshire County Council's architects department, which was led by Stirrat Johnson-Marshall between 1945-48. Cox had served with the Royal Engineers, alongside Percy Johnson-Marshall, and the Indian Army. At LCC, Shankland and Cox co-led a team of 18 architect-planners including

[352] George R. Collins, 'Cities on the Line', *The Architectural Review*, vol.128, November 1960, p.345.
[353] George R. Collins, 'Correspondence: Cities on the Line', *The Architectural Review*, vol.129, January 1961, p.6.
[354] Andrew Saint, 'Sir Hugh Bennett', *The Guardian,* 23rd December 2000.
https://www.theguardian.com/news/2000/dec/23/guardianobituaries
Accessed 13th September 2019.
[355] John Gold, 'Hook: revisiting the New Town that might have been', introduction to London County Council, *The Planning of a New Town,* (originally published1961), Studies in International Planning History series, 2015, London, Routledge, p.11.
[356] Otto Saumarez Smith, 'Graeme Shankland: a sixties architect planner', *Architectural History,* 12th January 2016, pp.397-402.
[357] BBC Archive, https://twitter.com/bbcarchive/status/1013797585138733057?lang=en. Accessed 5th September 2019.

Hugh Morris, an AA trained communist with an interest in cluster urbanism, who worked with Cox on Hook's housing.[358]

Although Hook's proposals were abandoned in 1960, the following year a book, *The Planning for a New Town,* defined Hooks principles and was released as a handbook for others designing new towns. Regarded by Pevsner as the 'most influential urban planning document of its generation', because it outlined a model for 'transforming the dispersed, low-density poly-nucleated forms of the first new towns into the concentrated, high-density linear forms since adopted elsewhere.' [359] Translated into German and Japanese by 1969, it underwent five reprints.

Hook aimed to address four themes: urbanity, motor vehicles, population balance and the relationship of town and country.[360] At less than one mile wide and with a predicted final population of 100,000, it combined garden city principles with modern design to conceptualise a compact city in a garden. A dominant central linear complex replaced separate neighbourhoods, used previously in Mark 1 towns, and, rather than working with topography (as seen in Harlow), a pedestrianised lid was positioned over the valley to form a multi-level town centre that segregated pedestrian and vehicular movement. This provided a platform for central high-density urban housing for 60,000 residents and, to offer choice, civic amenities were duplicated at frequent intervals. Underneath the pedestrianised deck a sub-terranian grid of distributor roads linked the new town to the regional road network, three peripheral industrial areas and parking for 800 cars. Outside the core, concentric bands of residential areas for 40,000 people with decreasing density met a green belt of recreation space. Reminiscent of Stein's Radburn layout, low-storey housing, with single-aspect, achieved privacy and their gardens opening onto walkways.[361] The multi-level city approach employed at Cumbernauld and Hook was criticised because their layouts could not easily be altered or extended due to their centralised high densities.

RMJM and Percy Johnson-Marshall Associates

[358] London County Council, *The Planning Of A New Town,* Routledge: London, 2015, Routledge: London, p.xvi.
[359] John Gold, 'Hook: revisiting the New Town that might have been', introduction to London County Council, *The Planning of a New Town,* (originally published1961), Studies in International Planning History series, 2015, London, Routledge, pp.2-3.
[360] London County Council, 'Plan for a new town – Hook', *Ekistics,* April 1962, pp.262-269.
[361] 'Planning of a new town: the Hook study summarised', *Architect's Journal,* 6th December 1961, pp.1095-8.

In 1959 Percy Johnson-Marshall had accepted a post as Senior Lecturer in Architecture in the Faculty of Social Sciences at the University of Edinburgh, a new department led by Matthew. In 1962 he became Professor of Urban Design and Regional Planning, where he established a planning research unit and prepared a number of major regional studies and plans for Scotland. In addition to his teaching, in 1960 he opened Percy Johnson-Marshall and Associates (PJMA), his planning consultancy firm in Edinburgh. Matthew had co-founded Robert Matthew, Johnson Marshall (RMJM) in 1956 with Percy Johnson-Marshall's brother, Stirrat Johnson-Marshall, but closed the planning team at the Edinburgh RMJM office during the early 1960s and reassigned staff and projects to PJMA. Matthew had become acquainted with Stein, Mumford and Catherine Bauer Wurster and he nurtured links between Edinburgh University, RMJM and American urban renewal institutions to fund projects, such as Percy Johnson-Marshall's planning research unit.[362]

During the 1960s RMJM undertook a number of large-scale regional planning projects. The two RMJM offices collaborated with PJMA to prepare the Belfast Regional Plan (1960-3), the administrative sector for Islamabad in Pakistan, the Lothian Regional Plan including Livingston New Town and the Central Borders Plan. Independent PJMA projects included a multi-level complex for Halifax, Nova Scotia, and the transformation of an 87-acre site in Salford, Greater Manchester, into a multi-level decked development surrounded by tower blocks. Coinciding with studies into motor transport and a desire to design for mobility, its highway design sought to disperse predicted congestion even at peak times. Regional approaches to urban planning transpired based on constellations of towns and cities. These allowed for future growth and change and each layout produced a different solution to population growth and car ownership. Theoretically a new town could now be an interdependent node, capable of growth and adaptable to changes in land use. This had a drastic impact not only on the treatment of surrounding landscape, but also the distribution of functions. Neighbourhood concepts were replaced by layouts that encouraged freedom and dispersal for both vehicles and pedestrians. To achieve this transport networks had to provide uniform accessibility throughout the designated area.

[362] Miles Glendinning, Modern Architect: the Life and Times of Robert Matthew, 2008, RIBA Publishing: London, p.289.

The Belfast Regional Plan aimed to reduce the city of Belfast's population and industry by increasing its overall urban area's population to 600,000 people, an increase of 40,000. Acknowledging the area's potential attraction to new industrial enterprise due to its communications networks as well as social and commercial facilities, Matthew commented there was, 'an opportunity to create a contemporary urban environment of a high quality which could serve as a major symbol of regeneration within Northern Ireland'. He proposed the simultaneous demagnetisation of the centre, the creation of a new regional centre and the rejuvenation and expansion of the area's towns. To boost Northern Ireland's long-term economy, Matthew claimed that wide areas could be effectively revitalised by significantly expanding a small number of existing urban centres and he proposed the towns of Lurgan and Portadown could join to create a substantial new city. Landscaped parkways would link inner city areas and suburbs and 'Greenscape' would prevent further sporadic sprawl across adjacent high quality agricultural land.[363]

Sub-regional networks

On a larger scale, in 1962 in America, Resources for the Future, a research and education corporation that had been founded a decade earlier with support from the Ford Foundation, held their fourth forum entitled 'The Future Use of Urban Space'. The following year its papers were published as *Cities and Space: the Future Use of Urban Land,* and one article by Catherine Bauer Wurster, Professor of City and Regional Planning at the University of California, outlined an urban structure to disperse services and amenities across a sub-regional network of compact, diverse and integrated cities linked via a mass transit system. Open space defined each city's limits and there would be one dominant urban core.[364] Referencing Stein's urban model she suggested each city could adopt a specialised function to strengthen its identity.[365]

In the same year Frederick Gutheim, president of the Washington Centre for Metropolitan Studies, noted the automobile's impact on urban design and the increased number of ideal cities based on the car as a primary element.[366] This coincided with the promotion of research into existing urban communities and social anthropology to

[363] Robert Matthew, 'Belfast Regional Survey and Plan', *Official Architecture and Planning,* April 1963, pp.353-354.
[364] Catherine Bauer Wurster, 'Form and Structure of the Future Urban Complex' in Lowdon Wingo (Ed), *Cities and Space: the Future Use of Urban Land,* 1963, John Hopkins Press: Maryland, USA, p.95.
[365] Catherine Bauer Wurster, 'Form and Structure of the Future Urban Complex' in Lowdon Wingo (Ed), *Cities and Space: the Future Use of Urban Land,* 1963, John Hopkins Press: Maryland, USA, p.100.
[366] Frederick Guthereim, 'Urban Space and Urban Design' in Lowdon Wingo (ed.) *Cities and Space: the Future Use of Urban Land,* 1963, John Hopkins Press: USA, p. 119.

inform planning. Historically British and American approaches to urban design had differed. In Britain utopian visions had translated into the building of model cities, each with its own philosophy, but it was not uncommon for occupants to alter the way of life initially envisaged by the designer. In contrast, following the example of the Chicago School of Sociologists during the 1920s, the US had practiced theoretical research through observation and analysis of urban phenomena and development. This had inspired new interest in transport studies that, by observing land use and traffic, aimed to predict likely future patterns of urban growth. Urban models were created based on linear programming and this practice began to influence British designers. Transportation and accessibility became key concerns and, with private car ownership increasing, the recommendation to disperse central functions over whole metropolitan areas became accepted. [367]

Ekistics and dynamic urban growth

Simultaneous to US advancement of urban renewal, Constantinos A. Doxiadis had developed Ekistics, the science of human settlements, from 1941 and by the mid 1960s its theories experienced a surge in interest.[368] Intrigue was fuelled by concern that large and expanding developed and under-developed cities around the globe had become dysfunctional and unsatisfactory due to their irrational mix of housing, industry and transport, which had then resulted in inappropriate urban arrangements and erosion of their natural context.[369] Citing Preston, Lancashire, as an example and using the same image published by Mumford and Grenfell Baines, Doxiadis blamed the crisis on the growing and aging population, the rapid rate of random urbanisation and the increasing economic, social and technological gap between rich and poor due to rising incomes. He claimed that existing cities could not resolve these issues and consequently, physical planning of cities had become regulatory rather than creative.[370]

Having built his reputation after the Second World War through the reconstruction of Greek cities, Doxiadis became a city planning consultant for over thirty countries across the globe. By 1962 he was regarded as the world's most

[367] Peter Cowan, 'The future of cities', *New Scientist*, 29th July 1965, pp284-286.
[368] Constantinos A. Doxiadis, *An Introduction to the Science of Human Settlements,* 1968, London: Hutchinson and Co, p.1.
[369] Constantinos A. Doxiadis, *An Introduction to the Science of Human Settlements,* 1968, London: Hutchinson and Co, pp.5-6.
[370] Constantinos A. Doxiadis, *An Introduction to the Science of Human Settlements,* 1968, London: Hutchinson and Co, pp.21-48.

prominent internationally active master planner and he worked alongside similar-minded and talented designers including Tyrwhitt. He had been elected chairman of a UN working group on housing policy in 1948 and in 1954 he spoke at Tyrwhitt's low-cost housing conference in New Dehli. From 1954 he received commissions to assist on national housing programmes in seven countries and from 1957 Tyrwhitt assisted him in publishing the journal *Ekistics*. During the late 1950s he won an urban renewal competition for 10,000 dwellings at New Eastwick, Philadelphia, and in 1959, having made links with the Ford Foundation, he opened an office in Washington.[371]

Doxiadis defined Ekistics as the co-ordinated inter-disciplinary study of human settlements and he emphasised that this was not simply analytical, but its application could inform policies, programming and planning. Its principles, informed by drawings of dynamic settlements he had prepared a decade earlier, had been influenced by CIAM's 1933 Athens Charter, that introduced four architectural functions: dwelling, recreation, work and transportation, as well as Le Corbusier's and Frank Lloyd Wright's ideal cities (figure 117).[372] Ekistics divided human settlements into five dynamic elements (nature, man, society, shells and networks) and the architect's role in this process was to lead the design of community units at a range of scales from dwelling clusters to large towns.[373] The settlements needed to be broadly evaluated in isolation and as interdependent components of economic, social, political, technological and cultural systems that could be natural, social or man-made.[374]

Doxiadis advised abandoning pre-conceived ideas of what cities were, as well as other scales, functions and forms of human settlements. His intention wasn't to transform current cities or those in the immediate future, but to plan a long-term global systematic approach to urban structures to be realised over 100-200 years.[375] This would require re-evaluation of human urban lifestyles to understand factors that may condition future cities in order to create a framework to live in and pre-empt the potential problems posed by it. He advised that the new urban form would differ from Ebenezer Howard's Garden Cites and the subsequent new towns movement, which, although successful alternatives to uncontrollable cities, he criticised because they

[371] Miles Glendinning, *Modern Architect: The Life and Times of Robert Matthew,* 2008, RIBA Publishing: London, p.427.
[372] Constantinos A. Doxiadis, 'Ecumenopolis: Tomorrow's City' in W. R. Dell (Ed), *Encyclopaedia Britannica: Britannica Book of the Year 1968*, 1968, William Benton: USA, p. 20.
[373] Constantinos A. Doxiadis, *An Introduction to the Science of Human Settlements,* 1968, London: Hutchinson and Co, pp.75.
[374] Constantinos A. Doxiadis, 'Ekistics, the science of human settlements', *Science,* vol. 170, 23rd October 1970, p.393.
[375] Constantinos A. Doxiadis, 'Ecumenopolis: Tomorrow's City' in W. R. Dell (Ed), *Encyclopaedia Britannica: Britannica Book of the Year 1968*, 1968, William Benton: USA, pp.17-18.

benefitted few people and did not achieve a realistic future city typology. [376] Opposed to completed static city forms, Doxiadis proposed dynamic community growth to absorb existing settlements. To achieve this the city centre would expand and move in one direction over time and urban planning would adapt to future unpredicted sociological and technological advances and scenarios. He had successfully trialled this concept on a smaller scale in 1959 at the University of Punjab, Pakistan, in his design for a new dynamically expanding campus for 30,000 students and staff. A canal provided the main axis for growth, supplemented by a possible future second perpendicular datum. A second example, a new city in West Baghdad for 100,000 people, demonstrated the separation of cars and people. Comprising ten sectors of varying economic groups, its layout restricted vehicles entering the neighbourhoods and prevented roads crossing pedestrian routes.[377]

Concerned that the world's population would reach seven billion by the year 2000 (it was 6.1 billion in 1968), Doxiadis suggested that by 2160 cities should interconnect to merge into broad continuous urban complexes, known as megapolitan areas, for tens of millions of people. Called Ecumenopolis, Doxiadis believed that by 2068 there would be one global city[378] and, within this, England and Wales would be one single major urban complex (figure 118).[379] By cutting ribbons of built-up areas through the natural environment, Doxiadis anticipated that globally, five per cent of habitable land would be developed as urban areas, 45 per cent would be cultivated and 50 per cent would be landscape. His model placed major urban developments as regional complexes in key locations to feed new growth. This extra-human city framework would encourage and structure dynamic regional uni-directional growth and the increased open space would ensure the city's biological survival.[380] A range of transport routes, including walking, driving, sailing and flying, created and connected the overall framework and allowed access to a wide range of local, regional and universal facilities. To avoid route intersections, Doxiadis suggested cars and trains should operate in sub-terrain high-speed tunnels and travel at ground level was for recreational purposes only.[381]

[376] W. R. Dell (Ed), *Encyclopaedia Britannica: Britannica Book of the Year 1968*, 1968, William Benton: USA, p.15.
[377] 'Architecture in Evolution: Dr. Doxiadis's Discourse', *The Architect's Journal,* vol.131, 17th March 1960, pp.424-425.
[378] Constantinos A. Doxiadis, *An Introduction to the Science of Human Settlements,* 1968, London: Hutchinson and Co, p.15.
[379] Constantinos A. Doxiadis, 'Ecumenopolis: Tomorrow's City' in W. R. Dell (Ed), *Encyclopaedia Britannica: Britannica Book of the Year 1968*, 1968, William Benton: USA, p. 26.
[380] Constantinos A. Doxiadis, 'Ecumenopolis: Tomorrow's City' in W. R. Dell (Ed), *Encyclopaedia Britannica: Britannica Book of the Year 1968*, 1968, William Benton: USA, p.29.
[381] Constantinos A. Doxiadis, 'Ecumenopolis: Tomorrow's City' in W. R. Dell (Ed), *Encyclopaedia Britannica: Britannica Book of the Year 1968*, 1968, William Benton: USA, pp.30-34.

Ecumenopolis had three scales – universal (the framework), national and local (regions and neighbourhoods) and personal (the home). This hierarchical structure enabled occupants to differentiate between region, neighbourhood and community units. Each complex would be sub-divided into one-mile wide communities where human experience was prioritised. A range of residential types would be available including single-family housing with private gardens and, citing the work of Le-Corbusier, multi-storey apartment blocks with terraces and roof gardens. To achieve a sense of community, housing along narrow streets led to small squares featuring artwork. Apartment blocks incorporated facilities serving 200-300 units per floor such as shops, play areas and a nursery.

In 1968 in the second edition of the *Team 10 Primer,* published six years after the original, Alison Smithson introduced similar scales, categorised as urban infrastructure, the grouping of dwellings and the doorstep. Team 10 declared their interest in designing buildings to support mobility and promoted urban motorway networks. They believed that mobility would change density patterns by distributing functions and they welcomed legible community organisation based on hierarchical units of differing human associations (street, district and city); each identifiable by its structure.[382] By the 1950s social sciences had influenced emerging themes such as identity, association and neighbourliness. At CIAM 10 (1956), where Team 10 was formed, the categories were mobility, cluster, growth and change (flexibility and renovation), urbanism and habitat.[383]

Islamabad: Doxiadis, Matthew and PJM collaborate

Islamabad, the new capital of Pakistan, was the first practical city-scale application of Ekistics (figure 125). Doxiadis prepared its master plan during the early 1960s as a collaboration with the government architect, Zahir-ud-Din. During the 1960s Matthew worked alongside Doxiadis as principal co-ordinating architect to plan Islamabad's administration sector until he reassigned the project, splitting its day-to-day management between Percy Johnson-Marshall in Edinburgh and Maurice Lee in RMJM, London. Designed to accommodate 2,000,000 by 2068, Islamabad was planned between 1959 and 1963 and its implementation commenced in 1961. As the

[382] Alison Smithson (ed), *Team 10 Primer,* 1968, Studio Vista: London, p.48.
[383] Brian Brace Taylor, 'Team 10 + 20', *Art et Architecture Aujourd'hui*, January and February 1975, p.xx

new administrative capital for Pakistan, it would replace Karachi, which, at the time of independence in 1947 was a congested provincial town with few facilities for the predicted population of 90 million people. Because it was not economically viable to acquire land in Karachi for the new capital's public buildings and residences or widen the city's streets to accommodate traffic an alternative location was sought and this presented an opportunity for a dynamic city to form part of a megapolis and eventually the Asian section of the Ecumenopolis. The Grand Trunk Road, an established transportation link through Asia, was identified as a route along which there were several established major cities – Teheran, Kabul, Pashawar, Lahore and Delhi and, following analysis by Pakistani experts and consultants, land adjacent to Rawalpindi, an existing town, was chosen due to its natural setting, existing technology and networks and aesthetic cultural possibilities. Rawalpindi had an established rail and road network, airport and was on the cross roads with the Trunk Road and a main highway entering the hills, Kashmir and the mountainous area of Asia. Its growth concept, based on a geometric grid and reliant on the existing settlement's networks, had a dual-nuclei diagram to enable simultaneous uni-directional growth to form a dynamic metropolis. Initially Rawalpindi would support Islamabad and then, once established the economic arrangement would reverse. [384]

Dynapolis and Chandigarh informed Islamabad's concept. From 1951 to 1965 Le Corbusier, his cousin Pierre Jeaneret, Maxwell Fry and Jane Drew worked alongside a team of Indian architects on Chandigarh (figure 119), Punjab's new capital, which had repeated sectors and a hierarchical subdivision of roads and functions (administrative, diplomatic, institutional, industrial, services, commercial, university, public housing, green belt and national park). Le Corbusier visited Chandigarh twice a year; in 1954 Fry and Drew left the team, but Jeaneret remained until 1965 and he worked with local architects to supervise many urban projects.

Islamabad was designed as a series of human-scale communities arranged as an ever-extendable grid of highways, completely separated from pedestrians. Its dynamic, rather than diagrammatic layout, epitomised the views of post-CIAM urbanists, particularly Team 10. Measuring 2.1km by 2.1km and designed for 30,000 to 50,000 people, the size of each community unit was informed by previous successful

[384] Constantinos A. Doxiadis, 'Islamabad: the creation of a new city', *Town Planning Rewiew,* vol. 36, April 1965, pp. 1-35.

examples of cities, the dimensions being dictated by a ten-minute walk.[385] Design considerations included conveniently placing light industries on the periphery to ensure employees could walk to work. Each unit was split into four residential areas that shared a local centre, accessible on foot, providing shops and other civic facilities. Aspiring to achieve high quality surroundings and encourage social interaction, the layout allowed every resident to access a small landscaped square within a one-minute walk or a strip of natural landscape within a three-minute walk. High-speed expressways surrounded Islamabad's main square and, although cars could pass through the space, their speed was restricted to 25mph and 10mph on residential streets.

British theoretical linear planning

In 1963 Doxiadis and Tyrwhitt organised the first 'Delos Symposium' as an eight-day cruise of the Greek Islands calling at points around the Aegean. Primarily co-ordinated by Tyrwhitt, it was dominated by American delegates, with Matthew, Lleweyn Davies, Giedion (who had also attended the 4th CIAM in 1933) and Buckminster Fuller amongst the 35 attendees. Its format was reminiscent of the 4th CIAM conference that led to the 'Charter of Athens and similarly a 'Declaration of Delos' concluded it.[386] The symposium became an annual event and after the second meeting Doxiadis established the World Society for Ekistics and invited Matthew to join its executive committee. In 1965 an Ekistics conference was held in Cambridge, England, sponsored by the British Government and Ford Foundation and Matthew (PRIBA and PIUA) invited Doxiadis to lecture at Edinburgh University. That year Matthew, Llewelyn-Davies, Percy Johnson-Marshall and J. M. Richards attended the third Delos symposium, which encouraged regional development. [387] This coincided with the first regional report on Paris, which was expected to grow to 14,000,000 and extend beyond the Channel coast by 2000. Simultaneous to Ekistics, Buckminster Fuller had also promoted the efficient use of world's natural resources as a means to achieve rational order based on communication networks. By 1961 he had proposed a network to enhance the globe's productivity. In 1965 Fuller initiated the 'World Science Decade' of 1965-75 and he enlisted Monica Pidgeon at the *Architectural*

[385] Constantinos A. Doxiadis, 'Man's Movement and his City', *Science,* vol.162, 18th October 1968, p.328.
[386] Miles Glendinning, *Modern Architect: The Life and Times of Robert Matthew,* 2008, RIBA Publishing: London, p.428.
[387] Miles Glendinning, *Modern Architect: The Life and Times of Robert Matthew,* 2008, RIBA Publishing: London, pp.431-2.

Design journal to promote it and identified the IUA as a suitable outlet to disseminate his ideas world-wide.[388]

H. Rau, Senior Fellow at the Department of Town and Country Planning, University of Manchester, applied Doxiadis's continuous linear development theory to Britain's national infrastructure plan (figure 120). In 1963 he predicted that by the year 2000 a further ten million people would need to be housed in Britain and, campaigning for a national renewal strategy that addressed land use and the economic disparity between regions, he introduced the concept of string-settlements. Following primary transport, communication and power supply routes, a ribbon framework distributed land uses. Settlements, in close proximity to green space, varied in width and density. This was considered advantageous as it provided rapid transport without congestion and, through extension, could accommodate future urban concentrations.[389]

The following year in an article published by the *New Society,* Arthur Ling noted that a new era of prototype town development had started and, presenting a national framework similar to Rau's (figure 121), he argued that a new town and town extension strategy could co-ordinate future motorways and settlement locations across the country. Citing Coventry, Ling observed the population of new towns had started to increase, requiring a greater range of regional amenities and facilities. Claiming that urban forms based on radial road networks were now obsolete because they were becoming increasingly congested, new patterns needed to be researched and tested. Ling highlighted Cumbernauld as an exception, which, with a non-radial layout, was designed to receive a higher density. Recommending compact linear formats served by main lines of public transport as an alternative to the straight layout of Hook, he cited the stellar configurations used in the 'finger plan' for Copenhagen and MARS's London plan's parallel districts (figure 122). These are a progression of ideas presented by the *Architectural Review* in 1943. He emphasised that detailed diagrammatic forms and complexes that complemented local topography, promoted public transport and segregated people and vehicles were desirable and he referenced Ralph Erskine's shopping mall in Lulea, Sweden, as an example.[390]

[388] Miles Glendinning, *Modern Architect: The Life and Times of Robert Matthew,* 2008, RIBA Publishing: London, p.423.
[389] H. Rau, 'National prospect: a plan for better housing and easier travel in Britain', *The Guardian,* 23rd April 1963, p.5.
[390] Arthur Ling, 'The newest towns', *New Society,* 9th July 1964, pp.9-11.

British theoretical circuit linear towns

By 1963 Matthew had co-ordinated an array of US networking events in Britain and Europe including a conference, 'Transportation and the Regional City,' with contributions by the Ministry's chief planner, J. R. James, on US sponsored planning research. James had predicted Britain's population would grow by 20 million by 2015 and, allowing for existing regions to grow by one third, further new towns would accommodate the remainder. He identified potential new areas of growth across the country, including Carlisle, which, although underdeveloped, had good rail and road links. Alcan (1964), sponsored by ALCAN Industries was a British application of Stein's Kitimat project in Canada (figure 111). Designed by Gordon Cullen and Richard Matthews, this was a theoretical model for a circuit linear town. The *Architectural Review* published a series of articles to demonstrate how the settlement could organise urban growth for the motor age. Designed for 100,000 people, its diagrammatic format was a ten-mile circuit, three-quarters of a mile wide, with a road and silent monorail as its central spine. Spacing of amenities along the route was determined by 30 minutes travel including 15 minutes on foot.[391] The following year Cullen and Matthews applied this model to existing conditions. Two examples were in Lancashire (figure 123). The first, a new town called 'Redrose', used four circuits radiating from principal towns at Wigan, Warrington, Leigh and St. Helens to link the Liverpool and Manchester conurbations. A regional city could be created by adding a further four circuits.[392] The second application on the Solway Firth, near Carlisle, proposed a barrage on the estuary to form a new reservoir supplying water to Manchester. The circuit encompassed this to link a series of linear and satellite communities.[393]

Grid-iron networks

In 1965 Lord Llewelyn Davies described the impact of the new interest in planning human settlements in an article published in the *Architectural Review.* Noting the garden city and new town movements as Britain's experimental contribution to research in human settlements, he challenged the accepted theoretical new town framework. He recommended cities should no longer be planned based on old patterns that restricted growth to an optimum size and allocated fixed zones for the city centre, industrial and peripheral residential areas, all linked by a radial transport

[391] 'A town called Alcan', *The Architectural Review,* May 1964, pp.69-72.
[392] 'Alcan: Redrose', *The Architectural Review,* April 1965, pp.112-3.
[393] 'Solway', *The Architectural Review,* May 1965, pp.3-6.

system. Instead he pressed dynamic growth on a regional or national scale to accommodate growing populations and expanding employment. Through multi-disciplinary collaborations between geographers, economists, sociologists, architects, engineers and planners a twenty-year plan could be explored. Central functions (gravitational nodes) such as employment, shopping and cultural activities could be evenly dispersed across city frameworks to enable decentralisation and revolutionise the theoretical basis for transport networks to facilitate outward mobility, provide equal coverage and capacity and allow further expansion. [394] Predicting this would transpire as gridiron networks of equal capacity, Llewelyn Davies stated that dramatic intervention, such as a major new transport network or urban renewal, was required. Countryside would no longer be treated as separate from the city, but as an integral component of equal value.[395]

Llewelyn-Davies continued to popularise the grid-iron network for the primary transport system as it readily enabled expansion and complemented separate pedestrian routes leading to the town centre and sub-centres.[396] Due to their efficiency and theoretical background, linear proposals, which didn't simply need to be straight, continued to gain interest. Initially main means of travel around the city were designed to be orderly, based on pre-determined bus or tram routes, but it soon became apparent that the motorcar, which was rapidly gaining popularity, would become the dominant mode and in doing so would disrupt this format as travel would be possible in any direction. Complementary motorcar and high-speed bus networks were then conceptualised, where buses infrequently stopped centre to centre rather than perimeter to centre.[397]

In 1967 Doxiadis published an article in the *Town Planning Review* to clarify the difference between linear and dynamic cities as both involved the controlled expansion along a single axis. Llewelyn-Davies had previously associated the Cuidad Lineal by Soria to Doxiadis's Ekistics work and his proposals for a dynamic city. Although Cuidad Lineal had a spine of central functions with residential and industrial either side, it presented limited growth options as it could only expand from either end

[394] Richard Llewelyn Davies, 'Town Design', The *Town Planning Review*, vol.37, October 1966, p.167.
[395] Richard Llewelyn Davies, 'Ekistics: the science of human settlements', *The Architectural Review,* vol.138, December 1965, pp.399-401.
[396] Richard Llewelyn Davies, 'Town Design', *The Town Planning Review*, vol.37, October 1966, p.170-1.
[397] Richard Llewelyn Davies, 'Some further thoughts on linear cities', *The Town Planning Review*, vol.38, October 1967, pp.202-3.

and therefore restricted site choice in the event of expansion or relocation. Doxiadis did not consider it to be dynamic; instead he demonstrated how Cuidad Lineal had actually been designed as a small-scale corridor-like extension to connect two cities. To clarify the difference between linear cities and dynamic cities Doxiadis established the following criteria:

1. Linear cities were suited to small-scale areas whereas the dynamic city was unrestricted.
2. Because linear cities were restricted they were designed to be static. Dynamic cities facilitated continuous growth.
3. Linear cities were uniform in size and formation i.e. repetition of their units was identical.
4. Linear cities grow in two directions. Dynamic cities grow in one direction.[398]

British Mark III new towns

Linear growth became a common characteristic of the next phase of new towns, the Mark IIIs (1967-70). The Department of Housing and Local Government employed James Jones and Jimmy James to initiate these based on existing settlements that allowed for future adaptability and change. They combined advanced public transportation networks with a return to the neighbourhood principle to reinforce unity. Peterborough (1967), Milton Keynes (1967), Northampton (1968), and Central Lancashire New Town (1970) all adopted this principle, but through different urban patterns.

Peterborough (figure 127) was designated under the New Towns Act in 1967 to absorb London's population growth. The Greater Peterborough master plan transformed the industrial town for 70,000 people to a city for 190,000 plus a further 250,000 within the regional complex of towns, villages and agricultural land spanning 16,000 acres. An initial scheme, prepared by Sir Henry Wells in 1962, expanded the town as a ribbon development northwards along the railway. The Minister of Housing and Local Government later appointed Tom Hancock in 1965 to prepare its designation report. Hancock's proposal is reminiscent of Ebenezer Howard's regional Social City township clusters that aimed to provide city life in a rural environment. He separated four independent arced linear townships (Bretton, Paston, Orton and

[398] Constantinos A. Doxiadis, 'On linear cities', *The Town Planning Review*, April 1967, pp.35-39.

Castor), with a country park, but linked them with parkways. Each township provided 20,000-30,000 people with education and shopping facilities.[399]

At Milton Keynes (figures 124 and 126), Llewelyn-Davies utilised an expandable grid-iron network for the primary transport system. A separate overlaid grid of pedestrian routes linking the town centre and sub-centres supplemented this.[400] Milton Keynes was designed to accommodate a population increase from 44,000 to 250,000 across 21,900 acres (8863 hectares) by the turn of the century. Its masterplan aimed to create independent towns across an urbanised region. Spanning rolling Buckinghamshire farmland, it is located on the main high-speed railway and motorway between the North of England and London. It's net-and-fill layout, based on a one-kilometre grid of two-lane roads, dispersed vehicular traffic across the town to scatter employment, education, health facilities, recreation, housing and retail. Two parklands weave through the city and cycleways link urban layouts with landscape. Neighbourhoods units were not prescribed, instead each area within the lattice was treated as an individual place for 5,000 people, known as a township, and local centres were positioned along the perimeters to form high streets. This enabled local centres to serve different townships and residents to use facilities in adjacent areas. Based on Buchanan and Partners' study of South Hampshire that examined the economic effect of dispersed or peripheral industry, new enterprises were spread across the framework.[401] The initial phase, designed for completion by 1980, adopted a linear format running north to south with a spur to the east to link an industrial area with the M1 motorway. Growth was concentrated on the existing towns of Bletchley, Wolverton and Stony Stratford, allowing them to unify first.[402] Llewelyn-Davies had used a similar grid to order sixteen villages as a new town at Washington, County Durham, (1966, figure 128).

Previously, in association with Jamieson and Mackay (highway and traffic engineers) and Gordon Cullen (the author of the Alcan schemes), Hugh Wilson and Lewis Womersley had incorporated Bletchley into a new sub-regional conurbation in the south Midlands as part of a plan for Northampton's expansion (figure 129). During the 1960s Northampton was a substantial and established existing town, rather than a

[399] Robin Guthrie, 'Expanding a town: Peterborough's example', *New Society,* 24th September 1970, pp.532-535.
[400] Richard Llewelyn Davies, 'Town Design', *The Town Planning Review*, vol.37, 1966, p.157-8.
[401] 'Manplan 3', *The Architectural Review,* November 1969, p.386.
[402] T. Bendixson, 'Milton Keynes: the newest new town', *Architectural Review*, August 1969, pp.103-8.

green field site, and was considered to be a potential 'dynamic generator of regional economic growth' on the railway line between Coventry and Euston.[403] In their first report, *Northampton, Bedford And North Bucks Study: An Assessment of Interrelated Growth,* Wilson and Womersley outlined an interrelated polycentric growth pattern, linking a continuous string of settlements in a triangular formation.[404] It transformed Northampton into a city for a million people through substantial expansion, the creation of a new town or small city at north Bucks and Bedford's limited growth. The national communication network linked a wide range of cultural and social facilities. Criticised as 'ribbon development', the diagram was swiftly revised to show three arced parallel roads, two miles apart, to allow growth between the M1, Milton Keynes and Wellington (figure 130). This model's advantages included open-endedness and a clear definition between town and country.[405]

Wilson and Womersley, in collaboration with Jamieson and Mackay, applied their Northampton, Bedford and North Bucks studies to planning proposals for Irvine for the Secretary of State for Scotland (figures 131 and 132). Prepared from 1965-66 to receive overspill from Glasgow, they treated existing settlements surrounding Kilwinning, Ayreshire, as a sub-region and outlined their expansion to accommodate a further 55,000 people across the designated area of 12,440 acres, increasing the total population to 80,000. Wilson and Womersley noted that mobility and future population growth would alter many regional planning concepts and focus would shift towards the creation of cities rather than new towns. With Irvine as the regional centre, the new city would attract business by offering varied employment opportunities and regional facilities. Population and land uses, particularly employment sites, would be evenly distributed across the region to disperse traffic.[406] Industry was scattered on the periphery of its three-strand structure, with one larger estate to the south. Each settlement unit would nurture a unique character relating to site and environmental conditions.

Their plan, which was designed to complement existing conditions, offered a basic framework for long-term growth and was intended to be flexible in terms of land

[403] George Duncan in Robin Guthrie, 'Expanding a town: Peterborough's example', *New Society,* 24th September 1970, p.532.
[404] Northampton Bedford and North Bucks – Wilson and Womersley's new town study', *The Architects' Journal,* 24th August 1966, p.458.
[405] Robin Moore, 'Planning: can Greater Northampton go linear?', *The Architects' Journal,* 25th February 1970, pp.474-5.
[406] Hugh Wilson and Lewis Womersley, 'Irvine New Town, final report on planning proposals', November 1966, Edinburgh: HMSO, pp.1-

use and communications. It proposed a phased building programme to ensure facilities were completed for the incoming community. A hierarchical communications system was applied and a pedestrian footpath system ensured vehicles and people did not mix. A communication spine for public transport, with limited stopping points, linked district centres and could be easily expanded by adding further settlements. Wilson and Womersley described its diagram (figure 133) as a necklace with 'beads of varying shape and size representing the units of development and the string [as] the public transport system.'[407] When applied to site conditions this translated into a wide arc, one mile wide and five miles long, spanning between Drybridge to the south of Irvine to Kilwinning in the north. This could be further extended to link Stevenson, Saltcoats and Ardrossan or beyond to Ayr and Dalry.

A later project by Wilson and Womersley, Redditch new town (1967, figure 134), advanced the relationship between domestic vehicles, public transport and footpaths within linear frameworks. Its residential units adopted a Radburn layout and a central spine for dedicated bus and pedestrian routes dissected these to link to industrial areas beyond open space. A road circumnavigating each residential unit excluded domestic traffic from the central area.[408]

A theoretical project, Civilia (1971, figure 135), further progressed ideas of mobility to structure uni-directional growth, but applied to a centralised rather than polycentric model. Similar to Doxiadis's Dynapolis, the planners, Michael Rowley and Rodney Carran, proposed a linear expansion along a concentrated spine leading from a single central urban complex to act as a growth generator. This high-density area would have a population of half a million, supported by local centres injected at strategic points. A lower-density lattice, as employed at Milton Keynes, was laid across this, capable of accommodating a similar population.[409] Civilia's indefinite linear form could be stopped or continued as required.

During the early 1960s British new town design evolved to accommodate the motorcar. Their communication network structured their form and dictated their phased construction and future growth. Ekistics and the American example had

[407] Hugh Wilson and Lewis Womersley, 'Irvine New Town, final report on planning proposals', November 1966, Edinburgh: HMSO, p.8.
[408] 'Redditch new town', *The Architects' Journal,* 19th April 1967, pp.935-936.
[409] Ivor De Wolfe, *Civilia: The End of Suburban Man,* 1971, The Architectural Press, London, p.32.

advanced these ideas and the Mark II new towns, which were denser and pedestrianised than the Mark I's, incorporated separate advanced transportation systems linked to a regional network to provide congestion-free access and manoeuvrability. The Mark III new towns continued these themes but focused on renewal. Often sub-regional cities, these adopted hierarchical units to structure their extension through repetition.

> Through their design of Mark III new towns, Wilson and Womersley, in collaboration with Jamieson and Mackay, created a new urban pattern: the polycentric linear sub-region. These urban arrangements followed high-speed road networks, often in a grid or ladder formation. Prior to this, Wilson had designed Cumbernauld, a Mark II new town, and this became a precedent for Hook. Characterised by its multi-level town centre, its design combined Howard's garden city principles with density and it was ordered using hierarchical defined neighbourhoods. Both approaches, the framework and social structures, are evident in Central Lancashire New Town's initial theoretical studies prepared by RMJM and will be examined in Part 3.

Part 3

Part three examines how RMJM applied the theories introduced in the previous two sections to Central Lancashire New Town's feasibility studies.

1964

‘Preliminary technical report on the future of central mid-Lancashire’ published by Lancashire’s County Planning Officer. Chorley, Leyland and Preton identified as towns for expansion.

1965

Peter Grimshaw’s Garstang New Town scheme.

‘The North West: a regional study’ published. Recommended a new town at Leyland/ Chorley.

RMJM and PJMA commissioned to undertake initial studies for Central Lancashire New Town.

1967

Study for a City published.

RMJM prepare ‘Central Lancashire New Town proposal: impact on North East Lancashire’.

1968

Government supports ‘growth pole’ development strategy.

Town Planning Act

1969

Architectural Review launches ‘Man Plan’ campaign.

BDP prepare ‘Central Lancashire New Town proposal’.

Housing Act.

1970

Grenfell Baines prepares ‘Central Lancashire and North Lancashire urban area report’ and ‘North Lancashire urban development: a proposal’.

Central Lancashire New Town designated.

RMJM prepare **‘A Study in City Growth’.**

1971

Central Lancashire Development Corporation appointed.

RMJM prepare Central Lancashire New Town draft masterplan.

CENTRAL LANCASHIRE NEW TOWN’S KEY REPORTS AND STUDIES

Study for a City

Part 2 introduced the work of Derbyshire; Wilson and Womersley; Jamieson and Mackay; Matthew and Percy Johnson-Marshall. This chapter focuses on an early report, *Study for a City,* prepared by RMJM for Central Lancashire New Town. Influenced by these designers and informed by a series of government reports, the report introduced a framework and sub-regional economic growth strategy for central Lancashire. Whilst *Study for a City* was being prepared and coinciding with Central Lancashire New Town's designation, George Grenfell Baines, who had been proactively campaigning for Preston's renewal and the region's regeneration, designed an alternative scheme to incorporate North East Lancashire and the Fylde coast into the new town to form a regional plan for economic growth.

Lancashire's regional decentralisation and economic growth strategies

Despite national interest in alternative urban forms, in Lancashire traditional Mark 1 and Mark 2 new town types remained popular. By 1960 neighbouring counties and local authorities had only partly solved Manchester and Merseyside's tremendous overspill problems by receiving population. Lancashire had three new towns underway - Skelmersdale (1961), Runcorn (1964) and, later, Warrington (1968). A further new town at Leyland to relieve Manchester and Preston's overspill was considered [410] and a review of the Lancashire County Development Plan again identified Leyland as a possible location for large-scale development due to its proximity to the new M6 motorway and high levels of employment in the motor manufacturing industry, primarily at British Leyland.[411] The new proposal by Mr Brooke, the Minister of Housing and Local Government, treated the area as a regionally planned conurbation.[412]

In 1964 the University of Manchester's 'Haydock Report' suggested economic activity could be decentralised to six growth areas (Morecambe Bay, Preston, South-Central Lancashire, Mid Cheshire, South Cheshire and North-East Wales).[413] This coincided with Garstang, next to the M6 motorway between Lancaster and Preston, being unofficially proposed as a new town site and during the 1960s its plan progressed alongside Central Lancashire New Town's (figure 137). D. M. Clark, an assistant

[410] Letter from Mr. Brooke, Minister of Housing and Local Government, to Manchester Corporation cited in 'New town proposal for S. E. Lancashire: minister changes his mind', *Guardian,* 19th November 1960, p.12.
[411] Lancashire Planning Department, *First Review of the Lancashire County Development Plan,* 1962, Preston: Lancashire County Council.
[412] 'New town proposal for south-east Lancashire: minister changes his mind', *The Guardian,* 19th November 1960, p.12.
[413] Department of Town and Country Planning, University of Manchester, *Regional Shopping Centres in North West England,* August 1964, p.106.

lecturer in geography at Lancaster College of Further Education, had outlined his proposals to the Government's North-west regional study group and, although recommending a town expansion rather than a new town, he considered Garstang to be an attractive settlement capable of receiving an additional 30,000 people over 20 years. He highlighted its geographical position as being sufficiently removed from south Lancashire's to become a self-contained community with its own identity and economy.[414] This idea was progressed by Peter Grimshaw, a chartered geographer, who also sent a scheme with a linear town centre to the North-west regional study group.[415] In this proposal the town's rich landscape of fells, canals, parks and lakes would contrast with new industrial areas to the north, the railway, new ring road and motorway. The existing topography informed the allocation of low-rise housing on the plain and high-rise residential units on the fell slopes. Grimshaw's layout was problematic because the M6 cut through the town's core[416] and when the *Architects' Journal* reviewed his study, it highlighted the resulting planning complications.[417] It also relied on the redevelopment of agricultural land. Claiming the construction of one new town every six years was necessary to resolve national estimated population increases, Grimshaw did not consider building on green belt to be problematic as he anticipated it would not impede agricultural productivity. He cited that nationally there had been a 4% reduction in rural land since 1939, yet yield had increased by 60%.[418]

In February 1966, supported by Lancaster University, the North-west Economic Planning Council assigned a major twenty-mile growth zone stretching from Carnforth to south of Garstang. Grimshaw then progressed his linear motorway new town scheme into a chain of multiple settlements following the north-south communication corridor with Garstang as a key nodal point. This culminated as a report titled 'Growthpoint Garstang'. Set against the backdrop of the Bowland Fells and maximising the town's water frontages along its rivers and the Lancaster canal, the town's master plan would be capable of receiving a population of 100,000. A five-mile deep green belt would restrict growth and connect to public linear green spaces that followed natural features. [419] Although Grimshaw's reports were widely

[414] 'Call for expansion of existing N.W. towns', *Guardian* 8th September 1964, p.16.
[415] 'New town plan opposed by council', Guardian, 9th April 1965, p.30.
[416] Joseph Minogue, 'Plan for motorway town sent to North-west study group', *Guardian,* 9th March 1965, p.6.
[417] Michael Franklin, 'Proposal for Garstang', *Architects Journal,* 4th August 1965, p.242.
[418] 'Use of agricultural land for new towns', *Guardian,* 11th May 1965, p.6.
[419] Peter Grimshaw, *Growthpoint Garstang: a Report on Garstang, Lancashire,* 1967.

distributed and supported by the national and local press, Garstang Rural District Council opposed them. In 1967 two alternative sites in the Garstang area, Overton village (on the Morecambe peninsula) and Calgate (between Garstang and Cockerham), were identified for development. Each could be developed as district centres with amenities to receive 30,000 – 40,000 people.[420]

Alongside Garstang's evaluation and the Haydock Report, in 1964 the County Planning Officer, Aylmer Coates, produced a 'Preliminary Technical Report on the Future of Central mid-Lancashire' that focused on the Chorley-Leyland area.[421] This was pertinent because, with the completion of the MOHLG's 'South East Study' in the same year, the creation of substantial cities and economic growth points had gained popularity. The mid-Lancashire's Technical Report outlined a vision to create a 'new and contemporary urban environment as the modern alternative to the traditional suburban relief from city frustrations' and it claimed that areas already containing well-established towns and cities could accommodate a substantial population increase of 150,000.

Selecting Chorley, Leyland and Preston's suburbs as focal points for expansion, the report stated that a large number of people could live together without the disadvantages of some cities and that new development could support future communities. Similar to Ebenezer Howard's utopian ideas, the report described a land use pattern that aimed to provide well-positioned and sufficient industry, open space, compact amenities and public services. Journey times could be limited to 30 minutes to open country, 20 minutes to work and 10 minutes to local shops and school. The proposal required 13 local authorities, including Preston, to collaborate to form a sub-region.

Lancashire's motorway network

By 1965 the new M6, then the longest section of continuous motorway in the country, had been extended to 111 miles and it spanned three counties from south Stafford to north of Lancaster.[422] Forton service station (figure 138), designed by T. P. Bennett and Sons, 7 miles north of Preston, opened just before the highway's

[420] 'New town in North Lancashire from private development', *Guardian,* 19th January 1967, p.4.
[421] U. A. Coates, 'Preliminary Technical Report on the Future Development of Central mid-Lancashire (with particular reference to the Chorley-Leyland area)', 2nd September 1964, pp.1-10, Lancashire Archives.
[422] 1963. 'Motorways and the landscape', *The Guardian,* 15th November, p.15.

completion. This early example of transport architecture, a monument to mobility, has a bold form to contrast with the rural landscape and it captured the pioneering spirit and excitement of road transport during the 1960s. Its landmark tower, originally designed to be 33 metres high, but reduced to 20 metres at the request of the planners, cantilevers at the top to provide a sun terrace and restaurant.[423] It was the second motorway services in central Lancashire, the first being Charnock Richards, south of Chorley, designed by Terence Verity and Associates in 1964. Construction of the M61 between Manchester and Preston, joining the M6 at Walton-le-Dale, was scheduled for construction between 1965-71 and the Lancashire section of the M62, linking the North-West and North-East, would be complete in 1971. Collectively the area's motorways would carry 119,000 vehicles per day (figure 139).[424]

In 1965 the North West study group published their findings as *The North West: A Regional Study.* Recommending that housing and industrial development were key factors to consider when preparing a regional strategy, the report concluded that a new town at Leyland and Chorley could take advantage of its proximity to the motorway network to stimulate rapid economic growth. It noted that if the renewal of towns, such as Preston and Blackburn, were also taken into account, a modern city complex for 500,000 could counterbalance Greater Manchester and Merseyside.[425]

Central Lancashire New Town's initial studies

Matthew and Percy Johnson-Marshall had participated in negotiations for a fourth new town in mid-Lancashire since late 1965 when Richard Crossman, then Minister of Housing and Local Government, commissioned Robert Matthew, Johnson-Marshall and Partners (RMJM) to undertake preliminary studies. Initially RMJM Edinburgh and PJMA had intended to collaboratively run the Central Lancashire New Town project but, unexpectedly, two of PJMA's employees, George Duncan (1931-1997) and Roy Stewart, relocated to RMJM's London office taking the job with them.[426] The move of the Central Lancashire project strained relations between the two RMJM offices, but Matthew continued to attend its meetings through 1966.

[423] D. Cruickshank, 1996. 'Forton services: M6 Lancashire', *RIBA Journal*, April 1996, pp.49-55.
[424] Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.9.
[425] Department of Economic Affairs, *The North West: A Regional Study,* 1965, London: HMSO, Pp.108-111.
[426] Roy Gazzard, 'Obituary: George Duncan', *Independent,* 24th March 1997.
https://www.independent.co.uk/news/obituaries/obituary-george-duncan-1274827.html

Stirrat Johnson Marshall's office had expanded during the early 1960s; it had attracted Andrew Derbyshire in 1961 and Hugh Morris, who previously had worked on Hook. On leaving Farmer and Dark with Volecker in 1953, Derbyshire had worked in the public sector, initially at Hertfordshire County Council with Stirrat Johnson Marshall, who was Deputy County Architect, prior to designing prefabricated schools for West Riding of Yorkshire. Between 1955-61 Derbyshire was Sheffield's deputy city architect, (alongside Hubert Lewis Womersley, chief architect 1953-64,) where he designed Castle Market, demolished in 2013. [427] In 1961 Derbyshire had been invited to apply for a Professorship in Architecture at the University of York but instead, inspired by the site for the new campus, accepted a position at RMJM, London, as the University's first project architect working on its development plan. He became a partner at RMJM in 1964. At York he applied a theoretical approach that considered the relationship between function and building and allowed for future growth. [428] The multi-purpose Central Hall (1966-68), designed by RMJM, provides a focal point to the campus (figure 140).

Duncan, a graduate of the Glasgow School of Art and Strathclyde University, was amongst the second generation of post-Wßar planners interested in liaising with local communities during the planning process, a technique Percy Johnson-Marshall had adopted at Coventry. He had worked alongside Percy at London County Council's town planning department on Comprehensive Development Areas in east London, followed by a short appointment from 1958 at Kent County Council where he developed urban design schemes and statutory planning policy. By 1960 he was a member of the RIBA and RIAS and, after relocating to RMJM Edinburgh, was transferred to PJMA's payroll. [429] He worked with Percy Johnson-Marshall on Islamabad, Pakistan; the Belfast Regional Survey and Plan; the Burgh of Kirkcaldy Central area Redevelopment Scheme; planning for Salford and Nova Scotia. Duncan was employed by PJMA when he first met Stirrat Johnson Marshall and Derbyshire during the early 1960s and they asked him to advise as a consultant on the University of York's development plan.

After Central Lancashire New Town's designation, Crossman noted,

[427] https://www.ribaj.com/culture/sir-andrew-george-derbyshire-1923-2016. Accessed 26th October 2018.
[428] University of York, 'Sir Andrew Derbyshire', https://www.york.ac.uk/about/history/people/andrew-derbyshire/ Accessed 9th September 2019.
[429] Miles Glendinning, Modern Architect: the Life and Times of Robert Matthew, 2008, RIBA Publishing: London, p.289.

> The Government have been considering as a matter of urgency how they can help Manchester to deal with its housing problems in a way that would contribute positively to the general prosperity and growth of the North-West … [They] have decided to designate a site in the Leyland Chorley area for a large new town … In addition to providing for the long-term overspill needs of Manchester, this new town – strategically well placed in relation to the road-rail network – should contribute to the industrial revival of the whole region, and form a new focus for urban renewal… The importance we attach to it is that we see it as a point for the industrial revival of the whole region, which I think will inspire the region to feel that the south does not get it all.[430]

RMJM's commission from the Ministry of Housing and Local Government's for Central Lancashire New Town was in two phases. First, within 12 months, RMJM needed to advise on the area for designation and the growth's scale, form and speed. Derbyshire, the partner in charge, considered the resulting report, *Central Lancashire – Study for a City*, to contain 'some of the most powerful analyses of human development patterns and the interactions between land use and different forms of communication'.[431] He acknowledged the influence of *The Planning for a New Town* stating its, 'innovations have many roots, but the Hook study was certainly a source that we knew about and read at the time… Like Buchanan, it just seemed for a while only like common sense'.[432] His planning team included Duncan and Stewart. Maurice Lee, who had worked on Islamabad, co-ordinated landscape design and methods assisted by Roger Cunliffe, who had returned from working in Chicago with Harry Weese (1915-1998). Colin Beck was resident architect and Jamieson and Mackay, who were also working on Northampton and Irvine, co-ordinated transportation. The second stage, to be delivered within a further 15 months (by April 1968), asked for a masterplan to be used by the future Development Corporation. The prescribed study area (figures 141 and 142), bound by agricultural belts to the north and west, hills and moors to the east and Wigan's coalfield to the south, was already urbanised and included Preston, Leyland and Chorley. Blackburn, Wigan and

[430] Richard Crossman in Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, foreword.
[431] Andrew Derbyshire, 'George Duncan', *The Herald,* 27th March 1997.
https://www.heraldscotland.com/news/12331805.george-duncan/ Accessed 28th October 2018.
[432] Interview between John Gold and Andrew Derbyshire in John Gold 'Hook: revisiting the New Town that might have been', introduction to London County Council, The Planning of a New Town, (originally published1961), Studies in International Planning History series, 2015, London, Routledge, p.18.

Garstang were expressly omitted, but could be included as part of regional analysis. Specifically, their brief requested a growth zone to improve the whole region's 'social and economic well-being'.[433] The zone's structure needed to be coherent, have an appropriate character and be linked by a communication system that accommodated car ownership, integrated all forms of public and private transport and segregated vehicles and pedestrians in urban areas. A clear contrast between town and countryside had to be maintained and the new town's construction must be self-contained with stages completing and becoming socially established in the shortest possible time. Development should revive and renew the region's older industrial towns by integrating new and existing infrastructure. Housing should relieve the south east Lancashire conurbation and other congested areas. Prescribed land use should be flexible to allow adaptation to change and growth, but not limited to the designated area.

Located within the North West Economic planning region, the study area spanned the counties of Lancashire, Cheshire and north-west Derbyshire and was the most densely populated in the country. 6.5 million people lived in the Greater Manchester and Merseyside conurbations and a further 760,000 across Lancashire's cotton towns (Blackburn, Burnley, Preston, Bolton, Bury, Rochdale and Oldham), a declining area due to the textile industry's destabilisation. One fifth of the country's slums (400,000 dwellings) were located in the north-west region and these were inhabited by one sixth of the region's population. In addition to this, a substantial proportion of housing required renewal and *The North West Study* had estimated that 52,000 persons, were expected to move into Central Lancashire by 1981, the equivalent of 15,000 households. The North West Study Group had calculated that between 1964-8 the region needed 740,000 new homes. This estimate comprised 175,000 additional households, 481,000 replacement houses and 82,000 households created by subdividing shared dwellings. By 1968 approximately 135,000 of the required 740,000 houses were built and by 1981 a further 38,000 households would be constructed in new towns at Runcorn, Skelmesdale and Warrington and 9,000 through town development schemes at Widnes, Winsford, Crewe and Macclesfield. This would satisfy the need for additional homes, but would not replace any of the existing.

[433] Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, pp.1-2.

Central Lancashire New Town: topography and existing settlements

The study area (figures 141 and 142) was characterised by gradually rising topography on the central Lancashire plain between the Fylde and Ormskirk coastal plain to the west, the fells and foothills of the Forest of Bowland to the north east and the Anglezarke moors to the south east. Undeveloped land was predominantly rural or sub-rural with varying landscape value. River valleys, crossing the plain, posed major physical features; the River Ribble, which is tidal almost all the way through Preston, being the most significant. This was wide, well defined, and had steep escarpments until it passed through Preston, where surrounding high-quality agricultural land flattens onto the coastal plain. Attractive semi-rural land north of the Ribble and east of Preston inclines gently up to the lower slopes of Longridge Fell. This offered an array of natural features and views of Longridge Fell to the north and the Pennines to the east. Similar topography stretches south from Walton-le-Dale to the east of Leyland and Chorley, although by the 1960s dereliction and urban sprawl were widespread in this area. Flat land was available in the Ribble valley and west of Leyland leading to the Ormskirk plain. Parks at Avenham, Worden, Euxton, Cuerden and Astley were also assets to the area and RMJM noted these could offer the same quality of development as north of the Ribble.

The Ministry of Agriculture, Fisheries and Food had classified most of the surrounding non-urban land as Grade III (average quality for horticultural crops) or, on the valley slopes, Grade IV. High-grade land (Grade 1 and 2), protected for market gardening or intensive farming, was found in small quanitities to the west of Penwortham along the Ribble, a few acres of Farington Moss to the north west of Leyland, west of Walton in the Darwen valley, and west of Chorley in the Yarrow valley. The Government owned several sites including the Royal Ordnance Factory between Leyland and Chorley (780 acres) and had reserved land for a proposed prison at Ulnes Walton.

In 1966 the study area's population was 294,300 (figure 143) and its diverse range of industries and employment in engineering industries (such as vehicles, aircraft and nuclear energy) was growing. The total number of people working in the designated area was 131,000 (including 15,000 who travelled daily from outside). Of this 58,000 were in manufacturing, 72,000 in services, 300 in agriculture and, although declining, 14,800 in textiles. Employment in Preston was higher than surrounding

areas, overall unemployment was low and the town's specialism in advanced science-based manufacturing industry was recognised. Engineering was expanding in Preston and Leyland and it accounted for half of manufacturing jobs in the area. Vehicles and aircraft industries, the largest single group, employed 21,000 and electrical and metal industries provided a further 7,500 jobs. Key employers were British Leyland Motor Corporation, which had plants in Leyland and Chorley; the British Aircraft Corporation (6,000 employees), UKAEA (5,000), English Electric (3,000) in Preston between the Docks and the railway; and Courtaulds at Red Scar Works to the north east of the M6.

Within the study area there were three major urban areas and four smaller settlement clusters, which became individual interrelated townships in RMJM's initial proposals. All were in close proximity to improved north-south main infrastructure routes, the region's four universities, rural areas of outstanding beauty, coastal resorts and within reach of Liverpool and Manchester. Preston, the focus of numerous previous urban renewal schemes, was the largest town and it owed its regional significance and long history to its location as the first crossing point of the River Ribble upstream of the sea (figure 144). Bounded by Fulwood, Walton-le-Dale and Penwortham, Preston's development followed major regional transport routes. Before the Preston bypass opened in 1958 most road traffic between Scotland and the South Lancashire conurbations had passed through Fulwood, Preston and Walton-le-Dale on the A6. The River Ribble and its escarpment had formed a topographical barrier to development in a southerly direction and instead Preston grew on an east/west axis between Blackpool and North East Lancashire. During the peak of the textile industry, manufacturing became concentrated in three wedges radiating from the central area (westward around Preston docks; north and west alongside the railway and eastwards along Ribbleton Lane) and this pattern remained virtually unchanged.

By 1966 Preston was a thriving bustling town that had become the leading sub-regional administrative and communications centre with its port, service industry, government centre, retail, welfare and cultural facilities. 20,000 people were employed in the central area in 1966 and its regional role was reflected in the proportion of service to manufacturing jobs (70:30) and its ability to attract higher social groups. Preston housed Lancashire County Council's headquarters as well as main sub-regional offices of insurance companies, banks and premises for local

solicitors, accountants, estate agents and other professional firms. The cotton industry's magnificent civic and institutional buildings dominated the town's civic, commercial and retail core and its flourishing shopping streets served the sub-region. In 1961 the central area provided one million square feet of shopping floor space and its turnover was £14million. The St. George's Centre, a two-storey shopping precinct, had just been constructed to reinforce Preston's position as one of the major regional retail centres in the North West outside Liverpool and Manchester. In addition it had six sub-centres, each with between 70 and 140 shops, along major roads. At the 1961 census the combined population of Preston, Fulwood and Penwortham was 163,000.

South of the River Ribble, existing conditions were not as favourable. RMJM noted the neglected post-industrial landscape between towns as 'non-descript housing development in which large scale renewal has been and is still prejudiced by infilling. It presents the most difficult environmental and renewal problems of any of the urban concentrations in the study area'.[434] RMJM identified Leyland (figure 145) as a springboard for industrial growth despite it being the least established out of the three towns. Since the Second World War it had experienced rapid incoherent growth as an important manufacturing and industrial town and over the previous 35 years its population had doubled to 21,360 by 1966. Its direct communications link to the M6, high proportion of skilled workers and 17,500 jobs were advantageous. Residents occupied 10,300 of these and two thirds were at British Leyland Motors, who supported the town's recreational facilities. Planning challenges stemmed from its lack of large-scale natural features, rapid industrial growth and disproportionate population, which had caused featureless development without community investment. A vast industrial area in proximity to Leyland Motors dominated the town and, surrounding the main shopping area, this formed a northern boundary that hindered expansion. Land use and communications urgently needed reorganising, particularly to the north where shopping, housing, industry and motorway-bound traffic collided. Residents relied on Chorley and Preston for shopping, services and social facilities, although a new local centre comprising approximately 18 shops, a library and magistrates court was due to be built as part of the Towngate development within Leyland's historic centre.

[434] Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.29.

RMJM considered neighbouring Euxton, south of Leyland, to be equally formless and noted its fast growing community following the A49. Its population in 1966 was 4,000, but this was predicted to grow to 7,000 by 1971. They recommended a plan incorporating the building of community facilities to complement the population increase and ensure balanced expansion.

Chorley (figure 145) had retained its historic character as a compact small self-sufficient busy market town with parkland to the West and Rivington Reservoirs and Anglezance Moors to the east. In 1966 its population had fallen from 32,640 in 1951 to 31,300. It provided the region with a diverse range of service facilities including teacher training, culture, entertainment and agricultural retail and it had evolved as an important centre for banks, insurance companies and offices. Its broad manufacturing industry included motor engineering, floor covering manufacturing, coal mining and cotton spinning.

Walton-le-Dale, Lower Penwortham, Tardy Gate and Bamber Bridge had expanded rapidly over the previous 15 years to reach a population of 22,500 by 1966. Due to their proximity to Preston, they offered few services or amenities. Although attractive in parts, the area was equally non-descript and characterised by mixed land uses, overhead electricity cables, gas works, road patterns and railway lines that were in urgent need of re-organisation and unification to generate sufficient growth and support a suitable range of local facilities.

To the east of Leyland, Cuerden, Clayton-le-Woods and Whittle-le-Woods were within a large triangle bound by the convergence of the M6 and M61 and Royal Ordnance Factory to the south. Their combined population was 6,500 by 1966. These were commuter villages for Leyland and Chorley and as such offered fewer jobs. The River Lostock's wooded valley flowed north from Clayton-le-Woods, through Cuerden Hall Park, and it had potential as a recreational area.

North of the Ribble, Longridge was a small agricultural and mill-based town with a population of 5,800. It had a fine rural setting on the lower slopes of Longridge Fell and offered a good provision of recreational, welfare, cultural and entertainment facilities. Longridge also had potential to form the city's recreational centre and undergo residential expansion.

Grimsargh and Cumeragh in proximity to the Ribble Valley and Preston, offered good scenery and suitable land form. Combined they had less than 1,000 dwellings and Whittingham psychiatric hospital dominated the area, which was due to become a general hospital with 1000 beds by the 1980s. New businesses were attracted to its industrial sites, such as Red Scar, due to their proximity to the M6. Although Grimsargh lacked infrastructure it offered large areas of land free from major inhibitions and suitable for building.

A Study for a City

Study for a City marks a long evolutionary process and period of consultation to determine the location and form of the new town as well as its impact on adjacent settlements. Essentially the report introduced two concepts on a regional scale: amenity dispersal and a three-strand urban structure. The project differed from other British examples because the sub-region's dispersed existing settlements provided nodal points to stimulate simultaneous grow. The *North West Regional Study* provided its background. RMJM's brief was to form a growth zone, capable of accommodating an additional 150,000 people initially over 20 years and adaption to rapid change and further expansion beyond the designated area at a later date. There were four specific criteria - the integration of new and existing developments to promote urban renewal including raising the quality of existing development and maintaining a clear contrast between town and country; the phasing of construction in self-contained locations which have appropriate urban character; the integration of all forms of private and public transport, whilst segregating vehicles and pedestrians; land use should accommodate changing circumstances and eventual growth beyond the predicted population intake, but not necessarily within the designated area. The layout needed to be comprehensible, instil urban character and, segregated from pedestrians, accommodate a high proportion of car ownership as well as provide public transport.[435]

RMJM proposed that the existing towns surrounding Preston, the sub-regional centre, could spark economic rejuvenation capable of permeating across the region,

[435] Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.1.

notably towards the isolated Calder Valley settlements. Similar to Irvine's diagrammatic form, they recommended a linear arc of inter-related townships, following the communications line and spanning north-east from Chorley to Longridge. This was thought to be the best cohesive economic movement pattern to complement the existing land grading, development restraints and future transportation potential. RMJM predicted that the study area's population would increase to 500,000 between 1966 and 1991, requiring a further 106,000 jobs primarily in construction, manufacturing and service industries, and the growth pattern could accommodate a further 80,000 people by 2001.[436]

Due to the scale of the development and proposed transport network, RMJM sought to provide city-scale amenities to rival Liverpool and Manchester. Informed by analysis of social facilities provided in other post-War new towns and a study of existing facilities in the North West region, RMJM designed a logarithmic scale of amenities (figures 146 and 147). This model provided flexible and dynamic growth by dispersing a proportion of major functions across different townships within the interrelated city complex. Each township would adopt a unique function and identity to offer choice and convenience and have the potential to become self-sufficient as a 'specialised magnet'.[437] It would contribute to a balanced comprehensive economic city network without compromising the main city centre or causing congestion in adjacent townships (figure 148). Based on community size the model created four settlement scales that are similar to Arthur Ling's model for the 1938 MARS plan: 4,000-5,000 (neighbourhood), 15,000-18,000 (district), 60,000-80,000 (township) and 300,000-500,000 (city). For example, local shops and a two-form entry primary school would serve a neighbourhood; eight-form entry secondary schools, a library and industrial estate would serve a district; a township's centre would offer retail, recreation and social facilities and major city attractions could include shopping, a concert hall, art gallery, botanical garden, zoo and sports stadium. Analysis of the existing towns identified that each already had a specialised function, for example, people visited Chorley for entertainment and shopping and Preston for employment. Some cases, such as Leyland, a town with high employment but poor social amenities, unbalanced the existing provision. RMJM's proposals aimed to correct deficiencies

[436] Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.45.
[437] Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.62.

in community facilities and employment opportunities, whilst complementing, reinforcing and expanding existing successful relationships between communities.

To evenly distribute traffic and amenities across the region, a complementary transportation system was designed to prevent congestion and provide equal access to all parts. This supported the anticipated high level of car ownership, but also integrated public transport and accommodated flux between these as the new town grew. A theoretical hierarchical three-strand structure, based on a single township for 60,000 people, three and a half miles along the primary routes and two and a half across, was developed as the urban model (figure 149). This population size offered maximum cost effectiveness in transportation terms – it could provide efficient mobility for relatively low capital investment per head of population. The three-strand structure comprised two longitudinal high-speed roads and a lightly-loaded express spine road for travel by public transport, linking the town centres. Connecting to the spine route, secondary transverse roads for local public transport enabled travel between districts. Applied to site, the diagram could be repeated by extending existing settlements and creating new ones to form a linear chain of townships (figure 150).

Central Lancashire New Town: growth strategy

A *Study for a City* proposes three urban growth types: infilling blank sites or increasing density through renewal; limited peripheral expansion and, requiring new transportation networks, substantial directional growth by adding new high-density townships, which, surrounded by open landscape, would be the highest concentrated community type. This formula could increase the density of existing towns to 80-100 people per acre (p.p.a), whereas new townships would be built to 100-120 p.p.a.. Neighbourhoods in existing residential areas would be 40-60 p.p.a, whereas new districts, comprising low-rise housing with private gardens, would accommodate 30-60 p.p.a.. For both contexts, the study proposed a sequence of local amenities and open spaces linked to pedestrian routes (figure 151). At least one car per household would be provided. Parking and streets would be screened to achieve privacy within each residence, and vehicle and pedestrian movement would be segregated. Flexible multi-use complexes would provide education and social facilities and, reminiscent of Clarence Perry's community layouts, a new typology would be developed for secondary schools that could remain open in the evenings. Large sites would be reserved for industrial estates. These would be close to urban areas, regional road and

rail networks with space for future expansion by grouping complimentary businesses to form specialised complexes. Their design would be based on 30-35 workers per acre. Closer to residential areas or town centres, laboratories or offices could provide alternative employment opportunities.

RMJM's growth strategy aimed to protect the character of existing settlements. Its dispersed pattern allowed individual areas to grow simultaneously and the order and type of development could adjust to achieve rapid construction and integration into the new city structure. Collectively existing communities would expand by 128,000 people, approximately half the target population increase of 250,000, with the majority in new settlements south of the river (figure 152). Preston's growth to become the largest township, and the city's administrative, retail and service centre, would be limited. Chorley would form a township by growing by 20,000 by infilling and fusing with Coppull, which also would accommodate a further 12,000 people. South of the Ribble, Leyland had sufficient vacant land to receive a further 50,000 to create a large township of 70,000, complete with social and shopping facilities. Euxton could receive up to 6,000 people; Whittle-le-Woods 12,000 and the Penwortham and Walton-le-Dale area 20,000. Urban motorways and an express public transport system would inter-link these and connect them to Preston. To the north, Fulwood would receive 16,000 people. The remaining 122,000 would be split between two new townships on 'green-field' sites.

Because each township required a strip of land three and a half miles long and two miles wide in close proximity to transport routes, a study was undertaken to identify alternative locations and growth phasing (figure 153 and 154). Taking into account limitations of high-grade agricultural land and areas of outstanding natural beauty, ten alternative new town and urban expansion locations were identified. This reduced to three preferred options based on their employment potential through the possible position of central areas; distribution of major industry; the location of existing and new residential areas; configuration of open space and the relationship to the public and private transportation network. 'Option D' was selected due to its clear linear structure with potential for growth and there were no likely construction prohibitions caused by land restrictions. In addition it met recreational aspirations whilst preserving the existing high-quality environment by not impeding on farmland; it utilised existing industrial sites and identified suitable available land for new

industrial areas in proximity to the national motorway with possible further transport expansion to the east. In this model RMJM unbalanced and reduced the population distribution of the two new townships by placing 75,000 nearest to employment in Preston and 37,000 in the eastern settlement on higher quality landscape. Fulwood would receive the remaining 10,000 people in order to meet the city's overall population target.

Identification of the designation boundary concluded RMJM's report. The area, 51,460 acres, stretched from Longridge in the north-east via Preston to Chorley. Omitting the 7,500 acres deemed unsuitable for development, the average density was 11.4 persons per acre. In terms of future regional growth RMJM recommended substantially extending the linear pattern either to the north-east by following the Ribble Valley or to the north west towards the M6.[438]

Following the study's publication an article in the *Lancashire Evening Post* promoted the city as the first of a generation of new towns offering an alternative development pattern to provide a comprehensive complex of homes, industry, services and open spaces. It reported that the city, 'sweeping as a huge arc from Longridge to Chorley would be based on a 'thriving and energetic' group of communities and it could achieve its target population of 600,000 by the year 2000.[439]

Central Lancashire New Town: industry and employment

In April 1968 the Hunt Committee published recommendations for regenerating locations with depleted industry, known as 'grey areas'. Generally these already had established infrastructure. Deliberately targeting centres based on their growth prospects, the Committee advised 25% building construction grants, not linked to the generation of jobs. In Lancashire high unemployment had become a persistent feature of some areas. The worst, Merseyside and Furness, received Development Area status under the Local Employment Acts of 1960 and 1963. The decline of textile and coal mining industries in other parts of the region such as North East Lancashire had reduced the range of employment opportunities. These two factors, together with the

[438] Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London.
[439] Ernest Moore, *Lancashire Evening Post,* 5th June 1967, p.1.

creation of new employment due to the region's predicted population increase, emphasised the necessity to attract new industry to the region.

The Government rejected the Hunt Committee's proposals, instead tying assistance to creating employment opportunities in prioritised areas, such as North East Lancashire. Known as 'growth pole' development, this was characterised by clustering inter-related industries in a geographical area to concentrate economic activity. The textile mills in North West England towns provided historic precedent with redevelopment potential and, by carefully positioning a restricted number of new enterprises, rapid growth could occur. Mechanical, electrical and vehicle engineering sectors were particularly attractive in terms of employment and output and these were present in Central Lancashire New Town's study area.

In 1969 the *Architectural Review,* with J. M. Richards as executive editor, dedicated a series of eight issues to 'Manplan', the re-examination of health, welfare, education, housing, communications, industry and religion. Supplemented by photographs, its campaign, to prepare for the 1970s, was to review, redefine and align the nation's architecture and planning to society's needs.[440] Its first issue quoted an extract from Andrew Derbyshire's presentation at the 1969 RIBA conference. He stated 'think about the way we are destroying our precious heritage of towns and cities with ruthlessly sited urban motorways, visually squalid commercial development, and a peripheral sprawl of housing … the evidence suggests we are in the middle of a massive deterioration in the quality of life, due partly to our inability to synthesise the actions of specialists, partly to our own incompetence, and partly to the widening gap between the escalating size of our social and economic problems and the capacity of our forms of government to deal with them.'[441]

'Growth poles' became central to the Government's regional development policy because industry could attract other associated businesses, such as services, increasing overall economic activity. The third Manplan focused on towns and, using central Lancashire as an example, it reflected that 'growth poles' could transform the Government's Development Areas (figures 155-157). During the 1960s the Government was investing £260 million per year in development areas to resolve high rates of unemployment due to struggling or absent industries. The Department of

[440] 'Manplan 1', *The Architectural Review,* September 1969, p.164.
[441] Andrew Derbyshire in 'Manplan 1', *The Architectural Review,* September 1969, p.169.

Economic Affairs had commissioned a study on 'growth poles' and Economic Consultants, who prepared *Study for a City,* had focused on introducing metal-working industries to central Lancashire. Stating that Central Lancashire New Town could, 'spark off a series of changes that could restore the north west as one of the most prosperous industrial regions in Britain, which would of course greatly boost the national economy', they concluded, 'many hopes are pinned on this pilot growth pole project.'[442]

Between 1945 and 1965, 16,000 of the 45,000 jobs annually created by firms relocating to new locations had been for women and the provision of crèches, shops and nurseries had become essential to every urban day life. Arthur Ling had questioned existing work-life balances by stating, 'have we reached the point when people will demand more work nearer home'. To address this in 'Manplan 3' the *Architectural Review* used a section of Central Lancashire New Town's three-strand structure to argue that convenient placing of industry and housing, as historically showcased by Robert Owen at New Lanark, made economic sense (figure 157). Based on housing for 15,000 people, the diagram showed the interrelationship of amenities, industry and housing in a neighbourhood with a district centre.[443]

North East Lancashire

Although Central Lancashire New Town's wider region and existing settlement pattern had been taken into account when proposing the type and position of new functions within its framework, it caused considerable disquiet. It was feared that the city's attractions, coupled with North East Lancashire's lack of incentives for industry and people to remain in or come to the area, would seriously worsen its prospects. While RMJM had been preparing *Study for a City* several Government changes had arisen. Anthony Greenwood, M.P. for Rossendale, became Minister of Housing and Local Government, and Barbara Castle, M.P. for Blackburn, became Minister of Transport. In close proximity to Central Lancashire, the North Eastern towns of Rossendale and Blackburn were in decline.[444] Ignoring their potential role as prosperous satellites contributing to the overall regional growth and employment, an

[442] 'Manplan 3', *The Architectural Review,* November 1969, p.384.
[443] 'Manplan 3', *The Architectural Review,* November 1969, p.389.
[444] P. H. Levin, 'Commitment and specificity in urban planning: a study of administrative, technical, and political processes, *The Town Planning Review,* April 1972, p.95.

article in the *Guardian* claimed that East Lancashire towns would be 'sacrificed'[445] to the new city and their character would be adversely transformed.

Historically the waterways and damp climate had provided advantageous conditions for water-powered textile mills and following the invention of steam power, the valleys became concentrated with steam-powered mills. The population in North East Lancashire boomed and in the sixty years between 1861 and 1921 it doubled from 300,000 to nearly 600,000 whilst the number of dwellings rose from just over 50,000 to over 140,000. By 1880 its population growth exceeded the country's. Following the Second World-War the cotton industry began to decline as other countries competed for business. By the 1960s the cotton industry's infrastructure no longer met modern standards and this constituted a massive physical and social problem that was further aggravated by the buildings' compact dispersal through the narrow valley. Because available flat land suited to major industrial development was limited, modern manufacturing had not replaced the cotton industry and, with rising redundancies, its skilled labour began to seek employment elsewhere. Although North East Lancashire's population (472,700 or 7.1 per cent of the region) was declining at a rate of 0.2 per cent per year (73 per cent by migration), it was more than double the new town area's (232,000 or 3.2 per cent of the region's population), which without investment was increasing by 0.8 per cent.[446]

Roy Stewart, a planning consultant who prepared *Central Lancashire: Study for a City,* provided a description of North East Lancashire as an example of Geddes's valley section that aligns with the Government's 'growth pole' theory. The Ribble, Calder and Darwen rivers' valleys, which pass through central Lancashire to the Fylde's estuary, intersect the land and topographical studies had confirmed its high land value. Although the area had benefitted from some town centre renewal, its economic activity was not geographically wide. In comparison, its neighbour, central Lancashire, was situated adjacent to road and rail links (the M6 and M61) and it had varied industry. It was able to attract commuters and had maintained a reasonable economic base and urban environment.

[445] 'A new heart for Lancashire', *The Guardian,* 20th December 1968, p.8.
[446] Roy Stewart, 'New town's cohesive role', *Built Environment,* July 1972, p.248.

A Conference of North-East Lancashire followed the publication of *Study for a City,* the designation proposals, and in May 1967 Greenwood, the Minister of Housing and Local Government, commissioned RMJM and Economic Consultants to prepare *Central Lancashire New Town Proposal: Impact on North East Lancashire*.[447] Greenwood stated, 'a project of this size affects not only the people in the proposed new city but those who will be left out of it, particularly the towns lying to the east of the Leyland-Chorley area. The wider impact of a development of this magnitude should be fully evaluated before any decisions are taken'.[448] Published prior to the public inquiry and twice the length of *Study for a City,* this report considered two possible realities: the new town not going ahead and the new town being achieved to meet predicted growth in 1991.

The report explored the new town's prospective role in forming a single development by uniting three sub-divisions of the North West Economic Region (the Fylde, Mid-Lancashire and North East Lancashire). This demonstrated how co-ordinated growth could be applied across the region and Stewart noted that, although geographically and economically unique in circumstance, its theory could be widespread.[449] As the centre of the sub-region the new town would act as the 'principal engine of growth' to advance the region's social and economic well-being.[450] The impact report advised that the new town's ability to steadily gain impetus, improve its environmental quality and support major city functions over the next decade would be critical to upgrading living conditions, urban renewal, industrial provision and internal and external communications in North East Lancashire. It anticipated that the new town would diversify its population by 1981 reducing the numbers of people leaving the area and attracting new people.[451] An article published by the *Guardian* supported this view and stated the region 'will be "dead"' if not accepted.[452]

Without the new town RMJM predicted prospects would be influenced by trends in employment and the overall standards of communications, housing and living

[447] H.M.S.O, *Central Lancashire New Town Proposal: Impact on North East Lancashire,* 1968.
[448] Anthony Greenwood in P. H. Levin, 'Commitment and specificity in urban planning: a study of administrative, technical, and political processes, *The Town Planning Review,* April 1972, p.95.
[449] Roy Stewart, 'New town's cohesive role', *Built Environment,* July 1972, p.250.
[450] Roy Stewart, 'New town's cohesive role', *Built Environment,* July 1972, p.247.
[451] In Roy Stewart, 'New town's cohesive role', *Built Environment,* July 1972, pp.248-9.
[452] James MacColl (Ministry of Housing and Local Government) in Michael Morris, 'Benefits of new city for Lancashire', *The Guardian,* 5th September 1967, p.14.

conditions. They anticipated that between 1966 and 1991 there would be a decline of approximately 19,000 jobs in North East Lancashire's manufacturing industry. When compared to regional and national trends, employment growth in the service industry was expected to be relatively slow by rising from 92,000 jobs in 1966 to 190,000 in 1991. Concluding that migration would happen with or without the new town, it explained, 'the coming of the new town will stimulate those forms of activity in the study area which are the growth sectors of industry; whereas it may add to the difficulties of the sectors which would in any case be expected to decline. In other words it will accelerate the rate of change and this will enable North-East Lancashire to adapt itself in order to participate more fully in a changing world'.[453] It warned that Blackburn and Burnley may experience population migration to the new city, but the trade-off was fresh development and employment for lower paid Blackburn workers. To prevent this it recommended deleting the Longridge spur and rebalancing the two new townships. By relocating the population south-west of Preston and north-west of Leyland, a compact defined core of general activity could link to the North East towns.[454] The linear urban form would then extend from Preston along the Calder Valley, with major industrial development placed at Blackburn and Burnley, within commuting distance of all North East Lancashire towns. Through urban renewal and the injection of industrial sites and training centres, a single development zone between Colne and the western coastal towns could germinate.[455] To avoid population emigration, improve accessibility and enhance the area's appeal to industrialists, RMJM proposed a new fast link road, the Calder Valley motorway (M65), between the towns of North-East Lancashire, the M6 and the proposed new town. This would join the M650, an unrealised motorway proposed in 1968 to link Skipton with Bradford. Because the Calder Valley link was due to open in 1978, this gave towns, such as Burnley, only a few years to compete for industry prior to Central Lancashire New Town gaining momentum in the early 1980s.

In May 1969 the Building Design Partnership, founded by George Grenfell Baines, prepared 'Central Lancashire New Town Proposal', a report to provide North East Lancashire's authorities with material to formulate an alternative planning strategy for the North Lancashire Urban Area. Grenfell Baines had persuaded the

[453] P. H. Levin, 'Commitment and specificity in urban planning: a study of administrative, technical, and political processes, *The Town Planning Review,* April 1972, p.96.
[454] 'A planning strategy for the North Lancashire Urban Area', p.17.
[455] George Hawthorne, 'New town planners propose fast road across Lancashire', *The Guardian,* 3rd April 1968, p.3.

eastern towns of the region to prepare an different concept rather than simply objecting to RMJM's Central Lancashire New Town proposal.[456] RMJM's initial brief had precluded North East Lancashire from the study area and, in doing so, BDP argued that the plan for Central Lancashire New Town did not meet the sub-regional objectives set by the Consultant's terms of reference. They claimed that because the new city had been considered in isolation, it would not improve the social, economic well being of the region as a whole, instead the city could potentially damage the valley's economy. Criticising the extent of the original study area as being too restrictive, BDP recommended contextualising the city within a wider regional growth strategy to include the area from Colne to the Fylde coastal towns (figure 158).[457] This master plan would provide 5,000-18,500 jobs and increase population to 525,000 by 1991.[458]

In an attempt to modify the plan, BDP evaluated North East Lancashire and prepared a strategy based on the simultaneous development of the two areas. They highlighted the Calder Valley towns' existing linear structure, noting potential transport links and location of new amenities within their existing framework. They proposed an alternative urban region in North Lancashire based on conserving the existing Calder Valley towns, modifying Central Lancashire New Town's form and relating it to the Lancashire coastline. In September 1970 George Grenfell Baines prepared 'Central Lancashire and the North Lancashire Urban Area', a report that, although not officially supported, questioned whether, in reality, Central Lancashire would receive sufficient overspill from South Lancashire. Southern conurbations were decongesting their cities by rehousing people in new towns at Runcorn, Warrington, Skelmersdale and the satellite town at Wythenshawe rather than transplanting families, industry and commerce from Liverpool and Manchester. Grenfell Baines' report argued that by preventing population migration from the Calder Valley towns into Central Lancashire a 'more organic and orderly growth' could be generated. He considered North Lancashire to have tremendous prosperity potential by using its social and physical assets as a foundation. This would require a willingness to accept change rather than growth and the ability to adopt a 'dynamic attitude' rather than a 'pose of status quo'. Communications were fundamental to a 'full life in urban

[456] Letter from George Grenfell Baines to Guy Barnett, Department of the Environment, 28th December 1976, Lancashire Archives.
[457] Building Design Partnership, 'Central Lancashire New Town Proposal', May 1969, pp.6-7.
[458] Building Design Partnership, 'Central Lancashire New Town Proposal', May 1969, p.23.

society' and his report supported rail improvements as well as the east-west motorway as a means to revive transportation and trade for all North Lancashire towns from Colne to Blackpool. Without this infrastructure communities would remain isolated and 'vulnerable to becoming parochial. [459] Grenfell Baines predicted that population would increase in North East Lancashire towns and this could be accommodated by minimal fringe expansion and infilling, partly through housing renewal. Long-term expansion could gravitate from the south of Preston and encourage organic growth of established centres along the Calder Valley supported by improved links with the M6 and M62. As a consequence, Leyland's proposed development as a large industrial complex would need to be reconsidered to negate the commute.[460]

Four years after the original consultants' report on the form of Central Lancashire New Town, Grenfell Baines prepared a further report 'North Lancashire urban development: a proposal' to redefine the North Lancashire development structure. Grenfell Baines suggested restructuring the whole sub-region to bring high inter-accessibility, via national and regional transport networks, to connect the Fylde, Calder Valley and central north Lancashire. This could provide the basis of new growth and opportunity for the sub-region with the intersection at the Preston/ Leyland/ Chorley area providing a stimulus and location for the city's facilities. Grenfell Baines predicted the resulting population projection (at over one million people), distributed across the region's towns, would be higher than anticipated but as a consequence of natural increase.

Relying on a pattern of motorways, he considered his proposal's sub-regional urban structure to be more ambitious than Central Lancashire New Town's because it linked Liverpool, Preston docks and the Calder Valley (figure 159). Passing through the Leyland/ Chorley growth zone to the Calder Valley towns, the east-west highway would link the projected Liverpool to Preston motorway, M6 and M61 and provide a 'southern gateway' to the city region. The Liverpool to Preston motorway, Fylde motorway and Preston southern and western by-passes would complete the framework.

[459] George Grenfell Baines, letter to S. Jeeves, 8th November 1976, Lancashire Archives.
[460] George Grenfell Baines, 'Central Lancashire and the North Lancashire Urban Area, 26th September 1970.

Citing Milton Keynes Grenfell Baines replaced the twin express roads proposed by RMJM, which he considered economically unviable, with an at-grade adaptable transport grid to disperse facilities. Terminating the 'gateway' route, Leyland and Chorley could expand and the grid's construction could grow from Leyland to Euxton then Chorley and Coppull. Due to its proximity on the north/ south gateway route, Euxton could become a town centre complete with transport interchange serviced by a park-and-ride concept to allow travel to London.[461] Preston could expand to Longton, south of the Ribble, rather than Haighton and Grimsargh, north of the M6.

A *Study for a City,* a public facing document, outlined the amenity distribution and three-strand growth structure. This was the first of a series of reports that RMJM prepared for the forthcoming Development Corporation, who were appointed in 1971. The subsequent report, *A Study in City Growth,* progressed its ideas and detail and applied the theoretical framework to the topographical context. Whilst these documents were being prepared and with the promise of a sub-regional super city, Lancashire County Council had already begun to build facilities in the township centres to prepare for the rapid regional growth.

> Central Lancashire New Town's theoretical concept introduced in *Study for a City* proposed a comprehensive complex of homes, industry, services and open space. It achieved this by adopting many of the advancements presented in the previous chapters. The New Town's overarching economic movement pattern, based on a linear arc of inter-related townships, is reminiscent of Wilson and Womersley's Irvine project; the logarithmic scale of amenities echoes Derbyshire's Zone project and Team 10's principle; the social hierarchical structure defined by density had been previously been used by Ling; and Jamieson and Mackay applied their three-strand structure for economic growth. The next chapter focuses on a second RMJM report, 'A Study in City Growth', that applied this theory to the existing conditions in central Lancashire's designation zone on a town-by-town basis.

[461] George Grenfell Baines, 'North Lancashire development: a proposal', April 1971, Lancashire Archives.

A Study in City Growth

RMJM's *Study for a City* proposed an area of Lancashire for designation as a new town and described a framework to distribute city-scale facilities across a region. If accomplished, this would create a third city in Lancashire to counter balance Greater Manchester and Merseyside. In an unpublished report, 'A Study in City Growth' this theory is applied to the topography and existing settlements. This chapter describes the detail and, in relation to previous themes such as dynamic growth, urban expansion and polycentricity, describes how RMJM sought to achieve economic self-sufficiency in mid-Lancashire within twenty years. 'A Study in City Growth' illustrates Hook's influence on the design of Central Lancashire New Town because its drawings can be compared with those published in *The Planning of a New Town.*

Following a series of delays, Central Lancashire New Town was designated in March 1970. During the intervening period between the publication of *A Study for a City* and the designation, the 1968 Town Planning Act and the 1969 Housing Act had been implemented. These introduced surveys and structure plans, to be prepared by the local authority for submission to the Minister of Housing and Local Government, and improvement grants. Following Central Lancashire New Town's designation the Minister of Housing and Local Government stated that it would offer a 'strong new centre of growth… [and] provide housing and employment for people now living in the appallingly congested or decaying areas of the North-West region'.[462] The only concession was the removal of the Longridge spur, reducing the designation area to 35,225 acres for 430,000 people. In May 1970 RMJM circulated an initial draft master plan titled *A Study in City Growth* for Central Lancashire New Town.[463] Despite its omission from the designated area, Longridge was included in *A Study in City Growth*, giving a complete description of the new town as initially conceived. This outlines a structural framework that could accommodate changes to the plan's detail without potentially adversely damaging Central New Town's long-term objectives. From July 1970 RMJM amended and revised ideas presented in *A Study in City Growth.* This became the official draft master plan and, supplemented by two technical reports, it was issued to the Development Corporation that had been formed in the interim.

[462] Anthony Greenwood (Minister of Housing and Local Government) in Robert Waterhouse, 'Lancashire hotchpotch: plans for a super city around Preston await', *The Guardian,* 10th June 1975, p.14.
[463] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.1, parts 1 and 2, May 1970, p.1.

A Study for a City, had introduced the new town as a series of townships separated by open space and parkland. Served by two parallel major high-speed routes, this created a three-strand urban structure with a central lightly-loaded express public transport route to connect the township centres. The city was sub-divided into units (townships, districts and neighbourhood), distinguished by population size-bands, and each had been allocated a set of generic facilities. Prepared as a working document, *A Study in City Growth* detailed the theoretical framework introduced in *A Study for a City* and applied this methodology to the sub-regional context.[464] It describes each unit's function, growth, character and minimum population size (figures 160 and 161). Rather than static or self-contained, the population bands refer to progressive growth stages and, as societal contacts advanced and population grew, each unit would be superseded. This structure offered the whole city flexibility in size and ordered and phased the construction of community facilities. During this process original theoretical concepts were modified to suit existing urban conditions, landscape and topography.

Initially, Central Lancashire New Town's role had been to relieve congestion in the south-east Lancashire conurbation, but this objective became less important during the early 1970s after Manchester and Liverpool reviewed their housing needs and no longer required overspill housing. The new town's purpose changed but, because it remained a generator of regional growth, its consultants needed to look further afield than south Lancashire to guarantee incoming population and potential employers. *A Study in City Growth* presents this hypothesis, based on achieving self-sustaining growth within 20 years, to fulfil the original expectation to establish a city capable of competing with Liverpool and Manchester. Even distribution of functions and industry and the simultaneous sequential phased development of the townships were apposite to this (figure 162).

Distribution of amenities and industry across the city

In *A Study for a City* RMJM had analysed the distribution of existing functions across the towns' centres to understand their complex interdependence and extent of each location's specialisation (figure 163). They compared this data with other cities, which also had a population of 500,000 (Bristol, Belfast, Edinburgh, Leeds and

[464] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.1, parts 1 and 2, May 1970, p.3.

Sheffield), to produce a typological dispersal pattern based on administration, education, welfare, culture, recreation, entertainment, commerce and industrial sectors. To predetermine each town's unique function and avoid centralisation and congestion, RMJM recommended the early introduction of new major amenity types at local level to attract complementary facilities. Similar to the industrial growth pole strategy, these were known as 'prime movers' (figure 164). Their aim was to strengthen and diversify the range of facilities across the sub-region; encourage existing settlements to develop harmonious relationships within the new city and to serve population beyond the catchment, referred to as the 'hinterland'. In addition to prime-movers, RMJM provided data detailing the spatial requirements for generic civic amenities throughout the townships and districts (figure 165).

The proposed new city differed from previous new town projects because its growth and, eventually that of the sub-region, was treated as a planned modern industrial complex (figure 166). The idea of functional bias and 'prime movers' was also applied to the city's industrial strategy to spread employment evenly along the urban framework to minimise congestion on the road network. Large complexes, which had proved successful in other advanced regions, were considered advantageous because their infrastructure could attract other specialist manufacturers and support a high standard of complementary public services. In addition higher education training centres could be established to supply skilled industrial and office employees.

Main industries were brought together as pre-conceived interrelated groups, selected for their suitability to location, growth prospects and common characteristics. As complexes, these could operate on a highly competitive basis, generating further economic growth and social development without the need for long-term government support. This would provide a solid economic foundation for the city's expansion. In turn population increase would require extensive new planned residential areas to be built and town centres could sustain a wider range and higher standard of facilities. The increase in regional labour availability, improved manufacturing and commercial networks and cultural facilities would benefit adjacent locations, such as the Fylde and North-East Lancashire, making them competitive and appealing to businesses. A study, prepared by Economic Consultants Limited, had noted the region's existing large vehicle and engineering plants and identified their potential to encourage population movement to the new city. Their report concluded by advising that

engineering and allied metal-working fields, which were labour-intensive, would be suitable 'growth poles'.

Selection of industrial locations had strict criteria. They required sufficient flat land with no slopes greater than 1:25 and no major geological features that may impede development. An anticipated 27,000 jobs were required for a single township of 60,000, divided between service and manufacturing industries at a ratio of 70:30 (7,000 employees in the central area; 15,000 on industrial sites and 5,000 in dispersed locations). Based on 35 workers per acre for industrial sites, 140-200 acres would employ 5,000-7,000 workers, so, subject to suitable land availability, each township could have two or three new large complexes. A service industry on a 10-20 acre site for 300-600 people would support this. Other employment could be distributed through residential areas and local and district centres, with open space providing a buffer between major roads, industrial areas and housing. Generally industrial sites were located beyond the outer infrastructure strands, except in Preston and Leyland where industry remained inside the road system.

Prior to designation, a significant proportion of the region's constructional activity had been focused on road infrastructure (figure 167). By 1971 the opening of the M61, the M62 and the electrification of the main Liverpool-London railway had improved inter-regional connections. The M62 joined Liverpool in the west to Humberside in the east via Manchester's outer ring road (M60), and the M61 connected the M60 to the M6 at Walton-le Dale. The M58 linked south Skelmersdale with the M6 and Liverpool; and the M55 joined Blackpool to the M6. Lancashire's other motorway proposal was the unbuilt M59, the Liverpool to Preston motorway, designed to connect the M58 via Preston to the M55 to Blackpool.

At city scale, *A Study in City Growth* demonstrated how the transport infrastructure model introduced in *A Study for a City* would split each township into two different urban types: a central inner area and, beyond the high-speed routes, two outer areas (figure 168). Half of the township's population would reside in the inner area (figures 169 and 170), between the high-speed routes, and the remainder would be divided between the outer areas (figure 171), which benefitted from high levels of accessibility and proximity to the large industrial complexes. The district distributor

roads reduced cross-town traffic. With junctions connecting to the high-speed routes, these served the inner central and residential areas as well as the outer area.

The city's public transport provision adopted a hierarchical three-tier system. Primarily dependant on railway stations at Preston, Leyland and Chorley, the local and national rail networks connected the city to the hinterland beyond the study area and to the region. An express bus with eight stops across the city network supplemented this and, because it ran on a dedicated reserved route, anticipated journey times between adjacent centres were two to six minutes. The longest journey, from Longridge to Chorley, would take only 25 minutes. At peak times between 12 and 20 express buses per hour would operate in each direction.[465]

Township zones and centres

Each township had three civic centre types: the core, easily accessible from all parts of the town and city; the district centre, within walking distance; and local centres, on main pedestrian routes within a quarter of a mile from homes (figures 172 and 173). Positioned between the high-speed roads, the compact inner area contained all major facilities and the town's specialised functions. This included recreational amenities such as stadia, sports centres and town parks. Easily accessible to each township's 30,000 inner area residents, the express bus service connected each centre's major facilities to the city-wide amenity network. Because the inner core's growth needed to be phased alongside the overall township's construction to enable it to respond to changes and allow future expansion, RMJM suggested a linear development to coincide with housing in adjoining areas and, with the exception of prime movers, standard city facilities could be added later. The theoretical structure shows a central core connected by footpaths and local distributer roads to adjacent housing divided into two density zones. The distributors then connect to the high-speed routes and the outer areas beyond.

Each township's outer area offered family and low-density housing, industrial employment on complexes and open space. District centres, serving 1400 dwellings, would be dispersed across the outer area within a ten-minute walk of homes. Typically they would provide a community centre, complete with Catholic church and primary

[465] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.2, parts 3 and 4, May 1970, section 14.

school, library, social and welfare facilities, a comprehensive school, and a retail centre with banks, public houses and restaurant. Districts, sub-divided into neighbourhood clusters of 50 dwellings, would have varied housing types aimed at owner-occupied and rental markets.

Housing

RMJM had predicted a city-wide preference for two-storey dwellings with private gardens and this complemented their prediction that the study area's land value would be low and build costs for multi-storey buildings (above 3-4 storeys) would be high. To offer a wider choice in housing than any other new town or town expansion scheme, RMJM proposed alternative dwelling types across three density zones. In the central area, at 60-80 people per acre (ppa) and within 500 yards of amenities, small units could be offered in either low-rise or multi-storey high-density buildings. Because Central Lancashire New Town's housing policies had adapted their focus from overspill to renewal, this included the upgrading of existing terraces to provide cheap housing in close to central amenities. Two-storey developments with private gardens and access to play areas would be built in both inner and outer areas at 45-55 ppa. Aimed at families with school-age children, these would be in close proximity to local facilities. An indicative diagrammatic neighbourhood layout suggested their housing, arranged in a cul-de-sac layout, would surround schools and shops in a central green space. Lastly, at 15-25 ppa, dispersed developments of one or two-storey dwellings, distant from facilities and aimed at commuters would be located on the periphery of inner and outer urban areas.

Open space

Central Lancashire New Town had 700 acres of recreational space of different types and scales incorporated into its master plan. An extensive city-wide footpath system joined this together, connecting Longridge Fell in the north to Anglezarke Moors in the south-east. Providing pedestrian routes throughout each township, these linked township inner areas and their parks (Moor Park in Preston, Euxton Park Astley Park in Chorley) with green belt that separated each township. Playing fields, located on the edge of housing areas near to town or district centres, surrounded multi-purpose complexes comprising sports halls, secondary schools and community centres. Within a quarter of a mile of households, these supplemented local play areas and parks. In addition, extensive open spaces, each approximately 22-acres, could accommodate

golf courses, racecourses and watercourses for boating and sailing. The Ribble and the Lostock at Cuerden, had been identified as potential regional boating attractions and together with valleys at Darwen and Yarrow, would be preserved as accessible public amenities.[466] Regarded as a visual amenity, landscape between Preston, Grimsargh and Longridge was reserved for farming rather than recreation.

Phased population growth

RMJM's growth plan for Central Lancashire New Town had been prepared as a working hypothesis that would require periodic revision as social and economic conditions changed. Their target population distribution was 55.2% north of the Ribble and 44.8% to the south. Three types of township, characterised by their growth rate and extent of existing development transpired. First, substantial new communities, such as Longridge and Grimsargh, would be characterised by growth that would absorb existing settlements. These could comply with the original theoretical structure as their land was relatively undeveloped. Second, existing communities, such as Chorley, Leyland and Walton-le-Dale, were also capable of accepting large numbers of population. Finally, existing communities, such as Preston, with little capacity to receive major additional population, adopted a plan based on change. To overcome the major social drawback of most new towns, Leyland, Grimsargh and Longridge, which had few civic amenities, would be built up quickly through sequential growth and a large proportion of the central area facilities could be established within the first few years. In contrast Preston, Walton and Chorley would grow slowly and uniformly due to their extensive internal reorganisation programme, required to meet the new city's demands.

A Study in City Growth concludes by identifying short-term priorities, to be achieved within the first five years, including the re-planning of central Preston, Leyland's township centre and, by 1980, a district plan for Leyland. RMJM allowed for immediate growth and change within the designated area between 1969 and 1971 and also identified locations with environmental deficiencies that had potential for immediate development in order to demonstrate the expected standards for the city prior to the first phase (1971-6) commencing.

[466] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.2, parts 3 and 4, May 1970, section 14.

Based on statistics from the 1961 census and the 1966 sample survey, they predicted that in Preston alone there would be 4,000 new jobs in the service industry. To relieve strain on Preston's central area, inessential services would be decentralised to four nearby super-district centres at Penwortham, Lane Ends, Withytrees and Ribbleton (figures 174 and 175). These were selected due to their established concentration of retail, commercial and social facilities and their proximity to major open space.[467] To be commercially viable each catchment needed to support 25,000 to 40,000 people and offer 2,500 jobs. In addition areas identified for immediate renewal included Walton-le-Dale, Tardy Gate, Grimsargh, Longridge and, on a smaller scale, Cuerden and Duxbury Park. In close proximity to Preston, Leyland and Chorley, the three major centres, these could provide new residents with pleasant surroundings within easy reach of superb countryside and proposed social, recreational and work amenities.

Preston would remain the largest in population in 1991, but by natural increase rather than rapid growth. Leyland and Grimsargh's population would expand to approximately half that of Preston's; Chorley and Longridge to about one third and Cuerden to one eighth. To structure growth, four subsequent phases were proposed (figures 176 and 177). Known as the 'Leyland phase,' during the first five years (1971-76) the city would receive 20 per cent of its total population intake, growing from 264,000 in 1971 to 302,400 in 1976. To meet urban renewal demands, 15,000 new dwellings were required. Supported by a £5million expansion at British Leyland Motors, three quarters of the growth would take place in Leyland, making it the first show-piece of the new city. By 1976 a substantial section of its central area would be complete as well as over half its new housing.[468] Other townships would grow slowly over this period. To the north east only 80 dwellings would be built in Longridge and 700 dwellings in Grimsargh. Preston would continue its major renewal task by building four new dwellings to replace every one demolished. Population in the Cuerden township would increase by 50% during this phase with private builders responsible for the construction of new housing. An industrial estate north of Cuerden between the M6 and M61 would also be established.

[467] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.2, parts 3 and 4, May 1970, section 16.
[468] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.2, parts 3 and 4, May 1970, section 15.

During the second phase (1976-81), rapid growth south of the Ribble and major expansion to the north-east would start and this would fully commit the city to its form and scale by 1981. Known as the 'Grimsargh phase', 29 per cent of the incoming population would move to the area and two thirds would reside in Grimsargh, quadrupling its resident numbers. Initially Grimsargh would grow to become an enlarged district centre containing about 20 per cent of its total floor space for administrative, educational, recreational facilities. South of the Ribble, by 1981, the development corporation would be established in Walton and, by receiving half its residents from Preston, the township would grow to 33,400, over half its projected size. Cuerden's population would increase to 18,200 by 1981, concentrated around Whittle-le-Woods and east of Cuerden Park.

The third phase (1981-86) was characterised by the city receiving 31 per cent of its total growth. Concentrated north of the Ribble, the total population by the end of the period (428,500) would be sufficient to support major city-scale amenities. 4,700 dwellings would be needed and three quarters of the incoming population would settle in the north-east townships. By 1986 in Longridge, two districts and the beginnings of a township centre would be complete. Grimsargh would have 80 per cent of its target population and Preston's would increase by 5,000.

After these three phases remaining migration would be voluntary and influenced by the increase and diversification of job opportunities. Growth during the fourth phase (1986-91) would begin to slow to return to 1971 levels and all major urban renewal and rehabilitation programmes would be complete. Now established, town centre specialisms would contribute to overall city life. Three quarters of the remaining incoming population would reside in Longridge, with the remainder in Grimsargh. After the year 2000 the rate of growth and age structure of the population should resemble other similar sized cities.[469]

RMJM's initial intention had been to preserve and exploit communities' existing specialisations rather than reorganise or relocate them. Each township would become a thriving centre, independent of Preston, with a particular function to offer the entire city. *A Study in City Growth* describes each township and its unique city-wide role.

[469] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.2, parts 3 and 4, May 1970, section 15.

Descriptions of the individual townships below are ordered geographically, north to south.

Longridge

Longridge (figures 178 and 179) was not scheduled to expand significantly before 1981 when its high-speed routes were due for completion. The natural beauty of Longridge's Ribble Valley location would be exploited to transform it into a recreation-biased township for 56,000 people. It would gain a sports centre, river based marina, aquarium, botanical gardens and campsites and, introduced late in the development plan, three industrial areas. Two of these, at the eastern end, would be suited to small-scale industry. It was expected that the township would form strong links with North East Lancashire for jobs and services and its existing community would form a service district.

Grimsargh

Treated as a new town, Grimsargh (figures 178 and 179) would grow dramatically from 5,500 to 72,000 people. Its existing village would be absorbed into the township as a housing group on the central area's periphery. Whittingham Hospital would continue the township's functional bias in the welfare sector and it would also develop a specialism in sports and recreation, gaining a large showground and racecourse adjacent to the M6 and an Olympic swimming pool, stadium, agricultural ground on the Ribble Valley. Early in the plan period two industrial complexes established adjacent to the M6 would support growth in services. One to the north west of the township (1971-6) before major population expansion and later, between 1981 and 1986, Courtaulds' Red Scar Works would also gradually expand and connect to the M6. Both sections of the high-speed routes through the township would be developed between 1981-1986. Low-density housing would be built in Grimsargh's wooded valleys.

Preston

Although Preston's population would grow through natural increase, its building programme and rate of change was equivalent to fast growing townships due to the extent of its internal reorganisation and renewal (figures 180 and 181). Employment in the service industry would increase from 52,000 jobs in 1966 to 63,500 in 1991. In addition there would be significant increases in employment at the industrial estate at

Tag Lane and district centres. From the outset one substantial site had been reserved at Penwortham for an exceptionally large employer with substantial land requirements as it could be linked to the new city route system (figure 182). Because its centre would employ four times as many people as the next largest centre and provide regional needs, its development needed to deviate from the theoretical model. Modifications included access to its central area, distribution of employment and district size. Specialised in regional shopping and administration, it would also acquire a first-class cinema, restaurants, a new hotel, night clubs, concert hall, theatre and a further 18% increase in retail floor area (figure 183).

Based on change rather than growth, RMJM aimed to achieve Preston's long-term economic performance by allocating and relocating population and displacing facilities to other townships to restrain its expansion. As a major regional centre, Preston needed to integrate new-city scale facilities and infrastructure into its core and the form of the town's immediate development would be critical to its future city image and role. The bus station had been completed in 1970 and there were a number of major civic and commercial developments scheduled for completion by 1971 including the covered market hall and, in its vicinity, the civic hall. In addition its existing urban fabric required improvement to eradicate disparities in living conditions when compared with other areas in the new city.

RMJM anticipated that car ownership in the new city would surge between 1966 and 1991. In the Preston township alone the increase would be from 39,000 to 60,000. Due to the existing roads pattern in Preston and south of the Ribble, the theoretical network of high-speed routes and express public transport for the new city became distorted as it passed through the township (figures 184 - 186). The original model would only serve the outer part of the central area, containing long-term car parks, service industry and housing. Access to the inner area was restricted by a high-speed loop connected to the high-speed route. Service vehicles, local and express buses and short-term parking traffic would use the loop (the part-constructed ring road) that skirted the main pedestrian area. Built to prevent traffic using the central area's shopping street as a short cut, this linked the inner area's multi-level complexes of short-term car parks, shops and civic buildings at grade level, either direct from the distributer or off short cul-de-sacs. Equally if arriving by public transport, roads would be uncongested and people could alight into the bus station's concourse that, through

subways or raised walkways, connected to pedestrianized areas including shopping arcades such as the Guild Hall, St. Georges and St. John's, which arose following Preston's increase in retail trading coupled with a preference for covered precincts. Pedestrians enjoyed freedom of movement, easy access to parking areas and could cross major roads using subways and underpasses that followed extensive and continuous footpaths across the township inner area and district centres and reached as far as the Ribble Valley. Buildings, such as the bus station (connected to the Guild Hall) and indoor market hall of 1973, designed by RMJM under Andrew Derbyshire, became interchanges for vehicles and pedestrians visiting the township's core.[470]

By 1970 a significant proportion of Preston's historic minimum standard worker's housing had been cleared, but, because of the high proportion of terraces with no back-alley access, a further 38 per cent (600 demolitions per year) of the total 1966 housing stock warranted replacement by 1991. As part of *A Study in City Growth* RMJM completed a probe study in Preston to critically understand its complex housing rehabilitation and renewal problems as well as demonstrate the social and economic value of incorporating and re-structuring existing communities as part of the new city (figures 187 and 188). By examining a specific sample area, generic principles could be applied to an overall strategy for improving the city's urban areas.[471] The Oxhey area, north west of Preston, was selected because it was typical of the town's older areas. This had 275 acres of mixed residential development and in 1966 its population was 10,800, residing in 4190 dwellings (40 ppa). Its housing had been constructed cheaply during the late nineteenth century for cotton industry workers and the environment was poor by twentieth century standards. Described as a 'brick desert unrelieved by open space of any kind',[472] housing layouts were repeated rows of straight two-storey terraces with corner shops at the end of the blocks. Open space was scarce and the Oxhey recreation ground was without a play area. Properties were small with minimal back yards and a majority did not have ginnels. This meant that they could not be readily regenerated in line with recommendations from the Deeplish Study, completed in 1966, which had suggested widening alleyways to introduce communal areas (figure 189).[473] Despite this, if deficiencies could be addressed, its

[470] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.3, part 5, May 1970, section 16.
[471] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.3, part 5, May 1970, section 17.
[472] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.3, part 5, May 1970, section 17.
[473] HMSO, *The Deeplish Study: Improvement Possibilities in a District of Rochdale,* 1966.

potential was as low-cost housing aimed at young married couples due to its close proximity to the central area's array of shops, pubs, clubs and other social facilities.

The predicted increase in traffic caused by the new road structure would directly impact on the Oxhey area. First housing stock would be lost due to the proposed dual lane highway with grade-separated junctions on Aqueduct Street. Second, vehicular movement along the streets needed to be reduced and, similar to the Deeplish Study, pedestrian routes could be added to the rear of the properties. By demolishing mid-terrace properties the footpath network could cut across the residential blocks to link Oxhey to the new district centre in the north, Moor Park to the East and Preston's inner area to the south via pedestrianised underpasses. The streets with gable elevations would become local distributors. Plungington Road and Brook Street, which would carry most of the industrial traffic, were scheduled for improvement by 1981 when they would underpass the Aqueduct Street stretch of the urban motorway. [474] Model housing types for new dwellings were developed alongside rehabilitation and RMJM calculated that 1,670 acres of land for housing was required. In urban areas such as Oxhey, these would conform to the existing terrace house size and would follow the same grid layout to allow the existing road pattern to be reused and avoid disrupting the street's scale. Their section, which is stepped, is similar to Hook's housing (figures 190 and 191).

Walton

Walton's development would complement Preston's and in the early stages both stretches of its high-speed route and the district distributor would be built and its population would come mostly from Preston (figures 192 and 193). As the government administrative centre it would accommodate offices for Lancashire County Council and the headquarters of statutory undertakers. A two-minute bus journey would link Preston and Walton and during peak times its frequency would be three-minute intervals. A half-hour walk along the footpath network through parks and across the river would also link the centres. At King's Fold a new district centre would be developed and others would develop from the existing communities of Walton-le-dale, Bamber Bridge and Tardy Gate. Walton's road structure comprised three major new roads: two as part of the linear high speed route system, and the M65

[474] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.3, part 5, May 1970, section 16.

to join the M6 and link with the North East Lancashire towns. With exceptionally good access to the motorways, a new industrial complex at Clayton Brook would serve both Walton and Cuerden.

Cuerden

Cuerden's designation as a township was purely an administrative exercise as its eventual size and function did not merit classification (figure 194). Because of this it would not gain any township facilities. It would experience a steady growth rate, but its location, topography and function did not justify a township centre. Instead it would become a district centre serving Walton, Leyland, Chorley and Clayton Green with a specialisation in recreation due to its established yachting centre at Cuerden Park. Its predominance of higher social groupings would live in owner-occupier low-density housing and residents would seek employment in adjacent areas such as Clayton Brook.

Leyland

As a major growth point and counter magnet to Preston, Leyland would encounter large-scale expansion rather than change (figures 195 to 199). As a small community expanding into a city township, its population would increase by 150% during the first five years. It would be the first township in the new city to receive a substantial influx of people; it would present the city's new image and test the prime-mover concept. By the end of the first decade a new town centre, a housing area, two industrial areas to the west and new roads would be built. To avoid disruption, living and building activities would be kept separate throughout the period of rapid construction. Most of Leyland's development would take place south of the town, west of Euxton and the M6, with the new town centre, as the unifying feature between new and existing communities. By 1976 the township's western high-speed route would relieve the town's congestion and by 1981 this would connect to Preston in the north and the M6 to the south.

Leyland's rapid increase would create the correct economic environment to provide new central facilities and this would ease the social integration of people moving to the area. Its four principle functional specialisms included entertainment, welfare, education and industry. The latter was the town's existing functional bias and this was arranged as large complexes. British motors would remain the largest single

employer in the town, supplemented by three sites (Moss Side, Shaw Green and Charnock Brow) in the outer areas to distribute a further 11,000 jobs. Two industrial sites to the west of Leyland would achieve 50 per cent of their capacity in the first five years and would be allowed to expand without the intake of firms after 1976. Charnock Brow would develop between 1976-81. The existing complex to the north of Leyland would continue to supply most jobs and remain the city's largest industrial concentration. Leyland's new specialism was education and by introducing a polytechnic for 7000 students with research facilities to its centre to complement established industry, it could attract technologically advanced enterprises to the city. It would become an education complex also comprising a further education college, sixth-form college and industrial training school to the north of the valley. Large student numbers would attract specialised bookshops, restaurants, cinemas, a sports centre and other city-scale facilities.[475]

RMJM maintained that growth should not disrupt the pattern of existing communities or destroy the scale and quality of the town's landscape to the south of the town. Leyland already had a sizable existing population and, similar to Euxton, this would undergo modest renewal and rehabilitation to retain its compact form, size and function as a district centre in the township's inner area (figure 200). This type of development would be kept on the same scale as existing conditions, with an emphasis on improvement rather than growth. After demolition, the disused bleach works site would become a common with public facilities and footpaths linking surrounding areas.

RMJM also produced a concept design for a new township centre containing major commercial, social and education facilities at Worden Park (figure 201). To the south of Towngate, this was located in an area of superb landscape quality incorporating a wooded valley along Shaw Brook and the remains of Worden Hall, previously home of the Farrington family. Its valley profile allowed RMJM to merge built and natural elements by proposing a town centre based on a dispersed arrangement using pedestrian decks placed across higher levels (figures 202 and 203). This follows Hook's example. Pedestrian movement, along light bridges spanning the valleys, would be restricted to the raised level and would be completely segregated

[475] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.2, parts 3 and 4, May 1970, section 18.

from vehicles, servicing, the sunken access road and parking for 3,100 cars below. A commercial sector for retail, entertainment and office development with long-term parking was positioned next to housing to reduce travel through the township's core. A transport interchange serving the express bus would connect Leyland's old and new areas via an extended local bus service. The central area's access road and footpaths along the valley's riverside walk would link new facilities, closely associated to cultural amenities around Worden Hall and the town park, to new housing areas.

The Draft Masterplan's Technical Report detailed three zones for Leyland's housing (figures 204-206). This complied with the original theoretical framework. Inner area housing, within 500 yards of the town centre's activities, would provide 30 per cent of the town's dwellings in predominantly small dwellings at 60-80 ppa. Between the inner and outer areas, the middle zone, would provide family housing with gardens and access to play areas at 45-55ppa. The third zone, close to open space, and remote from facilities would rely on its residents being mobile. Private developers would build this housing as a mix of single and two-storey dwellings at 15-25 ppa. Housing for 46,400 people would be constructed south of Shaw Brook, adjacent to the new town centre, and to the west in two districts. 470 acres of farmland around Runshaw Hall was set aside for 12,000 new homes, split into two zones. The first comprised high-density small dwellings orientated around the township centre, the second of average household size with garages at a medium density with easy access to open space.

Chorley

Chorley's gradual expansion through the three phases would strengthen its bias towards culture, entertainment, professional services and teacher training. By the end of the plan period Chorley would have two junctions to the north and south of the township connected to high-speed routes. With the addition of new facilities, such as a theatre, concert hall and art gallery, it would act as a counter balance to Leyland and become an attractive service centre to southern communities in the city (figures 207-210). 10,600 new jobs would be created, mainly in the service industry, supplemented by 3,000 jobs at an industrial site at Whitehead in the north. To ensure the whole city could access its facilities Chorley's internal structure needed reorganising to prioritise pedestrians. In the short term it would provide both town and district functions and later a new district centre at Duxbury could be built once development to the south commenced. Chorley's old houses required rehabilitation, but new housing to the west

and south, particularly around the Yarrow Valley, had the potential to be some of the most attractive in the city due to its terrain as the steep wooded valleys could inform a series of pedestrian walkways to permeate the town.[476]

In 1971, following confirmation that the new town would go ahead, the Central Lancashire Development Corporation (CLDC) was established and shortly after the RMJM presented their draft plan. One of CLDC's first tasks was to gain pre-outline planning for a number of strategically placed schemes in dispersed locations. By 1975, prior to the public inquiry concluding, approximately 1,700 hectares had been acquired and the CLDC had committed to the construction of homes for 10,000 people.

> This chapter detailed Central Lancashire's phased growth strategy to complete an independent modern industrial regional complex over a twenty-year period. The final chapter will identify some of Central Lancashire New Town's unbuilt and completed buildings, multi-level transport interchanges and civic spaces, some of which were constructed prior to the New Town's designation in 1970.

[476] Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.2, parts 3 and 4, May 1970, section 15 and 18.

1964

Charnock Richards service station opened.

1965

Forton service station opened.

East Cliff Joint Divisional Office, Preston (built).

Redevelopment of Preston County Hall (not built).

1966

Chorley civic central precinct (built).

1967

Redevelopment of Preston County Hall (not built).

1969

Preston conference hall (built).

Guild Hall and Charter Theatre, Preston (built).

1970

Preston bus station completed.

Cuerden Pavilion (built)

Completion of Leyland new district centre including Magistrates Court.

Metroland development, Leyland (not built).

1971

Redevelopment of Preston County Hall (not built).

County Record Office, Preston (built).

Preston Divisional Police Headquarters (built).

1972

Magistrates Court, Preston (built).

1973

Market Hall, Preston completed.

Central Lancashire New Town's built and unbuilt projects 1966-1971

> 'A Study in City Growth' included a phased schedule of buildings and amenities to be completed between 1971 and 1991. Some of these projects, and others considered to be essential to the region's population expansion, were underway before 1971. This chapter identifies the civic architecture and buildings required by the new town's Development Corporation.

Between 1964 and 1971 a number of buildings were constructed across Central Lancashire New Town's framework. In addition major redevelopment schemes for the township centres were proposed and updated in line with changing requirements. Alongside RMJM's preparation of *Study for a City* and the subsequent evaluation of its impact on North East Lancashire, Lancashire County Council Architects, headed by Roger Booth, completed a number of civic projects in Preston, Leyland and Chorley's town centres. Lancashire County Council architects, who worked alongside engineers as part of an integrated design team, began to produce 'elemental designs' for civic architecture based on typology.[477] They had identified that building types had common characteristics and began to model alternatives for small, medium and large facilities to reduce delivery time between brief writing and completion and save on costs. This approach was applied to the region's police stations, magistrates' courts and libraries during the 1960s. The need to produce over 100 new libraries across the county simplified their design to a standardised building form characterised by an arched roof over the central reading space.[478] Similarly multi-level police headquarters adopted floor plates based on three 24x24 feet squares, with the central square housing the circulation core and services.

At Chorley a new civic central precinct had been proposed comprising the Divisional Police Headquarters, a Magistrates Court and the pedestrianisation of St. Thomas Square (1966-68, figures 211 and 212). The seven-storey police headquarters has a reinforced concrete structural frame on piled foundations and white mineralite finished external walls with minimal glazing. It was almost as tall as the opposite corn mill's brick tower on completion. Booth commended the building as a 'powerful civic contribution to the town – functions clearly expressed. External spaces sensitively

[477] Roger Booth, Lancashire County Council: County Architect's Report, April 1965 to March 1966, p.7.
[478] Roger Booth, Lancashire County Council: County Architect's Report, April 1968 to March 1969, p.5.

handled'.[479] The adjacent courthouse has alternate precast concrete ribs with granite aggregate and rough-cast tinted glass panels set directly into precast concrete mullions. The doors and frames were clad in stove-enamelled aluminium. Its pyramid roofs, constructed using mild steel box sections finished in copper felt, top an asphalt flat roof.[480] In Preston Lancashire County Architects also completed a police divisional head quarters (figure 213). Described by Roger Booth, the county architect and designer, as having 'no frills', the police station's load bearing panels produce a simple structural and brutalist form with slit windows.[481]

From the mid 1960s Preston had two council office schemes underway to address the potential increase in administration jobs. At East Cliff a seven-storey block with ancillary storage was being built to provide centralised accommodation for Divisional and Area Offices of Education, Health, Child Welfare and the Planning and Architect's Departments plus workshop accommodation for the Health Education Operational Unit (figure 214). Constructed on pile foundations that had been previously driven for a different building, this has an in-situ frame clad externally with precast concrete panels faced with limestone. Black slate faced the columns and mullions. Double vertical sliding casements allow ventilation whilst providing a sound baffle. Internally, demountable partitions ensured the offices' sub-division remained flexible.[482]

In addition to new offices at East Cliff, in 1964 a Special Sub-Committee of the Finance Committee instructed the County Architect to prepare a scheme for new County administration headquarters based on land between the existing County Hall and Preston's railway station (figure 215). Occupying an important site, this would form a focal point in Central Lancashire New Town and would contribute to the town centre's upgrading. This was part of a phased site development and a new computer building for the Treasurer's department had been completed in 1965. Clad in limestone, the same material used for St. Walburge's Church, Preston, this would set a standard of all future County buildings. It was swiftly followed by a scheme to provide a further 300,000 square feet of new office accommodation over eight years. In November 1967 Booth and two of his staff members travelled to America and

[479] Roger Booth, Lancashire County Council: County Architect's Report, April 1971 to March 1973, p.114.
[480] Roger Booth, Lancashire County Council: County Architect's Report, April 1963 to March 1964, pp.25-26.
[481] Roger Booth, Lancashire County Council: County Architect's Report, April 1971 to March 1973, p.119.
[482] Roger Booth, Lancashire County Council: County Architect's Report, April 1965 to March 1966, p.14.

Canada to study post-War office buildings and this influenced next phase's form: a 27-storey bronze-clad tower (figure 216). The podium, created by using the steep fall of Fishergate Hill, housed a small shopping precinct, parking and mechanical services and its roof was a landscaped public concourse. The top floor would have a public gallery allowing views of the Lancashire coastline, Pennines and the Lake District. A new four-storey entrance building clad in light grey limestone would mask the existing County Hall.[483]

Deliberations by the Royal Commission on Local Government delayed start on the County Hall's construction drawings and by 1969 an interim building was proposed whilst funds were confirmed. Construction of this four-storey large block required the part demolition of the adjacent Christ Church, leaving just the twin towers and gable end intact. A small octagonal conference room for 120 people was incorporated into the design and built on top of the Church's existing foundations. Limestone recovered from the church faces its external elevations (figure 217).[484]

By 1971 the scheme for the redevelopment of Preston's county hall had been redrawn. Properties facing Fishergate Hill were scheduled for demolition and would be replaced by local government offices in a 17-storey tower above a podium and a pyramid to house the new library and museum (figure 218). A new footpath from the railway station would keep people and vehicles segregated. This was due to go out for tender in December 1973. Later, on the site behind Fishergate Hill, a new County Record Office building was built (1975-6, figure 219). Clad in limestone, this air-conditioned building has a reinforced concrete frame and provides stacked storage and public rooms including a lecture theatre and exhibition space. Booth noted that 'pedestrians from the County Hall complex will be encouraged to stroll freely through the ground floor display area and use the reading and exhibition facilities.'[485]

Prior to 1971 Preston's central area was part-pedestrianised and reconfigured to receive a new ring road. Multi-use and transport interchange complexes were positioned adjacent to the ring road to separate pedestrians from their vehicles. In 1970 Preston Bus Station, the second largest in Europe, by the Building Design

[483] Roger Booth, Lancashire County Council: County Architect's Report, April 1966 to March 1967, p.14.
[484] Roger Booth, Lancashire County Council: County Architect's Report, April 1969 to March 1971, p.23.
[485] Roger Booth, Lancashire County Council: County Architect's Report, April 1971 to March 1973, p.183.

Partnership was completed (figure 220). Prior to Central Lancashire New Town's designation, Preston Corporation had commissioned Grenfell Baines and Hargreaves in 1959 (who later became Building Design Partnership in 1961) to design a new bus station and 500 capacity car park. The initial brief aspired to collate the town's dispersed termini of bus services. As the idea for a New Town in central Lancashire developed over the next six years, the size, role and importance of the bus station increased to create a prestigious public building that would be 'unrivalled in size and facilities in England [and] the Continent'.[486] On completion the *Architectural Review* concluded that the building's 'imposing scale seems doubly right for a future mini-metropolis'.[487] 171metres long, the bus station can accommodate 80 double-decker buses nose-on and 1100 cars on split-level decks above. Cantilevered curved edges of the concrete car decks create ribbed canopies to protect passenger platforms from weather. A central spine of passenger facilities and offices divide the ground floor concourse into two large waiting halls. The building later became part of a wider retail, entertainment and office complex linked by raised walkways and subways to segregate pedestrian and vehicular movement. This connected to the Guild Hall and Charter Theatre by RMJM (1969-73), commissioned to commemorate the 1972 Preston Guild (figure 221).

Designed between 1969-73 by RMJM for the 1972 Preston Guild, the Guild Hall's commission coincides with the preparation of *A Study in City Growth.* Its form, reminiscent of the central hall at York University, is characterised by a 'pie-shaped'[488] concrete hall which, supported by pilotis, protrudes above its brickwork podium. An external staircase allows access to the first-floor, below which is the shopping arcade that linked to the bus station via a subway. Later, in 1976, RMJM attached an office complex, comprising a fourteen-storey pink ribbed concrete tower above a podium.

The two-storey indoor market hall (demolished 2019), which was part of a building complex facing Preston's existing covered market, provided shops, 120 stalls and five-storey split-level car park for 600 cars (figure 222 and 223). Vehicular ramps, loading and storage flanked the ring road and, because there was a four-metre slope across the site, on the south side pedestrians could enter at ground level or from

[486] 'Bus station and car park', *The Architect's Journal*, 6th May 1970, p.1134.
[487] 'Services and disservices', *The Architectural Review*, July 1970, p.33.

[488] Clare Hartwell and Nikolaus Pevsner, *The Buildings of England: Lancashire:North,* 2009, Yale University Press: London, p.517.

walkways at first-floor level, which, accessed from an external spiral stair, sat under the existing covered market. The market was constructed in reinforced concrete with in-situ coffered floors and three groups of 24 pyramid glass reinforced plastic roof lights provided the central double height circulation space with natural light. To restrict direct sunlight, the south-east and south-west faces of the pyramids were opaque whereas the north-west faces were translucent.[489] Pedestrians could reach the Magistrates' Court (1972 by Preston Borough Architects), a two-storey rectangular building clad in white tiles, and Preston Polytechnic (now UCLan) to the north, beyond the ring road, by using an underpass.

Located in Cuerden, the headquarters of Central Lancashire New Town's Development Corporation was the first building constructed for the city following the New Town's designation in 1970 (figure 224). Sited within the mature grounds of Cuerden Hall and Park, a historic building of local interest, it is diplomatically placed in the centre of the designation area with no apparent favouritism to Preston, Chorley and Leyland. At the time Cuerden Hall was occupied by the armed forces and was due to be vacated in 1973, when it was to become a public amenity. Designed by RMJM, the building is noteworthy due to its rapid construction and its simple and elegant expression. The close working relationship of architect, engineer and quantity surveyor and the careful selection of materials enabled it to be completed in four months.[490] Unified by a generous flat roof, the external envelope comprises a lightweight prefabricated timber and glass external walls set back from a framework of standard rolled steel sections to form a shaded cloister. Internally, two permanent central service cores subdivide an adaptable office space that offers views into the landscape. Originally the building employed an interesting use of colour. External uncased steelwork was painted yellow to contrast against the mature trees and shaded external walls. Internal block work partitions were left unplastered apart from cork-lined walls in the meeting rooms and the service cores which were plastered and painted red.

By 1970 Leyland's new district centre, south of its existing centre, had been completed. The Towngate civic and commercial core comprised a magistrates court,

[489] 'Preston market', *Building,* 4th May 1973, pp.87-92.
[490] 'Cuerden Pavilion, offices for Central Lancashire New Town Development Corporation, near Preston', *The Architect's Journal,* 13 September 1972, pp.156, 597-610.

library, swimming pool and council offices. Designed by Lancashire County Council Architects' Department, the Magistrates' Court (figure 225) and Library on Lancastergate, is a dominant grey brick box topped with two copper roof pyramids. Key features of the street elevation are the wide external staircase and a band of vertical concrete fins that define the windows and six single-leaf entrance doors. Vertical windows repeat on the side elevations. Adjacent to the court is the library. Also in grey brick with three acute roof pyramids, this is a single-storey brutalist building. To the south east of Lancastergate and Towngate, Metrolands Investments prepared a scheme for a pedestrianized retail and cultural precinct including a bowling alley, indoor and outdoor market (figure 226). The land was cleared, but the design was unrealised and is currently occupied by Tescos.

Despite Central Lancashire New Town not being realised, some of the city's civic facilities and amenities proposed by RMJM from 1966 were constructed to prepare for the anticipated population increase. The motorway network was also partly completed and during the late 1970s and 1980s industry and housing estates began to be built under the Development Corporation's direction.

Conclusion

Through analysis of theoretical diagrams, this research sought to determine the extent Central Lancashire New Town conformed to garden city and new town models. Parallels can be drawn between Ebenezer Howard's garden city and the initial brief for Central Lancashire New Town. Howard's four principles were limiting population numbers and area; growth by colonisation; providing variety and sufficiency of economic opportunities and social advantages; and control of land in the public's interest. Intended as a component of a wider regional model, his concentric garden city model used a permanent green belt of mainly agricultural land to restrict city growth and guarantee extents of settlement. Planned diagrammatically, its clear framework divided the whole region into interrelated urban community units or satellites surrounding a parent city. Each had a distinct function to encourage a demographically diverse population. Attracting new enterprises would boost densities of declining towns and revive the overall region. Since their introduction in 1898 these ideas have been presented in many reiterations to the current day. Notably Abercrombie popularised the model as comprehensively planned regions and CIAM 4 (1933) and Stein diagrammed a poly-nucleated regional model characterised by town-less highways to join settlements. From the late 1940s Abercrombie and Matthew had progressed frameworks for regional complexes that distributed and diversified industry.

As an alternative, Soria's linear city, a zoned continuous ribbon town expansion, not subdivided by rural landscape, used communications to connect existing settlements and boost regional economy. During the 1930s Russian regional ribbon development, Le Corbusier's Zlin plan and the MARS plan for London also adopted chain-like arrangements. Ascoral merged the two models in 1942 by proposing concentric cities linked by industrial linear cities along transportation routes surrounded by agricultural land. Central Lancashire New Town's theoretical diagram is an adaptation of this model.

An advanced extensive regional version of Wilson and Womersley's Irvine New Town, Central Lancashire New Town adopted a similar coherent framework based on a three-strand growth structure. Each township's theoretical structure and communication system integrated car ownership, public and private transport and

segregated vehicles and pedestrians in urban areas. It separated urban and rural areas with green space and channelled phased growth along valleys.

Central Lancashire New Town is a form of agrarian habitation. If compared with Washington, Tyne and Wear, by Llewelyn Davies, its pattern could be interpreted as a structuring devise to unite smaller settlements. Derbyshire had already progressed the semi urbanised rural micro-region concept based on a Geddes section through 'Zone', his student project supervised by Korn and Goldfinger, but using a grid rather than ladder communications network. Similarly Mark III new towns offered city life in a rural environment.

Similar to Howard's principles and the MARS plan, Central Lancashire New Town aimed to nurture regional growth to improve prosperity and lifestyle through distribution of employment and amenities. RMJM's contribution to the new town movement is a formula (a logarithmic scale) to structure this. Defined by population and based on 'growth poles' and 'prime movers', this would disperse industry and amenities across townships set within a city framework. This would distribute traffic flow and create multiple urban growth points. It is likely that the dynamic growth themes stemmed from Matthew and Percy Johnson-Marshall's interest in Ekistics and Percy's awareness of Team 10's urban networks that could be renewed and accommodate infinite dynamic growth and change through multi-nuclei diagrams. The American fast cities, which advanced transport infrastructure to disperse functions across whole metropolitan areas, became the precedent for the Mark III new towns. These evolved as dynamic polycentric growth generators.

Rather than restricting this growth by settlement size based on population, Central Lancashire New Town's form allowed infinite directed growth along its valleys. Its seven townships or nodal points structured this. In 1925 Unwin had proposed directional growth, guided by strategically positioned industry and communication and infrastructure routes. He advocated concentric patterns or linked individual townlets, both with a central core and prescribed positions for education and cultural facilities. The Regional Planning Association of America developed this into a framework of multiple interconnected distinct individual new towns separated by nature. Llewelyn Davies suggested recreation, jobs and shopping as gravitational nodes to encourage decentralisation.

Central Lancashire New Town's townships were inter-dependent flexible hierarchical units with unique and generic facilities. Although prescribed, their land use remained subject to adaptation. As a pilot study for growth poles (new industries) the new town would revive and renew the study area's employment areas, allowing its urban pattern to merge new and existing infrastructure. This aspect of the concept was not innovative. MacKaye had suggested the strategic decentralisation of industrial and residential development to town extensions that had been developed as smaller self-contained autonomous satellites.

In Central Lancashire New Town's model, infrastructure subdivided each township into inner and outer areas and each had set housing densities supported by industry and facilities. Previously Perry and Cooley's neighbourhood units had quantified population and provided central facilities within walking distance of homes. To progress the ideas of residential complexes, in 1938 Ling had proposed five settlement population sizes (residential: 1000; neighbourhood: 6000; town: 50,000; regional city: 500,000 and capital city: 5,000,000), which are similar to those at Central Lancashire New Town.

Gibson and Percy Johnson-Marshall's Coventry scheme demonstrated the pedestrianized civic core's potential. Defined by public buildings, these became a common Mark I new town characteristic. Equivalent public spaces were realised in Leyland, Preston and Chorley's township centres prior to the establishment of the Development Corporation in 1971. The Tatton Browns had introduced transport interchanges or multi-use and multi-level buildings during the 1940s. Incorporating pedestrian decks Team 10 advanced these, specifically the Smithsons who were interested in city flow and they featured in Derbyshire's Zone project. In Central Lancashire New Town, complexes, such as the Bus Station and Guild Hall, became a distinct typology plugged into the communication network to filter vehicles and pedestrians. At Leyland the complex became a pedestrianized lid that straddled the valley to assist the separation.

Once the Longridge spur had been eliminated after the public inquiry, the term 'New Town' became a misnomer as it did not involve new settlements on agricultural land. Despite this, its contribution to the new town movement, as the first example

regionally planned industrial complex, is significant. Abandoning the project not only quashed new town planning on a city or sub-regional scale, but also locally hindered the rejuvenation of adjacent areas such as the east-west corridor between Colne and Blackpool. If the project had gone ahead its 20-year implementation period would have resulted in a planned and phased concentration of investment from public and private sources on an unprecedented scale in Britain during the 20th century.

Epilogue

In 1971 Central Lancashire new Town's Development Corporation, chaired by Dick Phelps, who had been manager at Skelmesdale, was appointed to draft the master plan. Despite concerns regarding its ability to compete with Merseyside, its uncertain industrial strategy and attractiveness to major new investors to create new jobs, *The Guardian* reported that building work could start in the summer of 1972, possibly at the expense of North East Lancashire towns.[491] Land acquisition commenced in July 1972, affecting 250 farms. The threat to agriculture production proved controversial because compulsory purchase orders were proposed prior to the publication of a master plan, although the Development Corporation stated that large rural areas would 'probably be retained.' [492] In November 1973 the Development Corporation published a draft outline plan that required £900 million of investment (at 1973 prices) from both private and public funders.[493] This was not the draft plan prepared by RMJM between 1966-1971. Instead, although Andrew Derbyshire is listed as a principal designer, the remainder of its design team had changed. The Development Corporation's manager, R. W, Phelps, commissioned a report on the department's organisation and management and this comments on its fragmentation. The report claims that three senior people from different sections of the corporation and working in isolation had prepared it and this could be seen in the Corporation's master plan, which was regarded as 'a mystery'. The preparatory process had eliminated the cross fertilisation of ideas.[494]

The draft outline plan proposed 72,000 new homes in villages of about 3000-5000 people, grouped into districts of approximately 20,000. Substantial recreation areas were planned for the Ribble and Lostock Valleys including facilities for watersports, equestrianism and a zoo. The plan included schemes for district centres, including Grimsargh, which with a population increase from 1,600 to 52,000 by 2001, was considered to be the most dramatic. These proposals then progressed into an outline master plan, published in 1974.

[491] Peter Hildrew, 'Planning for the year 2000', *The Guardian,* 13th October 1971, p.15.
[492] John Chartres, 'Buying of land for new town underway', *The Times,* 31st July 1972, p.2.
[493] '£900 M investments for Central Lancashire New Town'*, The Guardian,* 8th November *1973*, p.6.
[494] G. Morgan, *The Organisation and Management of the Central Lancashire Development Corporation: A Research Report,* Department of Behaviour in Organisations, University of Lancaster, p.17.

Following a series of delays, a public inquiry into the outline plan Central Lancashire New Town commenced in January 1975 and lasted three months. Assuming their plan would be approved, the CLDC proceeded with acquiring land, issuing architects' briefs and preparing detailed plans for the Longridge spur and Ulnes Walton-Runshaw areas.[495] However, by 1976 Ministers re-evaluated national funding for New Towns because they were concerned that inner city areas were starting to suffer economically. The House of Commons replaced new town policies, which had dispersed people from inner conurbations, with reallocating funding back to city centres. The irony of the delay, at a time when investment in new manufacturing industries was of prime national importance, was captured by George Rogers, MP for Chorley, who reported that it was hindering natural growth areas designated for accelerated expansion. [496] The decision regarding its future was delayed until 1977 when *The Times's* front page reported that Central Lancashire New Town's population increase needed to be significantly reduced to 23,000 people.[497] During the 1980s New Towns were privatised and Central Lancashire New Town's Development Corporation was dissolved at the end of 1985.

The change of government in 1979 ended the post 1945 consensus. Margaret Thatcher sought to reverse Britain's long-term economic decline by shifting focus from manufacturing to finance. During the 1980s strategies included restricting trade unions' power, council house sales and, dictated by market forces, the privatisation of large industrial companies. Industry was fundamental to Central Lancashire New Town's and the region's growth, yet British industry reduced by 15 per cent over the next decade.[498] The consequences are seen today in Lancashire. Currently, to increase Britain's productivity, the government requires Local Enterprise Partnerships to prepare Local Industrial Strategies by March 2020.[499] Lancashire's is fundamental to its future sustainable economic growth and, prepared by Steer Economic Development, analysis concludes by stating that without action this will be hindered because Lancashire's productivity gap relative to the UK's will widen and employment will decline. They note the region's potential growth will vary across its

[495] Peter Grimshaw, 'The decline and fall of CLNT: a case study in planning gone wrong', *The Planner,* September 1978, p.156.
[496] 'MP in 'no decision' row over New Town', *Lancashire Evening Post*, 28th February 1976.
[497] '380,000 cut from new towns' growth target', *The Times,* 6th April 1977, p.1.
[498] Larry Elliott, 'Did Margaret Thatcher transform Britain's economy for better or worse?' *The Guardian,* 8th April 2013, https://www.theguardian.com/business/2013/apr/08/margaret-thatcher-transform-britain-economy
[499] https://lancashirelep.co.uk/key-initiatives/lancashires-local-industrial-strategy/

polycentric structure due to connectivity and established economic roles. To address this Steer propose business clusters, cross-sector initiatives, place-specific assets and re-skilling the workforce to respond to change.[500] These initiatives echo the theories behind Central Lancashire New Town's framework.

[500] Steer Economic Development, *Draft: Lancashire Local Industrial Strategy: Evidence Base: Executive Summary,* May 2019.

Future research

Although primarily a historical piece of research, this study has relevance today in light of the government's Growth Deal and Lancashire's role as part of the Northern Powerhouse. Central Lancashire New Town's structure established an urban framework to support a strategy for 20 years of rapid growth. This was partially realised through the construction of infrastructure, housing, industrial complexes and township centres. Although this thesis captures work completed between 1966 and 1971, further projects, mainly industrial complexes and housing estates, were planned or realised by the Development Corporation from the mid 1970s. I intend to continue my interest in Central Lancashire New Town by mapping these projects and comparing their location and scale with RMJM's initial framework and construction phasing.

Interest in mega cities and polycentric spatial structures has increased since the year 2000, particularly in the context of developing countries. Themes include sustainable regional growth patterns, morphology, mobility and economy. As the product of seventy years of advancement since garden city movement, RMJM's theoretical framework for Central Lancashire New Town could provide useful precedent.

In terms of future papers, I have had an abstract accepted for a conference, 'Mapping the Spaces of Modernist Cities within the Context of CIAM's Athens Charter', Slovenia March 2020, which will enable me to contextualise Central Lancashire New Town with other cities that have links to CIAM.

List of illustrations

Plate 1: Location of Central Lancashire. (Source: JR James Archive, https://www.flickr.com/photos/jrjamesarchive/9249164862 Accessed 05.10.20)

Plate 2: Central Lancashire New Town's international context. (Source: JR James Archive https://www.flickr.com/photos/jrjamesarchive/9245738869/ Accessed 05.10.20)

Plate 3: Proposed designation area. (Source: JR James Archive, https://www.flickr.com/photos/jrjamesarchive/9249119574/in/photostream/ Accessed 05.10.20)

Plate 4: Central Lancashire New Town's regional context. (Source: JR James Archive https://www.flickr.com/photos/jrjamesarchive/9246432215/in/photostream/ Accessed 05.10.20)

Figure 2: Preston's Market Hall designed by Andrew Derbyshire, RMJM, 1973. (Source: 'Preston market', *Building,* 4th May 1973, p.90.)

Figure 3: Hook market area on pedestrian deck. (Source: London County Council, *The Planning of a New Town,* 2015, p.61.)

Figure 3: Central Lancashire New Town land use and transport plan. (Source: Central Lancashire Development Corporation, *Central Lancashire Development Corporation Outline Plan,* 1974, insert)

Figure 4: RMJM, Master plan for Jeddah, 1973. (Source: George Duncan, 'The planning and development of the city of Jeddah 1970-1984', Durham theses, Durham University, figure 9.5. http://etheses.dur.ac.uk/7069/)

Figure 5: Ward and centre of Ebenezer Howard's Garden City. (Source: E. Howard, *Garden Cities of Tomorrow,* 1944, p.53.)

Figure 6: Ebenezer Howard Garden City and rural belt. (Source: E. Howard, *Garden Cities of Tomorrow,* 1944, p.52.)

Figure 7: Brentham Garden Suburb, Ealing. (Source: Ewart Culpin, *The Garden City Movement Up-to-Date,* 1913, p.52)

Figure 8: Buckingham's square city, 1849. (Source: A. R. Sennett, *Garden Cities in Theory and Practice,* 1905, Guildford: Billing and Sons, p.126)

Figure 9: Ebenezer Howard's correct principle of a city's growth – a regional framework by adding extension satellites when the first garden city has reached its maximum population. (Source: E. Howard, *Garden Cities of Tomorrow,* 1944, p.143.)

Figure 10: Unwin's financial comparison of a garden city compared with an ordinary town development. (Source: Raymond Unwin, *Nothing Gained By Overcrowding,* 1912, Westminster: P. S. King and Son, p.4.)

Figure 11: Part plan of Letchworth by Raymond Unwin and Barry Parker. (Source: Ewart Culpin, *The Garden City Movement Up-to-Date,* 1913, p.15.)

Figure 12: Christopher Wren's plan for the rebuilding of London, 1666. (Source: *RIBA Town Planning Conference Transactions, 1910*, London, 1911, p.293.)

Figure 13: Development of a town by means of self-contained suburbs with defining belts of open space. (Source: Raymond Unwin, *Nothing Gained By Overcrowding,* 1912, Westminster: P. S. King and Son, p.19.)

Figure 14: Part plan of Hampstead Garden Suburb. (Source: Ewart Culpin, *The Garden City Movement Up-to-Date,* 1913, p.34.)

Figure 15: Burnage Garden Village by J. Horner Hargreaves, August 1907. (Source: Model and photograph by Jim Backhouse, B.15 Workshop, University of Manchester.)

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Figure 17: Hollins Green, Oldham. (Source: Patrick Abercrombie, 'Modern town planning in England: a comparative review of 'garden city' schemes in England, part II', *The Town Planning Review,* July 1910, plate 47.)

Figure 18: Back of the menu card for the 1910 RIBA Town Planning Congress banquet, designed by H. Bradshaw. (Source: *RIBA Town Planning Conference Transactions, 1910*, London, 1911, p.94.)

Figure 19: Map of the ten cities of health, London, designed by Arthur Crow. (Source: *RIBA Town Planning Conference Transactions, 1910*, London, 1911, p.410.)

Figure 20: A suggested suburban development based on Withington, Manchester, suggested by the 1909 Town Planning Bill drawn by Edgar Wood for the Manchester Society of Architects. (Source: *The Architectural Review,* September 1910, p.147.)

Figure 21: A suggested suburban development based on Withington, Manchester, suggested by the 1909 Town Planning Bill drawn by Edgar Wood for the Manchester Society of Architects. (Source: *The Architectural Review,* September 1910, p.149.)

Figure 22: A suggested suburban development based on Withington, Manchester, suggested by the 1909 Town Planning Bill drawn by Edgar Wood for the Manchester Society of Architects. (Source: *The Architectural Review,* September 1910, p.148.)

Figure 23: Chicago street system designed by Daniel Burnham 1906-9. (Source: *RIBA Town Planning Conference Transactions, 1910*, London, 1911, p.260.)

Figure 24: Patrick Abercrombie, methods of urban growth. (Source: C. H. Reilly and P. Abercrombie[SEP], 'Town Planning Schemes in America[SEP]', *The Town Planning Review,* April 1910, p.58.)

Figure 25: Schematic diagram of Vienna and Paris. (Source: Gerald Dix, 'Little plans and noble diagrams', *The Town Planning Review,* July 1978, p.349.)

Figure 26: Welwyn Garden City designed by Louis de Soissons. (Source: Aranda Y Garcia Cascales, *El Futuro Madrid,* 1927, p.32.)

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Figure 29: Barry Parker, Remodelling of Porto's civic centre. (Source: Barry Parker and Patrick Abercrombie, 'Oporto', *The Town Planning Review,* October 1916, p.30.)

Figure 30: City of Dublin new town plan by Sydney and Arthur Kelly and Patrick Abercrombie. (Source: 'Dublin town planning competition', *The Town Planning Review,* April 1917, p.108.)

Figure 31: Patrick Abercrombie and Henry Johnson's suggested lines of growth for Doncaster. (Source: Patrick Abercrombie, Joseph Humble and Henry Johnson, *The Doncaster Regional Planning Scheme,* 1922, plate 22.)

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Figure 33: General Plan of Forest Hills Gardens. (Source: Clarence Perry, *Regional Plan of New York and its Environs,* vol. 7, 1929, p.90)

Figure 34: Clarence Perry, summary of neighbourhood planning principles. (Source: Clarence Perry, *Regional Plan of New York and its Environs,* vol. 7, 1929, p.88)

Figure 35: Preliminary study for a hypothetical garden suburb in the New York City Region, 1923. (Source: Clarence Stein, 'Toward new towns for America', *The Town Planning Review*, Vol.20, October 1949, p. 203.p.204)

Figure 36: General plan of Sunnyside showing its relation to the city block. (Source: Clarence Stein, 'Toward new towns for America', *The Town Planning Review*, Vol.20, October 1949, p.207.)

Figure 37: Plan of Radburn completed by 1930. (Source: Clarence Stein, 'New towns for America', *The Town Planning Review,* October 1949, figure 25).

Figure 38: Typical Radburn cul-de-sac. (Source: Clarence Stein, 'New towns for America', *The Town Planning Review,* October 1949, p.249).

Figure 39: Radial expandable layouts. Left: by Professor Rud Eberstadt exhibited at the 1910 RIBA Town Planning Conference; centre: by H. V. Lanchester exhibited at the 1910 RIBA Town Planning Conference; right: by George Pepler exhibited at the 1925 International Town, City and Regional Planning Conference, New York.

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Figure 41: Henry Wright, section through Epoch III. (Source: in E. A. Smith, 'Seeing a state whole', *The Survey,* 1st May 1925, p.159.)

Figure 42: Henry Wright, Epoch III: linked by highways, each settlement has a function that contributes to the whole region. (Source: in E. A. Smith, 'Seeing a state whole', *The Survey,* 1st May 1925, p.158.)

Figure 43: Benton MacKaye, theoretical control of urban growth using inter-towns and green space to form multi-centred regions, 1928. (Source: Benton MacKaye, *The New Exploration,* 1962, Urbana: University of Illinois Press, pp.183-184.)

Figure 44: Barry Parker, the parkway concept, 1937. (Source: 'Site planning as exemplified at New Earswick', *The Town Planning Review,* February 1937, p.96)

Figure 45: Barry Parker, polycentric regions: parklands as agricultural belts and towns connected by town-less parkways, 1937. (Source: 'Site planning as exemplified at New Earswick', *The Town Planning Review,* February 1937, p.101)

Figure 46: Clarence Stein's regional city concept. (Source: Clarence Stein, 'City Patterns…Past and Future, *Pencil Points 23,* June 1942, p.53.)

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Figure 48: A. Trystran Edwards, left: model town designed to perfect communications. (Source: A. Trystan Edwards, 'A "model town designed for traffic"', *The Town Planning Review,* May 1930, p.35.) Right: Type plan for a new town: green wedges replace the green belt to create functional zones capable of infinite expansion. First appeared in T. A. LI, '100 new towns for Britain by J47485', *100 New Towns for Britain*. (Source: A. Trystan Edwards, *Towards Tomorrow's Architecture,* 1968, p.75)

Figure 49: A. Trystran Edwards, suggested plan of a town by a navigable river. (Source: T. A. LI, '100 new towns for Britain by J47485', *100 New Towns for Britain*, June 1935, p.240.)

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Figure 52: Noulan Cauchon, hexagonal community clusters and road layouts, 1925. (Source: Eran Ben-Joseph and David Gordon, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol.5, no.3, 2000, p.251.)

Figure 53: Noulan Cauchon hexangonal housing layout, 1925. (Source: David Gordon, '"Agitating people's brains": Noulan Caichon and the city scientific in Canada's capital', *Planning Perspectives,* July 2008, p.368.)

Figure 54: A. R. Sennett, hexagonal city capable of phased growth, 1905. (Source: A. R. Sennett, *Garden Cities in Theory and Practice,* 1905, Guildford: Billing and Sons, p.222.)

Figure 55: Left: Charles Lamb, hexagonal plan, 1904. (Source: Eran Ben-Joseph and David Gordon, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol.5, no.3, 2000, p.244). Right: Barry Parker, hexagonal layout for a site with small houses in blocks. (Source: Barry Parker, 'Site planning as exemplified at New Earswick', *The Town Planning Review,* February 1937, p.93.)

Figure 56: Rudolph Muller, hexagonal plan, 1908. (Source: Eran Ben-Joseph and David Gordon, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol.5, no.3, 2000, p.246.)

Figure 57: Arthur Comey, a progressive hexagonal city, 1923. (Source: Eran Ben-Joseph and David Gordon, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol.5, no.3, 2000, p.248.)

Figure 58: Noulan Cauchon, Hexagonopolis, 1927. (Source: Eran Ben-Joseph and David Gordon, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol.5, no.3, 2000, p.253.)

Figure 59: Barry Parker, hexagonal neighbourhood unit, 1928. (Source: Eran Ben-Joseph and David Gordon, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol.5, no.3, 2000, p.257.)

Figure 60: Adams and Whitten, extended hexagonal cul-de-sac and loop scheme, 1934. (Source: Eran Ben-Joseph and David Gordon, 'Hexagonal planning in theory and practice', *Journal of Urban Design,* vol.5, no.3, 2000, p.261.)

Figure 61: Soria y Mata, 500m wide linear extension to connect two settlements, 1882. (Source: Ivan Boileau, 'La Ciudad Lineal: a critical study of the linear suburb of Madrid', *The Town Planning Review,* October 1959, p.231.)

Figure 62: Soria, arrangement of blocks, Ciudad Lineal. (Source: George R. Collins, 'Linear planning throughout the World', *Journal of the Society of Architectural Historians,* vol. 18, October 1959, p.39.)

Figure 63: Soria y Mata, tramway around Madrid 1892. (Source: Ivan Boileau, 'La Ciudad Lineal: a critical study of the linear suburb of Madrid', *The Town Planning Review,* October 1959, p.232.)

Figure 64: Left: La Ciudad Lineal in relation to Madrid. (Source: Ivan Boileau, 'La Ciudad Lineal: a critical study of the linear suburb of Madrid', *The Town Planning Review,* October 1959, p.233.) Right: Final layout for Ciudad Lineal. (Source: George R. Collins, 'Cities on the Line', *The Architectural Review*, vol.128, November 1960, p.343.)

Figure 65: Typical section through Ciudad Lineal. (Source: George R. Collins, 'Linear planning throughout the World', *Journal of the Society of Architectural Historians,* vol. 18, October 1959, p.40.)

Figure 66: Gonzalez del Castillo, Belgium Linear City, 1919. (Source: George R. Collins, 'Linear planning throughout the World', *Journal of the Society of Architectural Historians,* vol. 18, October 1959, p.50.)

Figure 67: Pepler, satellite towns for London, 1921. (Source: Aranda y Garcia Cascales, *El Futuro Madrid,* 1927, p.24.)

Figure 68: Left: Socialist town at Stalingrad by Professor Milutin (1) Housing; (2) green space; (3) industry and railway. Right: Magnitogorsk by Milutin. North – industry; south – green space and housing. (Source: 'The builders: recent developments of town planning in USSR: the adopted policy of zoning', *The Architectural Review,* May 1932, p.210.)

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Figure 78: Cover of the 'New Architecture' exhibition catalogue by MARS, 1938, Burlington Galleries, London. (Source: photo by author of original at Edinburgh University Special Collections.)

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Figure 80: MARS plan for London. Left: borough unit; right: neighbourhood unit. (Source: Maxwell Fry, *Fine Building,* 1944, fig. 12 and 13.)

Figure 81: MARS plan for London. Left: City district diagram; right: complete unit diagram. (Source: Maxwell Fry, *Fine Building,* 1944, fig. 14 and 15.)

Figure 82: Gordon Stephenson, Dallington, Northampton, 1953. (Source: J. Lewis Womersley, 'Housing experiments on Radburn Principles', *The Town Planning Review,* October 1954, p.183.)

Figure 83: Lewis Womersley, Eastfields, Northampton, 1952-4. (Source: J. Lewis Womersley, 'Housing experiments on Radburn Principles', *The Town Planning Review,* October 1954, p.191.)

Figure 84: Gordon Stephenson, Queens Park Estate, Wrexham, 1954, basic housing unit. (Source: Gordon Stephenson, 'The Wrexham experiment', *The Town Planning Review,* January 1954, p. 277.)

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Figure 87: Perspective of Coventry redevelopment by Gibson showing the relationship of various building groups. (Source: 'For redevelopment of the centre', *The Architects' Journal,* 24th April, 1941, p.280.)

Figure 88: Gibson's preliminary study of the redevelopment of Coventry's centre, 1941. (Source: 'For redevelopment of the centre', *The Architects' Journal,* 24th April, 1941, p.279.)

Figure 89: Housing at Coventry designed by Gibson with Percy Johnson-Marshall as assistant. (Source: 'Coventry 1: Wartime', *The Architects' Journal,* 24th April 1941, p.274.)

Figure 90: Coketown (Preston). (Source: Lewis Mumford, *The Culture of Cities,* 1938, London: Secker and Warburg, p.196.)

Figure 91: Park system proposed for London by Tubbs based on existing and proposed parks. (Source: Ralph Tubbs, Living in Cities, Harmondsworth: Penguin Books, 1942, p.31.)

Figure 92: Sketch of the heart of a town by Tubbs. (Source: Ralph Tubbs, *The Englishman Builds,* 1945*,* Harmondsworth: Penguin Books, p.57.)

Figure 93: Thomas Sharp's model town in plan. (Source: 'Model town for a film', *The Architects' Journal,* 4th February 1943, p.94.)

Figure 94: Grenfell Baines, redevelopment of the New Hall Lane area, Preston. (Source: 'Preston replanning scheme', *The Architects' Journal,* 22nd April 1943, p.270.)

Figure 95: Grenfell Baines, perspective of the redevelopment of the New Hall Lane area, Preston. (Source: George Grenfell Baines, 'Plan for Preston', Master thesis, Lancashire Archives.)

Figure 96: Grenfell Baines, replanned central area, Preston. (Source: 'Preston replanning scheme', *The Architects' Journal,* 22nd April 1943, p.272.)

Figure 97: Grenfell Baines, perspective of replanned central area, Preston. (Source: 'Preston replanning scheme', *The Architects' Journal,* 22nd April 1943, p.272.)

Figure 98: Grenfell Baines, covered walkways in replanned central area, Preston. (Source: 'Preston replanning scheme', *The Architects' Journal,* 22nd April 1943, p.270.)

Figure 99: Prouder Preston, replanned central area, 1946. (Source: Preston's Town Planning and Development Committee, *Prouder Preston,* 1946.)

Figure 100: Prouder Preston, proposed major roads, 1946. (Source: Preston's Town Planning and Development Committee, *Prouder Preston,* 1946.)

Figure 101: Prouder Preston, new neighbourhood layout, 1946. (Source: Preston's Town Planning and Development Committee, *Prouder Preston,* 1946.)

Figure 102: Aileen and William Tatton Brown, reconstruction of a city quarter drawn by McShane. The new pattern dovetails into the remains of the old. The dotted line on the plan is the standard unit shown above. (Source: Aileen and William Tatton Brown, 'Three-dimensional town planning', *Architectural Review,* September 1941, pp.82-83 and January 1942, pp.18-19.)

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Figure 104: Le Corbusier, St. Die. (Source: Percy Johnson-Marshall, *Rebuilding Cities*, 1966.)

Figure 105: Harlow New Town. (Source: Harlow Development Corporation, *Harlow New Town,* pamphlet in Lloyd Rodwin, *The British New Towns,* 1956.)

Figure 106: 1950 direction of population overspill. (Source: Brown, *A Preliminary Plan for Lancashire,* 1951.)

Figure 107: The Zone by Voelcker, Derbyshire and Crooke, 1951-2. Left: rural unit, right: city view. (Source: Peter Carolin, 'John Voelcker, Team 10 founder member: a view from the practice', *Arq,* vol. 16, no.4, 2012, p.365.)

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Figure 109: Team 10's reinterpretation of Patrick Geddes' Valley Section by adding a comparative and synchronic 'Scale of Association'. Shown at Doorn, 1955. (Source: John Voelcker, 'Team X', *Arena*, vol. 81, June 1965.)

Figure 110: Avenham Street housing by Stirling and Gowan. (Source: Mark Crinson, 'The uses of nostalgia: Stirling and Gowan's Preston Housing', *Journal of the Society of Architectural Historians,* June 2006, p.223.

Figure 111: Kitimat by Clarence Stein, Roger Willcox, Albert Mayer, Julian Whittlesey, and Benton MacKaye (1955). (Source: 'Kitimat: an interim report', *The Canadian Architect,* 1st March 1956, p.19).

Figure 112: Competition entry for the redevelopment of Berlin's centre, 1958, by Percy Johnson-Marshall, Boissevain and Osmond and Colin Buchanan. (Source: 'A plan for a two-level city', *The Architects' Journal,* 1st October 1959, p.287.)

Figure 113: Departures from mark 1 new town forms, 1956. (Source: *The Architects' Journal,* 22nd November 1956, pp.734-8.)

Figure 114: Cumbernauld new town. (Source: 'Cumbernauld new town, mark II: A plan to master the motor car, *The Architects' Journal,* 1st October 1959, pp.276-277).

Figure 115: Reginald Malcolmson, 'Metrolinear'. (Source: George R. Collins, 'Correspondence: Cities on the Line', *The Architectural Review*, vol.129, January 1961, p.6.)

Figure 116: Hook new town. Left: road layout; right: pedestrian footpath system. (Source: London County Council, 'Plan for a new town – Hook', *Ekistics,* April 1962, pp.272-273.)

Figure 117: Constantinos A. Doxiadis, Ideal Dynapolis with unidirectional planned growth. (Source: Constantinos A. Doxiadis, 'Ecumenopolis: Tomorrow's City' in W.

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Figure 118: Constantinos A. Doxiadis, Ecumenopolis showing absorption of new towns into the urban mass. (Source: Constantinos A. Doxiadis, 'Ecumenopolis: Tomorrow's City' in W. R. Dell (Ed), *Encyclopaedia Britannica: Britannica Book of the Year 1968*, 1968, William Benton: USA p.24)

Figure 119: Chandigarh by Pierre Jeanneret, Le Corbusier, Maxwell Fry and Jane Drew. (Source: Percy Johnson-Marshall, *Rebuilding Cities,* 1966, Edinburgh University Press, pp.142.)

Figure 120: H. Rau, proposed communication lines and strung settlements in Britain. (Source: H. Rau, 'National prospect: a plan for better housing and easier travel in Britain', *The Guardian,* 23rd April 1963, p.5).

Figure 121: Arthur Ling, a national motorway plan for Britain. (Source: Arthur Ling, 'The newest towns', *New Society,* 9th July 1964, p.9.)

Figure 122: Arthur Ling, alternative urban forms. (Source: Arthur Ling, 'The newest towns', *New Society,* 9th July 1964, pp.10-11.)

Figure 123: Circuit communities at Redrose (left) and the Solway Firth (right): by George Cullen and Richard Matthews. (Sources: 'Alcan: Redrose', *The Architectural Review,* April 1965, p.113 and 'Solway', *The Architectural Review,* May 1965, p.3).

Figure 124: Milton Keynes distribution of amenities. E – different facilities at an activity centre serve different catchment areas. F – members of a family living in one residential area will use different facilities in different areas. (Source: 'Planning study: Milton Keynes: new city for the South-east: the masterplan', *The Architects' Journal,* 5th February 1969, p.365.)

Figure 125: Constantinos A. Doxiadis, Islamabad metropolitan area. (Source: Constantinos A. Doxiadis, 'Islamabad: the creation of a new city', *Town Planning Rewiew,* vol. 36, April 1965, p. 27.)

Figure 126: Sketch map of interim proposals for Milton Keynes indicating land use and transport pattern. (Source: 'Planning study: Milton Keynes: new city for the South-east: the masterplan', *The Architects' Journal,* 5th February 1969, p.375.)

Figure 127: Greater Peterborough. (Source: Robin Guthrie, 'Expanding a town: Peterborough's example', *New Society,* 24th September 1970, pp.532-535.

Figure 128: Grid arrangement for Washington new town. (Source: Peter Hall, 'The pattern of cities to come', *New Society,* 10th March 1966, p.8.)

Figure 129: Early proposal for a conurbation linking Northampton, Bedford and Bletchley new city. (Source: Peter Hall, 'The pattern of cities to come', *New Society,* 10th March 1966, p.9).

Figure 130: Wilson and Womersley's linear diagram for Northampton. Primary roads link to the M1. (Source: 'Planning: can Greater Northampton go linear?', *The Architects' Journal,* 25th February 1970, p.474.)

Figure 131: Wilson and Womersley, linear principles for Irvine, 1966. (Source: Hugh Wilson and Lewis Womersley, 'Irvine New Town, final report on planning proposals', November 1966, Edinburgh: HMSO, p.23.)

Figure 132: Wilson and Womersley, left: Irvine principle of growth; right: Irvine New Town basic plan. (Source: Hugh Wilson and Lewis Womersley, 'Irvine New Town, final report on planning proposals', November 1966, Edinburgh: HMSO, pp.17-18.)

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Figure 135: Civilia: left: intensity of activity diagram; right: communications network. (Source: Ivor De Wolfe, *Civilia: The End of Suburban Man,* 1971, The Architectural Press, London, p.32.)

Figure 136: Theoretical diagram for Central Lancashire New Town. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, cover.)

Figure 137: Garstang new town proposal by Peter Grimshaw, 1965-7. (Source: left - 'Proposal for Garstang', *The Architects' Journal,* 4th August 1965, p.242 and right – Peter Grimshaw, 'Growthpoint Garstang', 1967).

Figure 138: T. P. Bennett and Sons, Forton service station, 1965. (Source: Dan Cruikshank, 'Forton services, M6 Lancashire', RIBA Journal, April 1996, p.50.)

Figure 139: left: existing and proposed motorways; right: major road traffic movements. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.30.)

Figure 140: RMJM, Central Hall, University of York, 1966-68. (Source: https://www.yorkpress.co.uk/news/15288919.university-halls-700k-overhaul/)

Figure 141: Central Lancashire New Town prescribed study area. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.3.)

Figure 142: Left: Mid-Lancashire identifying proposed and existing towns. Right: Future development of central mid-Lancashire 1965. (Source: 'Mid-Lancashire Future Development', *The Architects' Journal,* 4th August 1965, p.241).

Figure 143: Population of the study area by Local Authority. Black 1951 figures, white 1961, grey 1966. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.26.)

Figure 144: Preston showing existing communications and relation to River Ribble. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.27.)

Figure 145: Left: Chorley and Coppull; right: Leyland. Existing conditions. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.28.)

Figure 146: Scaled provision of amenities by population. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.52)

Figure 147: Logarithmic scale of population, density and time. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.54)

Figure 148: Movement pattern arising from dispersal of major city functions. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.57).

Figure 149: left: a three-strand structure for a theoretical township of 60,000 people applied to the directional expansion of an existing town. Right: a three strand structure showing the theoretical community distribution across four districts of 15,000 people, four main employment areas and one town centre. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.60).

Figure 150: left: the three strand structure applied to possible site conditions. Right: the three strand structure extended to a city scale by linking townships. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.60).

Figure 151: sequence of open spaces linked to the pedestrian system. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.71).

Figure 152: Proposed expansion of existing communities south of the River Ribble. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.75).

Figure 153: Possible direction of new development and options for the location of the two 60,000 townships. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, p.77).

Figure 154: Options for growth. (Source: Ministry of Housing and Local Government, *Central Lancashire: Study for a City: Consultants' Proposals for Designation,* 1967, HMSO: London, pp.80-1).

Figure 155: Wilson and Womersley: even dispersal of industry in relation to housing, 1969. (Source: (Source: 'Manplan 3', *The Architectural Review,* November 1969, p.386).

Figure 156: Wilson and Womersley, Alternative theoretical structures for a 60,000 population, 1969. No.5 is the three-strand structure. (Source: 'Manplan 3', *The Architectural Review,* November 1969, p.388).

Figure 157: RMJM's application of Wilson and Womersley's three strand structure model at Central Lancashire New Town. Model shows a section of one strand. (a): neighbourhood; (b): district centre. (Source: 'Manplan 3', *The Architectural Review,* November 1969, p.389).

Figure 158: Alternative planning strategy for North Lancashire by the Building Design Partnership, 1969. (Source: Building Design Partnership, 'Central Lancashire New Town Proposal', May 1969, pp.18-19.)

Figure 159: Central Lancashire New City pattern of development in the Leyland/ Chorley area proposed by George Grenfell Baines, April 1971. (Source: George Grenfell Baines, 'North Lancashire development: a proposal', April 1971, Lancashire Archives.)

Figure 160: Minimum viable communities. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft master plan, 1971, fig 5.2).

Figure 161: minimum viable communities. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 6.1)

Figure 162: Range of target catchments to be served by city facilities by 1991. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 4.11)

Figure 163: left: regional context; right: profiles of functions in the context area showing bias of urban areas. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 4.4 and 4.5)

Figure 164: The snowballing effect of a prime mover in a theoretical context of stagnation or decline. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 4.9)

Figure 165: Space needs of a 60,000 township. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, table 6.5)

Figure 166: Land use structure 1991 designation proposals. (Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970)

Figure 167: Existing and proposed motorways. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 10.1)

Figure 168: left: theoretical structure of 500,000 city; right top: theoretical transport structure for a township (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 6.3, 6.4, 6.5)

Figure 169: Inner area land use requirements excluding district distributor roads and high-speed routes. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, table 6.10)

Figure 170: Typical inner area. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 6.14)

Figure 171: Typical outer area. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 6.13)

Figure 172: Distribution of types city-scale facilities across a townships and districts. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 6.6-6.9)

Figure 173: Examples of facilities at a local level (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 4.1)

Figure 174: Super districts at Penwortham and Lanes Ends (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figures 16.12 and 16.13)

Figure 175: Super districts at Withytrees and Ribbleton (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figures 16.14 and 16.15)

Figure 176: Phasing of the townships (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 15.4)

Figure 177: Population growth by township 1966 and 1991. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', vol.2, parts 3 and 4, May 1970, table 13.1)

Figure 178: Grimsargh and Longridge existing land use structure (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 11.31)

Figure 179: Land use structure of Grimsargh and Longridge (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 14.19)

Figure 180: Main policies for the Preston area (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 16.2)

Figure 181: Preston proposed land use structure. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 14.22)

Figure 182: Reserved industrial site for Penwortham (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 16.7)

Figure 183: Phasing of major facilities in Preston central area (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, table 16.9)

Figure 184: Theoretical communications network for Preston (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 16.16)

Figure 185: Transportation structure of Preston central area (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 16.18)

Figure 186: Preston central area. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 11.10)

Figure 187: Industry and movement in Oxhey probe area (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 17.2)

Figure 188: Preston – principles of improvement in probe area (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 17.4)

Figure 189: The Deeplish Study – widening of the ginnel to the rear of terraces to provide communal space. (Source: HMSO, *The Deeplish Study: Improvement Possibilities in a District of Rochdale,* 1966, pp.59-60)

Figure 190: Stepped section housing at Hook. (Source: John Gold, *The Planning of a New Town*, (originally published1961), Studies in International Planning History series, 2015, London, Routledge, p.46)

Figure 191: Possible form of redevelopment (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 17.7)

Figure 192: Accessibility to Walton. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft master plan, 1971, fig 2.5).

Figure 193: Land use structure at Walton (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 14.23)

Figure 194: Cuerden land use structure (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 14.25)

Figure 195: Policy map for Leyland (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig. 18.2)

Figure 196: Leyland, existing land use structure. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, 11.11)

Figure 197: Land use structure for Leyland (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 18.3)

Figure 198: Growth of Leyland (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 18.6)

Figure 199: Phasing of major facilities in Leyland central area. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, table 18.3)

Figure 200: Euxton land use structure (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 18.8)

Figure 201: Organisation of central Leyland area. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 18.5)

Figure 202: Hook, town centre across a valley. (Source: John Gold, *The Planning of a New Town*, (originally published1961), Studies in International Planning History series, 2015, London, Routledge, p.31.)

Figure 203: Valley profile and organisation of movement. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 18.4)

Figure 204: Theoretical housing layout, density 90ppa. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft master plan: technical, vol.2, part 5, and appendices 1971, fig 6.1)

Figure 205: Theoretical housing layout, 50 ppa. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft master plan: technical, vol.2, part 5, and appendices, 1971, fig 6.2).

Figure 206: Theoretical housing layout, density 19ppa. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft master plan: technical, vol.2, part 5, and appendices, 1971, fig 6.2).

Figure 207: Policy map for Chorley (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, figure 19.1)

Figure 208: Central area land use at Chorley. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig.s 19.7 and 19.8)

Figure 209: left: land use and communication structure in Chorley; right: movement in Chorley's central area. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, fig.s 19.5 and 19.6)

Figure 210: Phasing of major facilities in Chorley. (Source: Robert Matthew, Johnson-Marshall and Partners, 'Central Lancashire New Town: draft designation proposals: a study in city growth', May 1970, table 19.6)

Figure 211: Left: Lancashire County Architects, typological model for a large divisional police headquarters with single men's quarters. Right: Lancashire County Architects, Chorley Police Station during construction with Magistrates' Court in the background. (Source: Roger Booth (County Architect), *Lancashire County Council: County Architect's Report,* April 1966 to March 1967.)

Figure 212: Lancashire County Architects, Model of Chorley Police Station and Magistrates Court. (Source: Roger Booth, *Lancashire County Council: County Architect's Report: April 1963 to March 1964*.)

Figure 213: Preston divisional police headquarters, Lancashire County Architects (source: Roger Booth, Lancashire County Council: County Architect's Report, April 1971 to March 1973)

Figure 214: Lancashire County Architects, East Cliff Joint Divisional Office, 1965. (Source: Roger Booth, *Lancashire County Council: County Architect's Report: April 1965 to March 1966*.)

Figure 215: Lancashire County Architects, Initial scheme for the redevelopment of Preston County Hall, 1965. (Source: Roger Booth, *Lancashire County Council: County Architect's Report: April 1966 to March 1967*.)

Figure 216: Lancashire County Architects, Preston County Hall Redevelopment, 1967. (Source: Roger Booth, *Lancashire County Council: County Architect's Report: April 1966 to March 1967*.)

Figure 217: Preston's Conference Hall as part of the County Hall redevelopment, 1969-70 by Lancashire County Architects (source Roger Booth, Lancashire County Council: County Architect's Report, April 1971 to March 1973)

Figure 218: County Hall redevelopment scheme, view from Preston railway station c.1971 (Source: Lancashire Record Office)

Figure 219: County Record Office, Bow Lane, Preston by Lancashire County Architects (source: Roger Booth, Lancashire County Council: County Architect's Report, April 1971 to March 1973)

Figure 220. Preston Bus Station, Lancashire, designed by the Building Design Partnership, 1959-70, (the author).

Figure 221: The Guild Hall, Preston by RMJM 1969-73. (Source: the author).

Figure 222: Plan of Preston Market Hall showing underpass and servicing to ringroad and relationship to the existing covered market. (Source: Source: 'Preston market', *Building,* 4th May 1973, p.89.)

Figure 223: Preston market hall's walkways and ribbed lift shaft, designed by Andrew Derbyshire, RMJM, 1973. (Source: 'Preston market', *Building,* 4th May 1973, pp.87-9.)

Figure 224: Cuerden Pavilion, Cuerden Hall, Lancashire, designed by Robert Matthew Johnson Marshall, 1971 (source: 'Cuerden Pavilion, offices for Central Lancashire New Town Development Corporation, near Preston', *The Architect's Journal,* 13 September 1972).

Figure 225: Leyland Magistrates' Court, Lancastergate, Leyland, Lancashire, designed by Lancashire County Council Architects, 1970 (the author).

Figure 226: Metrolands development at Towngate c.1970 (Source: Metrolands Investments Ltd, *Leyland Town Centre Development,* c.1970)