RESEARCH REPORT SERIES no. 33-2012

ENGLAND'S SCHOOLS 1962–88
A THEMATIC STUDY

Geraint Franklin, with Elain Harwood, Simon Taylor & Matthew Whitfield

ASSESSMENT

ENGLISH HERITAGE

Research Report Series 33-2012

ENGLAND'S SCHOOLS 1962–88

A THEMATIC STUDY

Geraint Franklin, with Elain Harwood, Simon Taylor and Matthew Whitfield

ISSN 2046-9799 (Print)
ISSN 2046-9802 (Online)

The Research Report Series incorporates reports by the expert teams within the Investigation & Analysis Division of the Heritage Protection Department of English Heritage, alongside contributions from other parts of the organisation. It replaces the former Centre for Archaeology Reports Series, the Archaeological Investigation Report Series, the Architectural Investigation Report Series, and the Research Department Report Series.

Many of the Research Reports are of an interim nature and serve to make available the results of specialist investigations in advance of full publication. They are not usually subject to external refereeing, and their conclusions may sometimes have to be modified in the light of information not available at the time of the investigation. Where no final project report is available, readers must consult the author before citing these reports in any publication. Opinions expressed in Research Reports are those of the author(s) and are not necessarily those of English Heritage.

Requests for further hard copies, after the initial print run, can be made by emailing:
Res.reports@english-heritage.org.uk
or by writing to:
English Heritage, Fort Cumberland, Fort Cumberland Road, Eastney, Portsmouth PO4 9LD
Please note that a charge will be made to cover printing and postage.

CONTRIBUTORS

The sections on Leicestershire, Nottinghamshire, and Ipswich were undertaken by Elain Harwood. The remainder of the report was completed by Geraint Franklin, with Matthew Whitfield and Simon Taylor contributing to the sections on Lancashire and the West Riding of Yorkshire respectively. Photography is by James O. Davies, Mike Williams and the authors, illustrations by Allan Adams and location maps by Tom Duane.

ARCHIVE LOCATION

English Heritage Archive (formerly the National Monuments Record Centre)
The Engine House
Fire Fly Avenue
Swindon
SN2 2EH
Telephone: 01793 414600.

DATE OF RESEARCH

2010-12

CONTACT DETAILS

Geraint Franklin,
Assessment Team (South),
English Heritage,
1 Waterhouse Square,
138–142 Holborn,
London ECIN 2ST.
Telephone: 020 7973 3773;
email: geraint.franklin@english-heritage.org.uk

Frontispiece: The Bishop Wilson Memorial Library of 1986 at the Bishops' Primary School in Chelmsford, Essex was designed by Colin St John Wilson & Partners (job architect Rolfe Kentish). The tiny library bears the name of Wilson's father, the Bishop of Chelmsford from 1929 to 1950. The remainder of the school was designed by Thomas, Mowle & Chisnall. Photograph by Martin Charles; reproduced by kind permission of M.J. Long and the British Architectural Library.

Front cover image: the Vanessa Nursery School in West London, built in 1972-73 to the designs of Fitch & Co Ltd. Reproduced with permission from Architectural Review, *vol.154, no.919, September 1973, p.180.*

This report has been prepared for use on the internet and the images within it have been down-sampled to optimise downloading and printing speeds.

Please note that as a result of this down-sampling the images are not of the highest quality and some of the fine detail may be lost. Any person wishing to obtain a high resolution copy of this report should refer to the ordering information on the following page.

CONTENTS

SUMMARY

This thematic study of later-twentieth-century school buildings was commissioned by English Heritage's Schools Working Group. Post-war demand for places encouraged local authorities to think in terms of programmes of schools rather than one-offs. To this end, prefabricated systems of construction were organised into school building 'consortia', but from c.1973 ceded to 'rationalised traditional' construction, usually in brick. Falling pupil numbers and cuts in public expenditure made the last quarter of the twentieth century an era of contraction, rationalisation and rehabilitation of building stock. Prescient themes of the 1980s include energy conservation, more enclosed plans and the introduction of market forces.

Primary school design facilitated informal, 'child-centred' learning in various ways. A variety of group sizes and activities was encouraged by the sharing and inter-connection of teaching space. The 1963 'Newsom report' on secondary education challenged traditional subject boundaries and called for specialised resources and informal plans. Secondary education was dominated by questions of selection and transfer between educational stages, and middle schools were as much an element of non-selective reorganisation as an educational concept in their own right. Assimilation was a major theme, with facilities for the wider community and disabled children integrated into mainstream schools.

ACKNOWLEDGMENTS

The assistance of the following is gratefully acknowledged: at English Heritage, Susie Barson, Jon Bedford, John Cattell, Jon Clarke, David Garrard, Peter Guillery, Pete Herring, Alan Johnson, Carla Piper, Patricia Roberts, Andrew Saint, Rosie Sherrington, Diana Sims, Jo Smith, June Warrington and Jenifer White. James O. Davies is thanked for his photographs and Allan Adams for his illustrations. Plans are at 1:500 unless otherwise stated. Tom Duane of the Projects Team contributed the location maps. Andrew Saint and Pete Herring kindly read the report in draft and made many helpful suggestions. The authors would also like to acknowledge the assistance of Peter and Sally Benson-Ansell, Jonathan Clarke, Dennis Crompton, Adrian Digby, Mark Dorrington of Nottinghamshire Archives, Fiona Fisher, Vanessa Graham, David Harrison, Hannah Hayes, Ian Henghes, Simon Jarrett, Stephen Lee, Antonia Powell, Alan Powers, Christina Malathouni of the Twentieth Century Society, Josh Mardell, Abigail Rawlings, Liz Robinson, Gerry Shinton, Jennifer Singer and Nigel Wyatt.

Staff of the following institutions are also thanked: the British Architectural Library at the Royal Institute of British Architects, the Bromley Local Studies Library, the Centre for Buckinghamshire Studies, the English Heritage Archive, Gloucestershire Archives, Hampshire Record Office, the archives and library of the Institute for Education, London Metropolitan Archive, Norfolk County Council and NPS Property Consultants Ltd, Nottinghamshire Archives, the Royal Academy Library, the Ipswich branch of the Suffolk Record Office and West Yorkshire Archive Service. Access to privately-held papers was kindly facilitated by Sarah Canning of Hanford School, Sabine White of Homefield School, Jillian Wallis and Dianne Upton of Millfield School, Pam Thomas of the Pestalozzi Archive Project and Susan Walton of the Pestalozzi International Village Trust.

Catherine Burke, Elain Harwood and Grace Kenny kindly supplied draft manuscripts prior to their publication which the authors gratefully acknowledge.

The following individuals contributed valuable information:

¶ Private practices and individuals: Peter Aldington, Sue Ashworth, Colin Beales, Roger Bicknell, Francis Carr, Peter Clegg, Richard Frewer, Hal Moggridge, Stewart McColl, David Rock, Philippa Threlfall, Desmond Williams. ¶ The DES Architects and Building Branch: Robin Bishop, Tony Branton, Ian Fraser, Liz Fraser, Michael Hacker, Guy Hawkins, Grace Kenny, the late David Medd, the late Guy Oddie, Andy Thompson,

Dick Thompson, Brian Whitehouse. ¶ Cambridgeshire County Council: Tim Brading. ¶ London County Council / Greater London Council / Inner London Education Authority: Janet Bancroft, the late John Bancroft, Robert Byron, Eric Classey, Bob Giles, Brian Goldsmith, Louis Hellman, Eva Jiřičná, Peter Jones, Sylvia Libedinsky, Edward Mendelsohn, William Mitchell, Ivor Plummer, Linda Suggate, Ann Webb, Barry Wilson. ¶ Buckinghamshire County Council: Mehdi Ali Abidi, Bill Berrett, John Collins, James Parke, John Stewart. ¶ Hampshire County Council: Neill Beasley, Anthony Burrows, Nev Churcher, Richard Clark, Joe Collins, Merrick Denton-Thompson, Oscar Gammans, Dennis Goodwin, Stephen Harte, Michael Morris, Mervyn Perkins, Terry Riggs, Sir Colin Stansfield Smith, Ian Templeton, Huw Thomas, Bob Wallbridge, Gerry Way. ¶ Hertfordshire County Council: Jack Platt ¶ Lancashire County Council: Mike Bracewell, Patrick Bracewell, David Davis, George Mackin, Bill Morrissey, Ben Stevenson, Graham Turner ¶ Nottinghamshire County Council: Sydney Bell, Alan Meikle, David Meylan. ¶ West Riding of Yorkshire County Council: Sir Andrew Derbyshire, John Mawson, Sir Peter Newsam. ¶ West Suffolk County Council / Suffolk County Council: James Blackie, Laura Bowles, Peter Brooks, Laurie Carpenter, Jocelyn B. Dalley, the late Jack Digby, Will Durrant, Sandy Ingles, David Layzell, Henry Lambon, Adrian Palmer, Brian Phillips, Roderick Rees, Ray Swann.

Last but not least, we would like to thank the staff and children who welcomed us into their schools.

Figure 1.1: Britain's New Schools, *a booklet on British school building distributed to an international audience at the 1960 Milan Triennale, where a school designed in the Architect's Department of Nottinghamshire County Council won the* Gran Premio con Menzione Speciale (page 131).

British post-war schools were studied and visited by architects throughout Europe and North America, and international collaboration was abetted by initiatives such as the Organisation for Economic Co-operation and Development's Project on Educational Building (Banham 1961; Saint 1987, 208-13). Institute of Education Archives: ME/U/8.

INTRODUCTION

Aims and Scope

This national thematic survey of late-twentieth-century school buildings was commissioned in 2008 by English Heritage's cross-departmental Schools Working Group. A need was identified for further investigation into schools of this period, many of which were being replaced or altered (the wider context of which is set out below). The aim was to provide a historical context to inform and underpin processes of evaluation, protection and adaptation of our more recent school heritage by identifying key educational and architectural developments and distinguishing the characteristic from the distinctive. The principal end users of this document will be the Designation and National Planning Departments of English Heritage, local planning authorities and those responsible for maintaining, protecting and renewing historic school buildings.

The scope of the present study is the group of purpose-built schools designed and built, broadly speaking, in the decades of the 1960s, 1970s and 1980s. The adaptive reuse of existing schools falls outside these terms of reference, although it was a crucial element of educational provision. Neither are extensions or ancillary buildings included, with the exception of a few projects of particular architectural or educational interest. The report covers each stage of compulsory education as well as pre-school education. All educational sectors, including voluntary and independent bodies, are considered, and the administrative structure of education during the period is set out in Part I. Institutions for children and young people administered outside the Ministry of Education and its successors, such as reformatory, industrial and hospital schools, junior training centres, day care centres, remand homes and orphanages lie outside the scope of this study.

Structure and Sources

This report is divided into four sections. The first, entitled 'Frameworks of School Design' presents an overview of the circumstances, processes and protagonists of school building programmes, including the interaction between administrators, educationists, architects and other professionals. This is followed by a survey of school building types which relate to educational stages (nursery, secondary and so on) or to specific requirements, such as special education or the integration of community facilities. Part III profiles wider aspects of school design such as construction, lighting and landscaping.

The final and largest section highlights regional responses and profiles school building in nine local education authorities notable for their architectural or educational approaches. Part IV is bookended by studies of voluntary and independent schools and the Architects and Building Branch of the Ministry of Education. Each regional study concludes with a gazetteer of school buildings which illustrate characteristic or innovatory approaches to educational thinking or architectural design. Cross references to gazetteer entries are indicated in **bold type** and the survival and condition of buildings are noted where known. The name of a school was usually decided after it had been designed but before it opened; it is this 'original' name which is referred to here, as schools are apt to change

their names on reorganisation. Current school names are provided in parentheses where this seems helpful. At the end of the report may be found a glossary of abbreviations and acronyms (Appendix 1) and an inventory of listed post-war schools (Appendix 2).

The report is based on a combination of primary and secondary documentary research, interviews with architects and visits to schools. Documentary and archival sources varied considerably: school building was well documented in the official records of some authorities whilst in others architectural or educational journals proved more fruitful sources. The Archive of the Institute of Education at the University of London holds several key resources for the study of post-war school building, including the papers of the school designers David and Mary Medd and the slide collection of the Architects and Building Branch of the Ministry of Education. In some cases, first-hand recollection of projects and programmes derived from oral-historical interviews has been correlated to information derived from documentary sources. Architectural plans and other drawings were consulted where possible.[1]

Understanding and Protecting Post-war Schools

The management, adaptation and protection of historic school buildings has long been underpinned by an understanding of character, significance and context. The first histories of post-war school building, by Stuart Maclure and Andrew Saint, were published in the mid-1980s and remain the definitive accounts.[2] They were part of a broader reconsideration of public building and public buildings, topics hitherto neglected by scholars and then architecturally and politically unfashionable. At around the same time, in 1987, the first post-war building was listed, upon the basis that a building can be listed if it is older than thirty years or, exceptionally, ten years if it is under threat and of 'outstanding' significance.[3]

In 1992, English Heritage embarked upon a programme of thematic listing reviews commissioned by a 'Post-War Steering Group' (PWSG). These set out a historical and architectural framework for a number of building types against which buildings could be assessed for listing and included a selection of examples.[4] Educational building was the subject of the first of the PWSG 'thematics', jointly produced in 1992 by Andrew Saint, who contributed the section on schools, and Diane Chablo (neé Kay), who looked at higher education. The 1992 report identified a number of exemplars, dating from 1946 to as late as 1981, but those postdating 1962 were then ineligible for listing due to the 'thirty year rule'.[5] Consequently, the dozen post-1962 schools on the statutory list at the time of writing (Appendix 2) have been designated not as the result of a thematic listing programme but of largely threat-driven 'spot listing'. The present study thus takes 1962 as its start date; 1988, the year of the Education Reform Act, was chosen as a 'cut-off date'.

The last two decades have seen great changes to post-war schools and our understanding and appreciation of them. Recent research has identified new priorities and hitherto-neglected topics. As is often the case, research into particular buildings and building types has often been prompted by the designation process, and key cases have informed the present study as appropriate. The chronological scope of the present study

Figure 1.2: The Bretton Woods Community School opened in 1977 to serve the first of Peterborough's new townships, Bretton, begun in 1970. Community facilities were shared with the adjoining Cresset Centre. The snaking teaching block, designed by Ken Matthews and Stuart Denham of Cambridgeshire County Council, included a set-back upper floor which, together with the sloping cross walls, created a ziggurat effect. The school's demolition in 2007, after an unsuccessful attempt to list the building, highlighted the need for more research into later twentieth-century school buildings. Patricia Roberts – © English Heritage.

encompasses the 1970s and 1980s, applying an historical perspective to buildings erected within living memory. The extensive media coverage of recent listing cases is a reminder of the considerable popular interest of the topic and its capacity for controversy.

But as public attitudes to late-twentieth-century buildings alter, so too does the building stock. The first decade of the present century was marked by a return to large-scale programmes of school building, such as Building Schools for the Future (BSF) and Primary Capital Programme (PCP).[6] The scale and pace of change was considerable, and the amount of renewal probably unprecedented. At the local authority level, programmes of rationalisation, educational reorganisation or asset disposal can result in the closure and loss of historic schools (fig. 1.2). Others suffer gradual attrition of character and architectural integrity through incremental change. The changed economic circumstances of the past few years have again altered the pattern of interventions to historic school buildings. Repair and extension are currently more likely options than wholesale replacement, but recent increases in the birth rate suggest that this is unlikely to be a long-term trend.

PART I: FRAMEWORKS OF SCHOOL DESIGN

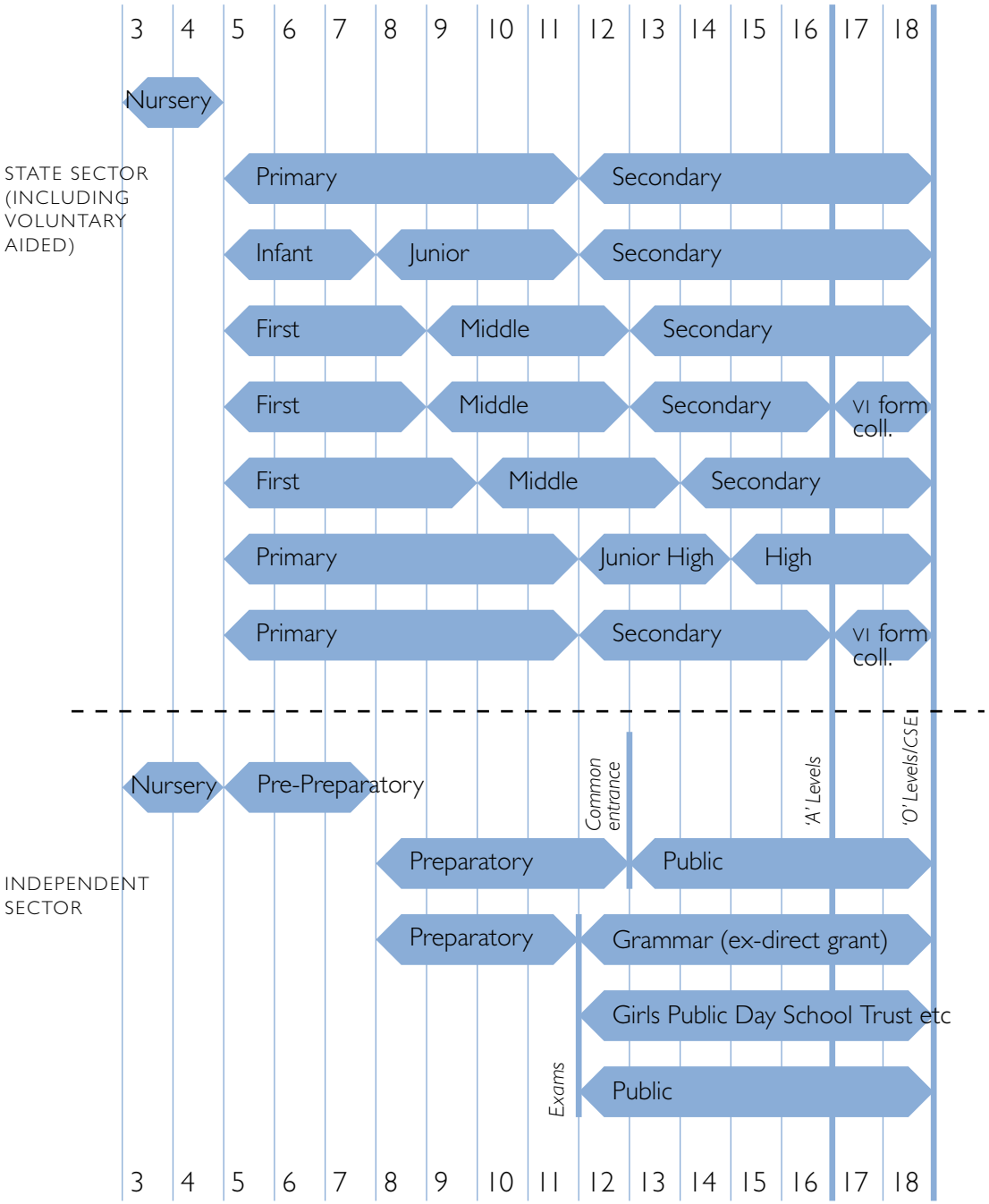


Figure 1.3: Stages of education in England and Wales after 1944.
(Redrawn from a diagram by Jeremy Wilson on p.253 of Tutt, P. and Adler, D. (eds) (1979) New Metric Handbook. *London: Architectural Press; original illustration crown copyright and reproduced under the terms of the Open Government Licence).*

The Organisation of Education in England

The post-war educational settlement was realised through the reform, not the transformation, of an existing legal and administrative framework. The respective duties and responsibilities of regional and central government in the provision of education, in a delicate balance of power occasionally summarised as a 'national service locally administered', were established by the Education Acts of 1902 and 1903.[7] The 1944 Education Act, based on the 1943 White Paper Educational Reconstruction, provided a free and universal system of education up to age 18.[8] The provision of secondary education became a duty—not merely a power—of local education authorities. All schools were subject to a single Code of Regulations, which stipulated standards of accommodation and class sizes.

Figure 1.4: One architect's view of the 'relentless demand for school places'. A cartoon by a member of the Essex County Council Architect's Department, published in Education*, 22 February 1963, p.388. Reproduced with permission of Essex County Council.*

The provision of school buildings was the largest and costliest of the services provided by the elected local government bodies designated local education authorities (LEAs).[9] Between 1903 and 1974 the number of LEAs decreased by a third.[10] Local government reorganisation in 1974 Act consolidated fragmented municipal boroughs but divided other authorities into several metropolitan districts, a reform which resulted, for example, in the dissolution of the educationally-progressive West Riding of Yorkshire. School building, although a decentralised activity, was nevertheless subject to the checks and controls of central funding. 'RAB' Butler's Education Act of 1944 replaced the Board of Education with the Ministry of Education as the central body responsible for schools and colleges. In 1964 the Ministry (hereafter MoE) was reconstituted as the Department for Education and Science (DES), headed by a Secretary of State.[11] After 1949 school building was overseen by the 'territorial' architects of the Ministry of Education's Architects and Building Branch (page 101).

'Maintained' schools, which accounted for a large proportion of the total number, were commissioned, designed, staffed and run by LEAs. Second in number and status were the 'voluntary' schools run by a non-governmental body such as a religious denomination or charitable foundation. The coexistence of maintained and voluntary schools, known as the 'dual system', had long been formalised by a complex grant-aiding arrangement (page 367). On the whole, buildings and sites were provided out of private funds, although

running costs and staff salaries were met out of taxation; voluntary schools were usually classified as lying within the public sector on this basis.[12] The third and oldest category was the grammar schools, which were brought within the ambit of the state by the 1902 Education Act to form the basis of a national system of secondary education. Their number was augmented by County Grammar Schools founded by the LEAs. Between 1918 and 1975 a small subcategory of 'direct grant' grammar schools was directly funded by central government and run by their own governing bodies.[13] Finally, the independent sector was wholly funded from private sources, usually endowments and school fees. Those institutions charged with the provision of their own school buildings (broadly speaking, voluntary, independent and direct-grant grammar schools) are considered further in part IV.

The 1944 Education Act established three stages of education: primary, secondary and further (fig. 1.3). A small number of nursery schools accommodated children under compulsory school age. The primary stage was either divided into separate infant schools (ages 5-7) and junior schools (8-11) or took the form of a single primary school for ages 5-11. From the 1960s a number of authorities provided middle schools, usually for the age ranges of 8-12 or 9-13. The organisation of secondary schools depended on whether LEAs or constituent divisions operated a 'selective' or a 'non-selective' policy. In the former, pupils took an 'eleven plus' examination in the final year of primary education, which sorted the children into what was considered the most appropriate types of secondary education, usually grammar, technical and secondary modern schools (page 41). Non-selective or 'comprehensive' schools did not discriminate on the basis of ability. Maintain secondary schools were usually co-educational. In some areas sixth form or junior colleges were provided for those staying on beyond the age of compulsory education. (These fall within the scope of this report, whereas colleges of further education do not). Lastly, special schools were provided for children with physical or mental disabilities. These were the permitted 'all age' schools and a proportion were residential. The intake and hence size of a school is sometimes stated in terms of the number of the number of classes per year: a 'two-form entry' infant school, for example, would comprise six classes, a pair for each of the three year groups; some comprehensive schools were as much as ten-form entry.

'In the Right Place, at the Right Time': Population and Provision

Providing school buildings involved balancing several factors such as supply and demand, the quality and quantity of accommodation, and local and central government policy. How could school places be anticipated and provided, in advance, where and when they would be required? By analysing trends in the birth rate and in the movement of population, educational administrators could go some way towards ensuring that the right design was built 'in the right place, at the right time, at the right price', in the words of MoE Chief Architect Stirrat Johnson-Marshall.[14] An account of school building after 1944 could be related in terms of a balance between creating new school places and upgrading existing ones. The period from the end of the Second World War to c.1960 was broadly a race to put up 'roofs over heads', by rebuilding bomb-damaged urban sites and erecting 'green field' schools in new housing estates, new suburbs and new towns. A formidable supply side was built up, providing three million new school places between

1945 and 1962 within straitened economic circumstances; allowing for inflation, a new school of 1962 cost half the amount of its 1949 predecessor.[15]

Yet attention was soon drawn to how the deficiencies of existing accommodation could be remedied. This usually meant the replacement, refurbishment or extension of older buildings reckoned to be overcrowded or 'obsolete' (fig 1.5). In the mid-1950s, Education Minister David Eccles provided additional funding for the reorganisation of all-age village schools and the upgrading of their facilities.[16] To this initiative the Architects and Building Branch contributed two exemplars, Finmere in Oxfordshire and Great Ponton in Lincolnshire.[17] The government White Paper Secondary Education for All, published in May 1959, encouraged the rebuilding of obsolete buildings and facilitated the assembly of sites by compulsory purchase. To the LCC Housing Committee it 'marked the end of a restrictive period when new schools have been directed by the increase in the birth rate or new housing development.'[18] In the 1960s attention shifted to schooling in deprived inner-city areas, often as part of wider urban renewal strategies. The Conservative administration that came to power in 1970 initiated a substantial programme of upgrading or replacing Victorian primary schools, many of which were in inner-city areas. Between 1972 and 1976 some 2,000 pre-1903 primary schools were altered or improved in this way.[19] From the 1970s, as school rolls fell and local authority expenditure fell, 'basic needs' provision returned in the form of new schools for developing and expanding settlements.[20]. Elsewhere, the quality of existing accommodation was managed not by replacing buildings but by the strategy of rationalisation.

Figure 1.5: Old and new in Ardwick, Manchester: the 1877 Armitage Street School mid-demolition, with its CLASP replacement in the foreground. The 1967 Armitage County Primary School formed part of the Thomas Street comprehensive redevelopment project (page 112). Institute of Education Archives: ABB/B/1/41/4.

Demographic Patterns and Allocation

The post-war 'baby boom', which peaked in 1947, was unforeseen by those preparing the 1944 Education Act, and served as a reminder of the importance of demographic projections (fig. 1.6).[21] After stabilising, the birth rate again began to pick up in 1955, as the country experienced greater prosperity. It peaked in 1964, three years after oral contraceptives ('the pill') were permitted to be prescribed on non-medical grounds.[22]

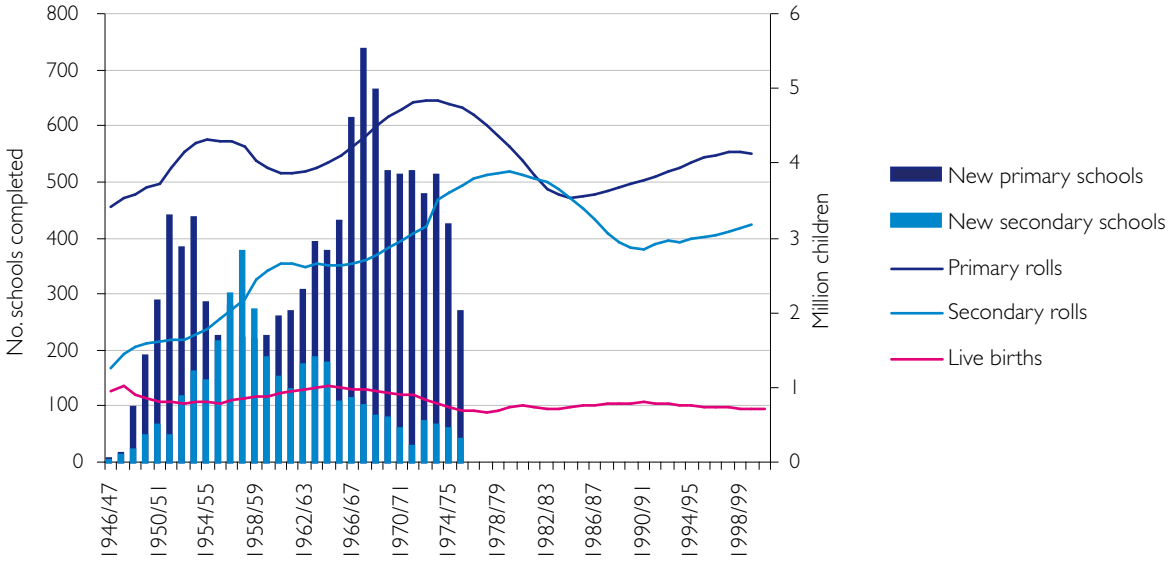


Figure 1.6: The numbers game. A graph showing the relationship between the birth rate, the number of children in full-time education in maintained primary and secondary schools, and the number of new schools completed per financial year. The DES stopped publishing statistics on new schools in 1976. Source: Department of Education and Science, Statistics of Education.

In the early 1960s, the continued expansion of school building was widely predicted; the realisation that the falling birth rate was not a blip but a long term trend seems to have come late.[23] It was not until 1975 that demographic projections were drastically revised, prompting a reconsideration of expenditure on provision.[24] With the raising of the school leaving age to 16, announced in 1964 but not implemented until 1972 on economic grounds, an extra 250,000 extra 'stayers on' became the new priority. Over the 30-year period from 1947 to 1977 the school population increased by over 4.4 million.[25] The post-war population was also a mobile one, and internal migration patterns made it difficult to predict school numbers.

The Inner-cities: Decline and Renewal

The period 1962-88 saw changing attitudes towards urban planning, a recognition of the social problems of the post-industrial city and the reciprocal relationship of these things with education. From the mid-1950s inner-city schools also saw greater numbers of immigrant children, who by 1972 accounted for 3.3% of all children in maintained schools. Many were from new Commonwealth countries such as the West Indies, India, Pakistan, Kenya and Cyprus.[26] The 1967 Plowden report on primary education suggested that specialised teaching methods, teaching assistants and in-service courses could lessen language and cultural barriers.[27] Slum-clearance and comprehensive redevelopment on the basis of strict zoning policies were the norm at the beginning of the 1960s. Recognition of the social costs of these policies and the longer-term depopulation and industrial decline of inner-cites slowly filtered from academia and the 'social professions' to government. By the end of the 1980s, the balance was being redressed through mixed use planning, rehabilitation of historic fabric, and regeneration through the new mechanisms of Urban Development Corporations, Urban Development Grants and Enterprise Zones.[28]

The planning strategies of inner-city renewal demanded investment in inner-city schools. The case for investment was highlighted by high-profile media accounts of low standards, violence and vandalism in urban schools. The Plowden report of 1967 introduced a policy of 'positive discrimination' towards disadvantaged children by providing special funding for new schools in designated Educational Priority Areas (EPAs). Some 5% of the annual capital budget was reserved for EPAs, supplemented from July 1967 with a special allocation of £16m over a two year period. Salary incentives aimed to attract good teachers: from 1968, teachers in 572 primary schools in England and Wales received a £75 annual increment, which rose to £276 in 1975. Additionally an EPA action research programme was launched in 1968 in five local districts. The policy faltered in the 1970s in the face of financial cuts and changing social policies on inner-city deprivation.[29]

New and Expanded Towns

The designation of ten new towns under the New Towns Act 1946 was planned to ease the post-war housing shortfall and perpetuate the long-term strategies of regional development and the dispersal of the population from the inner cities. The development of the new towns was placed under the control of a Development Corporation, funded and planned in cooperation with the local planning authorities who continued to provide statutory services such as education. A second generation of new and expanded towns was initiated in the 1960s. Some, like Milton Keynes, Buckinghamshire (1967), were products of the South East Study launched in 1964 by Minister of Housing and Local Government Keith Joseph and thus a continuation of the long-standing strategy of dispersing London's residents into new and expanded towns in the south east. Others, such as Redditch, Worcestershire (1964); Runcorn, Cheshire (1964); Warrington, Cheshire (1968) and Central Lancashire New Town (1970) were attempts to bolster the Midlands and the North against emigration.[30] One consequence was that new school buildings were required in large numbers. Government allocations for school building in 1977-78 were highest in Hampshire (4.3% of the national total), Cambridgeshire (3.8%), Kent (3%), Norfolk (2.7%), Staffordshire (2.6%), Essex (2.5%), Cheshire (2.5%) and Northamptonshire (2.3%). Between them this represented almost a quarter of the government capital allocation, much of it going to schools in the new settlements.[31] As the primary school roll started to decline from the early 1970s, these began to represent bright spots in an otherwise bleak picture of retrenchment.

With the new and expanded towns, especially provided for so-called 'London overspill', came social concerns and frictions surrounding the integration of newcomers into existing communities. Schools, with their precisely defined catchment areas, offered authorities the opportunity to 'engineer' a degree of social assimilation amongst the youngest residents. The populations of the new settlements were young and tended to marry, start families and seek housing earlier than previous generations. Housing tended to be completed at occupied at different rates, giving LEAs a tricky balance between under- and over-provision of school places. One solution was to provide a primary school whilst the catchment area built up, which after a few years could be re-designated as a junior school and joined by 'feeder' infant schools. More difficult to cope with was the diminishing school populations that some new settlements faced after the initial 'bulge', this effect was even noticed at large inner-city estates. Much of the new housing

took the form of estates of low-density housing, sometimes in Radburn-type layouts. A lack of community facilities was amongst the most common complaints.[32] The schools of Hampshire and Milton Keynes were an attempt to imbue these estates with a civic focus.

'The Tripod': Protagonists and Collaborations in School Design

David Medd, a post-war authority on school building, talked of school design as a tripod, an interdependent and equal collaboration between three professionals: the educationist, the administrator and the architect.[33] So much have models of public-sector procurement changed since the period considered here, it is worth outlining the crucial relationships in central and local government.

I: the Educationist and the Pedagogical Context

Significant developments in school design at the start of the twentieth century were driven by the medical schools inspectorate and can be seen in the wider context of public health reforms. Buildings were opened up to fresh air and daylight, and outdoor activity encouraged.[34] The influence of educationists on local authority school building before 1944 was limited outside the work of Henry Morris in Cambridgeshire (page 51). In the post-war period, certain local authorities and their architects started to catch up with 'child-centred' teaching methods.[35] The 1960s and 1970s, were generally regarded as the heyday of innovation, optimism and expansion in British education, and close relationships between teaching practice and school design were developed.[36] The architectural critic Reyner Banham summed this up with a characteristically snappy catchphrase: 'form follows curriculum'.[37] Yet the national picture is kaleidoscopic and suggests more fragmented and complex narratives than the spread of educational progressivism. The contributions of many key individuals, networks and partnerships remain obscure, perhaps because working practices were poorly documented, the multi-disciplinary nature of the subject or the inherently decentralized set-up of English education.

The elite of education policy makers were the Chief Education Officers employed by most LEAs. The larger Authorities had teachers' advisory committees which influenced design briefs, the Inner-London Education Committee being the most well known. The most productive partnerships between architects and educationists were often informal and took place at 'officer' level, although in other cases it was the deputy education officer who liased with the County Architect. A wide range of educational professionals were involved, including deputy education officers, educational advisors, inspectors (HMIs) and teachers.[38] A handful of counties took a special interest in educational policy and teaching practice. The educator Sir Tim Brighouse emphasised the challenges and opportunities of the urban school: 'rural authorities tend[ed] to have very strong governing bodies; urban authorities ran the whole damn thing, micro managed the lot, because it's a challenging urban situation'.[39] Henry Morris (Cambridgeshire, Chief Education Officer 1922-54) and Martin Wilson (Shropshire, 1936-65) were pre-war pioneers. They were followed by a post-war generation which included John Newsom (Hertfordshire, 1940-57); Alec Clegg (West Riding, 1945-74); Stewart Mason (Leicestershire, 1947-71); Robert Logan (Worcestershire) and E. Marianne Parry (Bristol).

At Oxfordshire, Alan Chorlton (1945-70) and Tim Brighouse (1978-89), primary officers Edith Moorhouse and John Coe and HMIs Robin Tanner and Len Comber encouraged curriculum innovation in rural primary schools. [40]

Reaction and Regulation

For the four post-war decades, the organisation and content of school curricula was not regulated by central or local government but devolved to head teachers and their staff. Teachers were free, within the bounds of professional standards, to establish their own methods and to respond to changes in pedagogy and wider society. Inevitably, this meant that the organisation and methods of teaching in a given school were much more fluid and diverse than had previously been the case, varying within LEAs and even within schools, the latter especially where rates of staff turnover was high. This laissez faire approach to teaching practice has always tended to check the dominance of the prevalent pedagogical orthodoxy.

The final two decades of the twentieth century saw a transformation in British education. Institutional autonomy, parental choice and diversity of provision combined with the emergence of a new centralism, seen in the acquisition of new powers by national government and the regulation of the curriculum. The union between child-centred education and the welfare state was transformed by backlash and political turbulence. An early indicator was the crisis at Risinghill School, an Islington comprehensive which opened in 1960 in buildings designed by the Architects' Co-Partnership. The liberal headship of Michael Duane prompted media coverage and dispute with staff and the inspectorate of the London County Council, which led to the reorganisation of the school in 1965.[41] By the time of a similar episode a decade later at William Tyndale Junior School, also in Islington, lines of division had clearly been drawn.[42] In the intervening period came a backlash from academics and intellectuals. In 1969, Brian Cox and Tony Dyson edited 'Fight for Education' and 'Crisis in Education' in *Critical Quarterly*, targeting the comprehensives and what was perceived as the lack of quality and accountability of progressive education. In one of several *Black Papers*, Rhodes Boyson MP commented scornfully that 'learning needs discipline, not the atmosphere of a Butlin's holiday camp'.[43] Such views did not necessarily follow party lines but nevertheless politicised and polarised a polemic between the advocates of equality and progressivism and the defenders of educational standards and traditions.[44]

The turbulent years of the 1970s saw doubts about education ripple out from what was initially a private debate amongst teaching professions to parents and employers, via a coterie of academics and thinktanks. A 1976 report by Neville Bennett of Lancaster University which attempted to measure and compare the effectiveness of 'formal', 'informal' and 'mixed' teaching was seized on by the media and political parties.[45] The clearest indication of a new political climate was the speech by Labour Prime Minister Jim Callaghan in October 1976 on the occasion of the laying of a foundation stone to an extension to Ruskin College, Oxford. The Ruskin speech anticipated most trends in education policy over the next two decades, including a 'core curriculum' set by central government (the National Curriculum of 1988).[46] Callaghan found fault with 'new, informal methods of teaching' and a lack of accountability and standards. Strongest of all was his criticism of the teaching of science and technology and of poor links with

industry, reflecting the technocratic preoccupations of the first Wilson administration of 1964-70. In a deeper sense, Callaghan's remarks were a reminder of the perpetual dichotomy of the individual and the state. Was education the fulfilment of each child's potential or the instrument of a productive, competitive nation state?[47]

Keith Joseph's 1985 White Paper *Better Schools*, much to the later embarrassment of the government, contained an assurance that the government would not assume greater powers over the school curriculum. Such a move would have indeed been consistent with the government's deregulatory approach, but the implementation in 1988 of the National Curriculum offered the political incentive of reining in LEAs, the educational establishment and, in particular, teachers' unions and progressive bodies such as the Schools Council. Under the Education (Schools) Act 1992, the schools Inspectorate, formerly based within LEAs, was reconstituted as the centralised Office for Standards in Education (Ofsted).

II: the Administrator and Cost Planning

Most of the upfront capital for the construction of school buildings was raised by authorities in the form of loans from central government. The loan repayment period, typically 35 years, indicates the anticipated use life of the building, although in many cases this has proved a conservative estimate. The costs of urban school building varied widely immediately after the war: Huddersfield and Wakefield were building primary schools for £80 per place for example, whilst the equivalent at Leeds cost £240.[48] Effective organisation was necessary if expenditure on school building was to be controlled and distributed equitably, and if phased, planned programmes of building were to replace isolated, one-off responses. The administrative framework for school building was established in 1949 by the Ministry of Education as a contribution to the deficit-reduction measures instituted by Chancellor Stafford Cripps. A 'floor' of building regulations and minimum space standards, prescribing minimum standards for space, lighting and ventilation and so on was joined after 1950 by a 'ceiling' of cost limits, calculated per school place.[49]

Additionally, authorities were required to submit annual building programmes to central government, spurring them to prioritise expenditure and plan well in advance, considering the effects of demographic change and house building.[50] Cost limits were blunt instruments: unlike housing yardsticks, they did not distinguish between regional differences in building materials and labour. And although the cost limits were periodically reviewed, they tended to lag behind inflation. If a small project was left off an annual programme, it was just about possible to build using 'minor works' grants from the Department of Education and Science, intended for repairs and refurbishment only. In 1949-50 Ernö Goldfinger built two schools for the LCC on a war damage budget.[51]

The imposition of controls on building, and above all the introduction of cost limits, was the catalyst for a total reconsideration of school planning. The mechanisms of equitable building—amongst them the fledgling disciplines of cost planning, bulk ordering, serial and selective contracting, standardisation and the partial industrialisation of school building—depended on the cooperation of administrators, quantity surveyors and

architects, and an inquisitive and creative attitude to resources. Jim Nisbet, the quantity surveyor at Hertfordshire County Council and later the Ministry of Education, pioneered elemental cost analysis, the itemisation of the elements of a building from foundations to plumbing and painting to obtain the maximum value for money. The cost plan was checked at significant stages, and could be taken heed of in the planning of the next school.[52] David Medd explained how this gave architects choice and priorities:

> Through cost planning you could decide at the start that you were going, say, to afford a certain lighting system, generous pin-up space, a pool or whatever, and build them into the cost plan at the start, instead of things hanging on precariously on the end of the cost sum and thus liable to being easily cut off. Thus such things as drains and foundations could be made to pay for what was going to give pleasure.[53]

The procedure of cost planning was written up as a Building Bulletin in 1951 and widely adopted in local educational authorities.[54] At first, much fat could be cut from school design, in excessive circulation, grand entrance foyers, separate dining areas, over engineering, or inefficient construction methods. By the mid-1960s, most authorities had pared non-teaching areas back to the bone, leaving little room for manoeuvre as the economy worsened and inflation increased. Despite cost planning, the 'cost squeeze' led to space standards being cut to DES minima and the use of cheaper materials and finishes. By the oil crisis of 1973-74, the building industry was already overloaded and contractors started to decline tenders or submit claims. In 1974, cost limits were replaced with a greater degree of case by case assessment.

III: the Architect

Public Offices of Salaried Architects

The size and influence of the public sector in the post-war period is illustrated by the fact that most education authorities possessed their own Architect's Department. Yet their size and status varied widely, and whilst the County Architect was a powerful figure in some local authorities, at Hertfordshire, Leicestershire and other counties the post was created around 1945. The County Borough of Ipswich turned to the local firm of Johns, Slater and Haward as established school builders (page 331).[55] In-house architectural teams benefited from continuity of experience and the ability to pool knowledge and resources. Smaller projects could usually be seen through from start to finish, and programmes of building offered the opportunity to close the cycle of school design through user appraisals or by establishing close partnerships with building contractors, such as Nottinghamshire's 'Research into Site Management' programme (page 137). Departments of any size could afford to establish small teams, sometimes termed development groups, to focus on a particular technical challenge which could later be widely applied. There was also a notable expansion of 'scientific' research and development undertaken by government-sponsored agencies. In particular the Building Research Station at Garston, Hertfordshire made significant advances in questions of construction, lighting, heating and colour.

The role of the architect in the design process was transformed from a passive role of responding to a fixed brief to one of investigation, observation and collaboration. Stirrat Johnson-Marshall, the dynamic Chief Architect of the MoE Architects and Building Branch discussed the aspirations and challenges of such an approach in a talk at the Sheffield School of Architecture in 1952:

> Somehow one must get closer to the client—to know what his aspirations are […] in terms of what he wants to do and how he wants to live. [...] In our world the Education Officer is the official spokesman of the client […] It is not a bit of good going to him and saying "what do you want?" You have got to ask him what he and his teachers want to do in every school and every part of every school. And you have got to keep on asking him because his subject and methods, like ours, is changing all the time.
>
> And when you start your language will be unfamiliar to him and his to you, so it will take you quite a time to meet on common ground. You will never achieve this if you see him only once a quarter at pompous meetings. But—once you have begun to know his subject and he yours, your work attains a source of inspiration which is far more exciting and rewarding than the text book and "plan type" approach of our predecessors.[56]

The percentage of British architects in public offices reached a peak of 45% in 1955.[57] After building controls were lifted progressively in 1952-54 a building boom encouraged something of the 'brain drain' from the public sector. Many of the brightest designers, after a spell in architect's departments such as that of the LCC, set up their own offices to do public as well as commercial work. An early indication of the new trend was Johnson-Marshall's defection from the MoE in 1956 to form Robert Matthew Johnson-Marshall and Partners. The *Architectural Review* complained in 1965 that authorities were 'finding the greatest difficulty in recruiting staff'.[58] Local government reorganisation in 1974 prompted the departure of many key county architects such as Fred Pooley of Buckinghamshire (page 239) and the dispersal of whole offices in the cases of West Suffolk (page 309) and the West Riding (page 151). For others, such as Colin Stansfield Smith of Hampshire (page 265), reorganisation provided a crucial break and the opportunity for fresh thinking. The contraction in public building from the 1970s had an effect on architect's departments: at Nottinghamshire, Henry Swain reluctantly made 70 of his staff redundant in 1976 when the capital programme was reduced by a third.[59] Over the last quarter of the twentieth century, under mounting economic and political pressure, most architectural offices were scaled down, merged with planning, engineering or property services departments, or outsourced wholesale to the private sector. Few survive in recognisable form today.

Private Architects

The commissioning bodies of independent and voluntary schools had a long tradition of employing private architects, who were often permitted to directly consult senior teaching staff and parents (page 369). Such was the volume of post-war school building that LEAs 'farmed out' work to trusted private practices, sometimes drawing up lists of

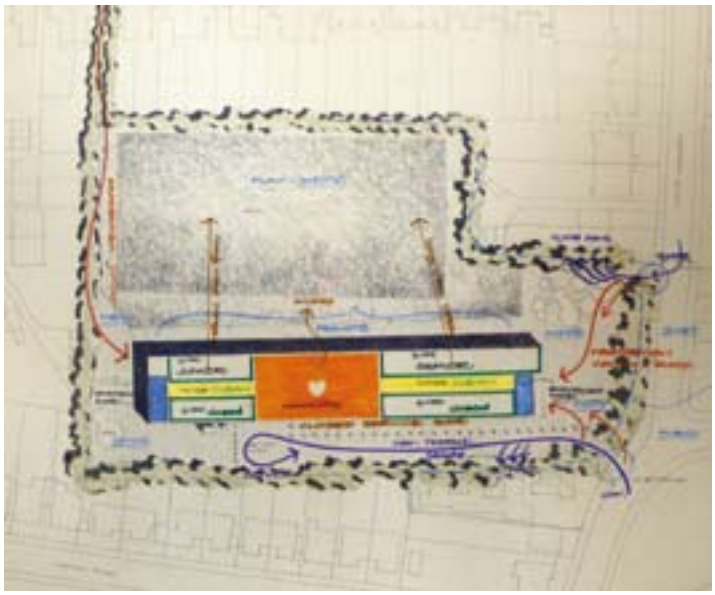


Figure 1.7: A 1966 design study by Team 4 (Su Brumwell, Wendy Cheeseman, Norman Foster and Richard Rogers) for the Homefield Preparatory School in Sutton. The drawing emphasises connections and contrasts: quiet/noisy; private/public; open/closed. The designation of 'entrance locks', service areas and dirty/clean processes is a reminder that the practice was then working on the Reliance Controls building in Swindon. Private practices often 'cross-fertilised' school design with their experience of other building types. Few public architects experienced such variety. (P5925001)

'approved' architects. Leslie Martin compiled such a list for the LCC in 1949.[60] This was an important element of managing peaks in annual programmes without expanding in-house teams; in times of cuts the 'outsourced' programme could be dropped without the loss of in-house staff. Local authorities had other motivations for bringing in private architects, too: to supply a prestigious project, to use up budgets at the end of the financial year, or to sort out a project which had gone wrong.[61] Nowhere was public patronage of private architectural practices more successful than in London (pages 184-86). For the Architects' Co-Partnership, 'there was no need to seek work or to compete for it; invitations to design primary and secondary schools arrived in the mail.'[62]

The importance of school commissions to private architects varied. Some celebrated practices such as Alison & Peter Smithson did not get further than a single school whilst others, such as Lyons, Israel and Ellis, Yorke Rosenberg and Mardall, the Architects' Co-Partnership, Sheppard Robson and Stillman Eastwick-Field developed considerable expertise in educational building over a long period. In larger practices, a single partner might specialise in educational work, such as Gordon Taylor of Sheppard Robson. Other practices confined themselves to a region, often working in partnership with an LEA, yet built up a national reputation, as did the Ellis Williams Partnership in the north west or Plinke Leaman and Browning in Hampshire. As private architects were not permitted to advertise there were clear professional and financial incentives for the publication of their work in the architectural press.

What was the contribution of private architects to post-war school building? Some public-sector architects doubted their capacity to effect significant innovation of the type and sensed a preoccupation with aesthetics. For David Medd they could do 'little more than decorate what they know about. It is not their fault, because they are not in a position to evolve, only to take orders from the client.'[63] But this was not universally true. Indeed, his mentor Stirrat Johnson-Marshall entered private practice with hopes of establishing 'a third arm' for the public sector. The simile was probably most apt within the sphere of higher and further education, where private architects enjoyed greater

autonomy and higher budgets.[64] Desmond Williams and Birkin Haward brought to the private sector collaborative working processes developed in public offices, whilst Richard Sheppard, Sam Morrison and the Edcon consortium developed their own constructional systems. Other ex-Hertfordshire architects continued school building under the names of Barron and Smith, Twist and Whitley and Green Lloyd and Adams Architects, enjoying a stream of local authority commissions. Some public offices such as those of the LCC/GLC and the West Riding used private commissions as a source of innovation and competition. At best the private sector ensured that the 'gene pool' of school design remained sufficiently diverse, providing architectural stimulus that countered contemporary trends towards standardisation (fig. 1.7).[65]

ENDNOTES

1. Many authorities have scanned their drawing archives in recent years, usually disposing of the originals; other collections of drawings in local authority ownership remain uncatalogued, or have been 'weeded' or dispersed on reorganisation. The prevalence of computer-aided drafting (CAD) techniques from the 1980s means that permanent paper records may never have existed for more recent buildings.
2. Maclure 1984; Saint 1987.
3. Department of Environment, Circular 8/87.
4. Cherry and Chitty 2009.
5. Saint 1992.
6. DSCF 2007; Department for Education and Skills 2006.
7. This phrase may have an origin in the Report of the Royal Commission on Local Taxation, Parl. Papers, 1901.
8. Board of Education 1943b; Education Act, 1944. (7&8 Geo VI, c.31), London: HMSO.
9. Education Act, 1944. (7&8 Geo VI, c.31), London: HMSO, s.6 (1); Pile 1979, 23. The term 'local education authority' has now fallen out of official use, but is employed throughout this report as a historical term.
10. In 1903, about 315 LEAs were created from some 2,500 school boards. The Butler Act of 1944 reduced this number to 146, which further shrunk to 104 on local government reorganisation in 1974 (Thompson nd, 1).
11. Subsequently renamed Department for Education (DFE, 1992), Department for Education and Employment (DfEE, 1995), Department for Education and Skills (DfES 2001), Department for Children, Schools and Families (DCSF, 2007) and Department for Education (DfE, 2010).
12. Pile 1979, 23-24.
13. Pile 1979, 67.
14. Saint 1987, 249; Oddie 1963, 180.
15. Institute of Education Archives: ME/M/1/13, 'Educational Building in the United Kingdom', p. 2.
16. Alexander 1977, 381.
17. Their designers, David and Mary Medd, returned to the subject of village schools in a series of Welsh projects in the mid-1970s (Welsh Education Office 1975).
18. Unpublished report of January 2000 by Elain Harwood for the English Heritage Historic Buildings and Areas Advisory Committee, deposited in deposited in the Historians' Files, English Heritage London Region, file reference LAM180.
19. Pile 1979, 107.
20. *Building*, vol. 231, no. 6956(42), 15 October 1976, p. 71.
21. Pile 1979, 10.
22. http://news.bbc.co.uk/onthisday/hi/dates/stories/december/4/newsid_3228000/3228207.stm, accessed 15 August 2012.
23. As late as 1969 the architect Michael Webb considered that 'the post-war need to build schools quickly, in large numbers and at reasonable cost, is as great as ever' (Webb 1969, 65).
24. DES Statistics of Education 1975; Ward 1976, xiii; Pile 1979, 12. The implications of falling roles were belatedly considered in DES circulars 5/77 (Falling numbers and school closures) and 2/81 (Falling roles and surplus places).
25. Pile 1979, 11.
26. Immigrant pupils were defined by the DES for statistical purposes as 'children […] of overseas origin and children born in the United Kingdom to parents of overseas origin who had been in the country for less than ten years' (Pile 1979, 11).
27. Central Advisory Council for Education (England) 1967, 69-74.
28. Urban Development Corporations (UDCs), loosely based on the older New Town Development Corporations, were suggested in a 1977 White Paper on inner cities and implemented by the Inner Urban Areas Act 1978 and the 1980 Local Government, Planning and Land Act. From 1981 to 1993, twelve UDCs were set up in England, the largest being the London Docklands.
29. Smith 1987.
30. MHLG 1964.
31. *Building*, vol. 231, no. 6956(42), 15 October 1976, p.71.
32. Alexander 2009, 77.
33. Medd 2009, 22.
34. Mary Medd's father, Dr Ralph Crowley was Medical Officer to the Educational Committee of the City of Bradford before becoming Senior Medical Officer for the Board of Education (Saint 2003, 79).
35. 'The Evolving School' in *Trends in Education*, no. 2, April 1966, p. 3-8.
36. Lowe 1992, 50.
37. Banham 1981, 189.
38. 'Umbrella men': Oddie 1963, 180.
39. c.2007 interview between Estelle Morris and Sir Tim Brighouse, http://archive.teachfind.com/ttv/www.teachers.tv/videos/tim-brighouse.html, accessed 15 August 2012.
40. Heller and Edwards 1992, 106.
41. Temple 2008, 419-21.

42. The William Tyndale Junior School in North London became notorious in 1974–75 when a highly-progressive and informal regime led to acrimony between staff, managers and parents, the intervention of the Inner-London Education Authority and a public enquiry. The episode received much publicity in the national press.
43. Lowe 1997, 60. The Black Papers were a series of five pamphlets published between 1969 and 1977 and edited by C.B. Cox, A.E. Dyson and R. Boyson MP. They carried a series of articles, mostly authored by academics and headteachers which criticised child-centred teaching methods amongst other things.
44. Pile 1979, 20.
45. Bennett 1976.
46. Will Woodward, 'Landscape Architect', *The Guardian*, 5 April 2005.
47. Saint 2003.
48. Cooke and Gosden 1986, 59.
49. Changes in cost limits were reflected in the revisions to the 1945 Regulations Prescribing Standards for School Premises dated 1951, 1954, 1959, 1971, 1972, 1981, 1996 and 1999.
50. Up to 1969, LEAs submitted annual 'starts' major works programmes, listing projects proposed to start on the year in question, along with a justification for provision and a costing for each project. After negotiations with the DES, an approved programme was issued, comprising a list of authorised projects and their cost. In 1969 the DES introduced a three-year rolling programme. This comprised three consecutive lists: a 'preliminary list', three years in advance of construction; a fully-costed 'design list' and a 'starts list' of projects ready to proceed to tender (Pile 1979, 78).
51. Harwood forthcoming.
52. Brian Whitehouse, pers.comm., 25 June 2012.
53. Quoted in Saint 1987, 121.
54. Ministry of Education 1951 (Building Bulletin 4).
55. Saint 1987, 62.
56. Institute of Education Archives: ME/M/1/6, Stirrat Johnson-Marshall, notes for talk to students at Sheffield School of Architecture, 7 May 1952.
57. In 1938, 31% of 10,000 architects were employed in the public sector; by 1955 it was 45% of 17,500 and by 1964, 39% of 20,000.
58. *Architectural Review*, vol.138, no.824, October 1965, pp.243-45.
59. *Building Design*, no.327, 10 December 1976, p.3.
60. Harwood forthcoming.
61. Harris FE College, Preston is an example of the latter. The project was run by the Development Group of the Ministry of Education, but the Architects' Co-Partnership had to be brought in, much to the embarrassment of the Ministry (Saint 1987, 187-88).
62. *Architects Co-Partnership: the First Fifty Years*. Unpublished pamphlet available at http://www.acparchitects.co.uk/History/50th%20booklet%20150.pdf, accessed 15 August 2012.
63. Institute of Education Archives: ME/Q/9/1: Letter of 6.4.1970 from David Medd to Stephen Gardiner, page 6.
64. Saint 1987, 184.
65. *Official Architecture & Planning*, vol.29, no.9, September 1966, p.1308; Classey 1998, 18. Powell (1916-71) was the brother of Phillip Powell of Powell and Moya.

PART II: SCHOOL TYPES

Nursery Schools

The development of 'child-centred' educational practice in early-twentieth-century England owed much to a small number of independent nursery schools. Those run by Margaret and Rachel McMillan and others were established as voluntary initiatives responding to the effects of urban poverty and unsanitary domestic conditions on the child population. They were homely places, characterised by close and informal relationships between adults and children and an emphasis on health, nurture and pastoral care where it was thought to be lacking at home. Some, such as the Malting House School established in Cambridge by the educational psychologist Susan Isaacs, occupied old buildings. Others made a virtue out of the necessity of 'temporary' buildings; Margaret McMillan's requirements anticipate an economising, anti-monumental strain in post-war public architecture:

> The old style of buildings, however handsome, will not do. Nursery school buildings are cheap and they must consist of self-contained shelters, built of asbestos, and costing a third of the usual price for buildings.[1]

But for all the influence of the early-twentieth-century nursery and the recognition of its value to society, the independent pioneers proved difficult to translate to local authority provision on a large scale. A major expansion of nurseries had been necessary during the First and Second World Wars as mothers took on war work and with the evacuation of children in 1939-45. The successive increases in the school leaving age in 1918, 1947 and 1972 saw no corresponding lowering of the threshold of entry to compulsory education. Despite the growing economic importance of the female labour force after 1945, central government could spare no resources for pre-school education; this was in part due to the fact that nursery places were usually more expensive than infants'.[2] The West Riding Development Plan of 1948 included the provision of 9,600 nursery places on 241 separate sites, but primary schools had to take priority and the proposal was quietly dropped in the 1950s.[3] Authorities were more likely to build nurseries in areas with a high percentage of women in full-time employment, such as Burnwood Nursery School, Stoke on Trent, completed in 1949 for the children of skilled women working in the potteries.[4] Such was the need for primary school places that the Ministry of Education actively discouraged authorities from building nurseries under permissive legislation from 1960.[5] In 1970, one in four nursery places were in post-war, purpose-built accommodation (table 2.1). As many were accommodated in wartime hutted buildings. For these reasons nursery education has been dubbed the 'Cinderella of the education system'.[6]

Post-war developments in nursery education came from two directions. The findings of educationists and developmental psychologists such as Jean Piaget (1896-1980) suggested that ages 2-5 represented a critical stage in mental and physical development and education in its widest sense was key to cognitive development.[7] Socio-psychological studies indicated the cumulative effects of poverty and 'culturally disadvantaged' home backgrounds on the learning capacity of children.[8] Pre-school education, always dependent on close cooperation between school and parents, could be seen as an additional social service for the most vulnerable families. Like Margaret McMillan, Mary

Medd emphasised the importance of school–home relations for the youngest children, but stressed that the parental role was as important a factor in the intellectual and emotional development of the youngest child as their socio-economic background:

> We cannot ignore the homes from which these children come […] Many come from homes in which there is nowhere to make a noise, nowhere to make a mess (the white-carpeted living room, the "open plan", the sixteenth floor flat), homes with no grass or trees, nowhere to find a place of your own; homes in which parents have no "child's time" to spare, no books, no talk to widen the vocabulary.[9]

Children and their Primary Schools, the 1967 report of the Central Advisory Council for Education (England) chaired by Lady Bridget Plowden, clearly bore the imprint of Piagetian and sociological insights.[10] The targeted expansion of nursery provision was one of several policy measures advocated by Plowden to alleviate urban deprivation. The report was unequivocal: 'there should be a large expansion of nursery education and a start should be made as soon as possible'.[11] The opportunity was the Urban Aid Programme of 1968, in which central government provided additional funds for local authorities to build nurseries in their deprived areas, termed Educational Priority Areas by Plowden.[12] An additional 24,000 nursery places were provided through this scheme.[13] The 1972 White Paper *Education: a Framework for Expansion* and the associated Circular 2/73 set national targets of nursery expansion at levels advocated by Plowden: to provide places for 50% of three year olds and 90% of four year olds by 1983, of which 15% would be full time.

For a short period *c*.1967-72 a national breakthrough in nursery education seemed imminent. The programme demanded 250,000 new places over a 10 year period but only a small number of new nurseries were completed before the curtailment of local authority building programmes in the mid-1970s.[14] Pre-school education did indeed expand in the last quarter of the twentieth century (fig. 2.1), but growth took the form of a patchwork of uncoordinated measures, with much reliance on voluntary, part-time and informal arrangements and the contribution of parents. Mary Medd identified

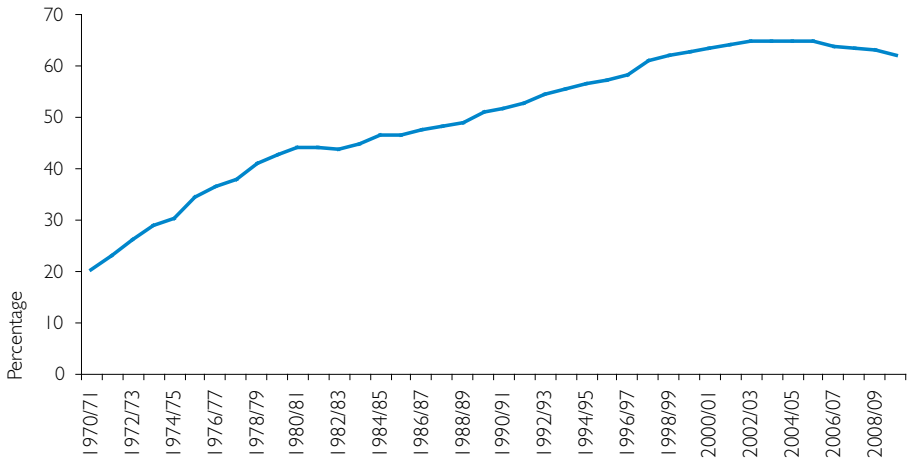


Figure 2.1: Children under five in UK schools. Pupils aged three and four at 31 December each year as a proportion of all three and four-year olds. Source: Department of Education. Data reproduced under the terms of the Open Government Licence.

five categories of purpose-built pre-school provision: nursery units in primary schools, nursery schools, day nurseries, nursery centres and play groups. Falling primary roles provided the opportunity for nursery units within infant or primary schools. Although it was little more than a formalisation of the 'reception' or 'babies' classes that had long been part of maintained infant schools, the Plowden report emphasised that the nursery-infant school enabled a smooth transition between educational stages. Architects and Building Branch duly issued guidance on the subject of converting redundant spaces in primary schools to nursery units.[15]

Smallest in number but often the educational and architectural pacesetter was the purpose-built nursery school, either on its own site or sharing with a primary school. The tradition of private nursery schools continued, some, like the Dartington Hall Nursery School (pages 383-84), affiliated to boarding schools for old children. Elsewhere, the financial impasse faced by LEAs was broken by charitable organisations like Save the Children. The construction of the Vanessa Nursery School in Hammersmith was founded by a charitable trust, the LEA taking charge of the maintenance of the completed school (page 194). Day nurseries or crèches were more orientated to childcare than education in their origins and practice, and were overseen by the Department for Housing and Social Services. The fourth category, the nursery centre, was an amalgam of school and crèche, although funding and management arrangements could be complicated. An example is the Ordsall Nursery Centre, Salford of 1974, designed for children of 9 months to 5 years. Lastly, play groups and play centres were often provided by parent groups such as the Pre-school Playgroups Association (renamed the Pre-School Learning Alliance in 1995) and charities like Save the Children.[16] Many functioned as 'drop-in centres', providing a level of parental support and liaison that nurseries could not.[17]

Day nurseries and day centres were sometimes included in large, urban housing schemes, the pre-war model being the Day Nursery at Kensal House, London, built in 1936-38 to the designs of Maxwell Fry with Elizabeth Denby. The huddled forms of the children's day centre in Eddington Street for the London Borough of Islington, designed by Darbourne and Darke, complement their nearby Athelstane Estate.[18] Designed in 1972-73, it included a 60-place nursery with medical facilities and a kitchen.[19] Spaces for play groups were provided at some London housing estates such as Cressingham Gardens in Lambeth (page 194) and the modernist Ainsworth Play Centre at the Alexandra Road estate, designed by Kisa Kawakami of the renowned Camden Architect's Department.[20]

The Design of Nursery Schools

Nursery schools were generally based on one to three classes each of about twenty children with staffing ratios of four adults, perhaps two of them qualified assistants, to every ten children. Nursery units benefitted from the facilities of the primary schools to which they were attached, whereas stand-alone nurseries sometimes forewent kitchens and staff rooms. To encourage parents to visit and assist a private consultation room and attractive foyer with waiting area was sometimes provided. Little published design guidance was available, so empirical observation of children and teachers was the logical starting point for architects. The Architects and Building Branch emphasised

Figure 2.2: David Medd's sketch of typical nursery activities, reflecting his view that their layouts needed less enclosure than infant schools. Institute of Education Archives: ME/Z/5/1/31.

the importance of first-hand sensory experience to develop and to stimulate the curiosity and imagination of pre-school children, and the need for improvisation and even risk.[21]

The DES architects identified seven 'zones of activity': table work, acting, music, messy work, quiet work, moving and construction, but most could be accommodated in a single playroom. There was accordingly less enclosure and differentiation than at infant schools, and flexible arrangements of furniture were generally found more useful than partitions (fig. 2.2). Access to a covered veranda and outside play areas were considered essential. It was found that rationalised traditional construction better suited the intimate scale and domestic atmosphere than prefabrication.[22] An eye level less than one metre from the floor meant that floor surfaces, thresholds and low, wide window sills were the most important elements. The provision of a variety of floor surfaces— vinyl and lino with carpeting for quiet areas, quarry tiles for messy work and flags and grass outside was a practical measure yet gave experience of tactility. The Medds suggested that the variety of the interior might be described by the way you might clean it: 'some parts will have to be cleaned by hosing down, some by a good brush, others by the flick of a feather mop'.[23] Interior floors, walls and ceilings were all potential display surfaces. Low-pitched ceilings, open to the roof offered exposed beams to hang things from.[24]

Catchment area	%
Immediate area	28
Neighbourhood unit	41
Scattered area	31
Situation	
Inner-city 'twilight' area	26
Industrial area	17
Pre-1939 housing estate	34
Post-war housing estate	16
Residential 'leafy suburb'	6
Admission	
All groups	38
Less than 10% of children from overseas	20
Over 50% of children from overseas	6
Less than 10% children of working mothers	22
Over 50% children of working mothers	14

Buildings	
Pre-1939 purpose built nursery school	29
Post-war purpose built nursery school	21
Classrooms in 1870-1900 primary school	11
Classrooms in 1900-1920 primary school	7
Classrooms in post-war primary school	6
Wartime prefabricated nursery	24
Converted house	2
Amenities	
Self contained	100
Outdoor playing space or garden	100
Covered outdoor playing area	43
Own kitchen	68
Transported meals	31
Class remote from main primary school	7

Table 2.1: A snapshot of nursery provision. Information from a Schools Council survey of 95 nursery schools and classes conducted in 1969-71.[25]

Primary Schools

The 1944 Education Act reaffirmed the 1926 recommendations of the Hadow committee to divide schooling into primary and secondary stages with a break at age 11.[26] On the ground, it was a further twenty years before the last all-age schools were reorganised.[27] Patterns of provision were at the discretion of the local education authority: some provided separate infant and junior schools with a break at age 7 plus; others, primary schools for the 5-11 age range. School sizes likewise varied from two-class village schools of about 50 pupils to primaries of 480 pupils; special permission from the MoE/DES was necessary for rolls greater than this. Single-form entry schools, with one class in each year group, facilitated closer pupil-teacher relationships, although the scope for teacher collaboration was limited. Two-form entry schools were recommended in the 1967 Plowden report on primary education, although three- and four-form entry were possible depending on age range and class size. Average class sizes were 30-35 in 1965, but the popularity of group work and greater numbers of teaching assistants led DES in 1969 to replace class size with teacher-pupil ratios as a statistical yardstick.[28]

Child-centred Approaches

Teaching in the post-war primary school is often characterised as 'child-centred' or 'progressive'.[29] Such approaches were underpinned by principles of self-development and experiential learning and based on an understanding on the intellectual development of young children. Having developed in the pre-war independent sector, child-centred ideals and methods were taken up after 1944 by educationists within the Ministry of Education, a few progressive Authorities and at teacher training colleges and in-service courses. Architects and Building Branch was no less instrumental in demonstrating how school design might assist new approaches to teaching and learning, and the same processes of reception, interpretation and compromise are apparent in local authority-designed schools. The introduction of non-selective reorganisation plans freed primary schools from the constraints of the eleven plus exam, one of the main factors in the retention of whole-class teaching.

Although child-centred practice was endorsed by central government from an early stage, its reception, interpretation and adaptation varied widely from authority to authority and school to school. Traditional, didactic modes of teaching—so-called 'chalk and talk'—persisted, even at the MoE's flagship Woodside Junior School in Buckinghamshire.[30] The reputation of Oxfordshire, amongst the most educational progressive authorities, rested on as few as twenty 'pace-setting' schools, its former Primary Adviser John Coe has suggested.[31] The Plowden report is customarily described as the apogee of child-centred education in England.[32]

Learning through first-hand experience and enquiry implied diverse and unpredictable patterns of activities, movement, resources and working groups, and a pedagogic balance between flexibility and structure. The teacher's role typically became less didactic and more informal; two or more teachers might pool their cohorts and resources for a planned session (sometimes dubbed 'team teaching'), and topic work might be

structured without the constraints of a fixed timetable ('the integrated day').[33] The class usually remained the pastoral unit, but whole-class teaching was substituted, to a greater or lesser degree, by groups of varying size and age, according to the activity. Infant age groups in particular especially tended to enjoy greater freedom of movement and self-direction. The principle of creative and active learning inevitably led to a greater emphasis on practical work and play, demanding wet or messy areas, plentiful storage and cleaning-up facilities and easy access to outdoor verandas.

Planning Primary Schools

In certain authorities, educationists developed a consistent approach to teaching practice and liaised with their architect colleagues to determine its spatial implications. An astute Chief Education Officer might impose a standard brief; elsewhere educationists and architects enjoyed the autonomy to work through the challenges of individual schools; in still other places the educational stimulus was contradictory, weak or absent. Where the pastoral needs of young children and whole-class teaching was valued, dispersed arrangements of fully or partly self-contained classrooms tended to result. More fluid approaches, stressing teacher cooperation and vertical grouping, resulted in the aggregation of teaching space in a more compact and open plan.


LOOKING AT MAPS

Here is Jane's school. A path leads up to the main door, which is painted white. Just to the left of the door are the big windows of the hall.

The school has only six classrooms. You can see them on this plan.

One day Jane has to take a book from classroom 6 to classroom 3. Find out exactly which way she goes.

Jane finds a visitor in the school playground. Which way does she go to take him to the headmaster?

Figure 2.3: This 1958 textbook features a typical 'hen and chicks' plan. The school is Kingswood Junior School, Clay Hill Road, Basildon by Poulton and Freeman. From Jean and David Gadsby, Looking at Everyday things. *London: A&C Black, p.69. Illustrations reproduced by permission of Essex County Council.*

Pedagogy was one of a number of interrelated influences on the design of the post-war primary school. Minima and maxima were determined by central government in the form of space standards and cost limits (page 18). Up to *c.*1970 high levels of daylighting were prescribed, resulting in dispersed plans and multi-lateral lighting (page 83).[34] Methods of construction, whether traditional or prefabricated, each imposed their own peculiar constraints on planning. A balance between divergence and convergence, between seclusion and communality, was achieved with the 'hen & chicks' or 'cluster' plans developed at the Architect's Department of Hertfordshire County Council *c.*1949 at around the same time that cost limits were being announced.[35] Pairs of classrooms with a shared

entrance, cloakrooms and lavatories were ranged around a central hall, dining areas and staff accommodation (fig. 2.3). They had the additional benefits of generous daylighting and plentiful 'bays and backwaters' for diverse activities.[36] The versatility of such layouts ensured their dominance in primary school planning until the late 1960s, when economic pressures dictated still more compact plans.[37]

Finmere and 'Built-in Variety'

The Architects and Building Branch of the Ministry of Education was instrumental in developing and promoting planning techniques which facilitated child-centred teaching practice. The breakthrough in education-led primary school planning was Finmere Primary School in Oxfordshire of 1958-59, a fifty-place village school designed by David and Mary Medd of Architects and Building Branch (page 106). Responding to certain characteristics of village schools—mixed-age groups, more informal pupil-teacher relationships and teacher cooperation—the Medds provided a 'built-in variety' of spaces of differing character.[38] Their compact, squarish plan had a central shared area with a high ceiling and exposed roof trusses that could be divided from the two classes by sets of folding doors (fig. 2.4). Each class had an enclosed room for rest and storytelling and three bays for practical work. Structured space was thus provided for a range of working groups, from individuals and small groups to activities involving the whole school. The design elements of Finmere—'home bases' for each class, enclosed quiet rooms, shared areas, practical bays and verandas— became widespread in the planning of English primary schools in the later twentieth century. The Medds went on to extend built-in variety to a range of briefs and school types, including larger primary schools, middle schools and the lower school of a comprehensive (page 105).

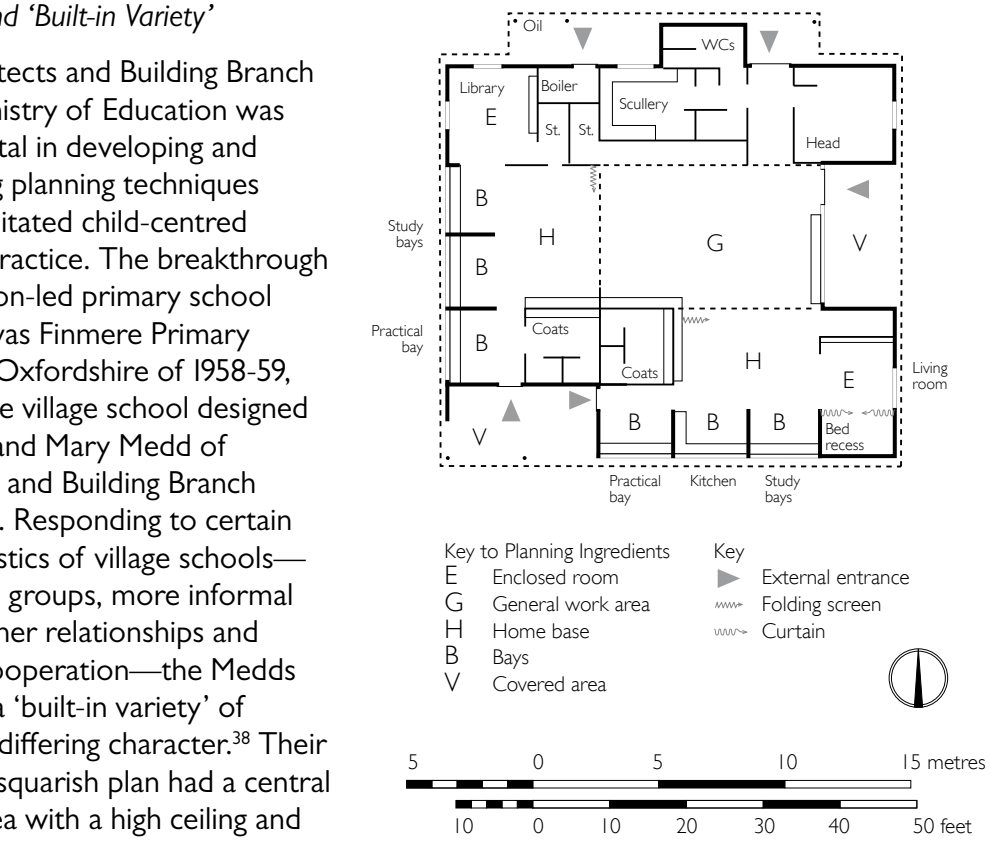


Figure 2.4: Finmere Primary School, Oxfordshire; MoE Development Group (job architects David and Mary Medd), 1958-59. 1:300.

The case studies of individual authorities in Part Four of this report demonstrate a wide variety of regional responses to the ideas and techniques promoted by Architects and Building Branch. The planning techniques of built-in variety and planning ingredients can be seen most clearly in the educationally-progressive counties of Oxfordshire, Leicestershire, Bristol, the West Riding of Yorkshire, Nottinghamshire and Derbyshire,

and the voluntary schools designed by the Ellis-Williams Partnership. Many of these authorities were early adopters of non-selective education with the consequence that primary education could develop without the pressure of the 'eleven plus' examination (page 41).

Compact and 'Open' Plans

The introduction of cost limits in 1949 forced architects to develop cheaper and more efficient construction techniques and materials and to reconsider the proportion of circulation to teaching space in the primary school plan. Economic factors above all led to the gradual compaction of the primary school plan over the third quarter of the twentieth century. Circulation was first to be cut: corridors were staggered, partially absorbed into teaching areas with folding doors or replaced by circulation through teaching areas or outdoors.[39] Grand yet seldom used spaces like entrance foyers, dining areas and assembly halls were telescoped into inter-connected areas. Primary plans later became deeper with daylight provided through roof lights or small internal courts.[40] Although cost pressures were largely responsible for the increasing compaction of the primary school plan, they also had the potential for greater freedom of movement, sharing of resources and teacher cooperation.

Very different from built-in variety was the open-plan school, which had origins in the 'loft plans' and 'schools without walls' promoted in the United States. The ideal was a flexible and unenclosed space, capable of accommodating multiple classes and activities. This usually took the form of large, deep and open plans, mechanically-serviced and divided up with low screens or furniture. In the UK these ideas were limited to a very few schools, amongst them Eastergate Church of England Primary School in West Sussex, the Ilford Jewish Primary School, St Paul with St Luke Primary School in east London and the Halifax Primary School in Ipswich, their layouts all now subdivided. The ensuing open plan debate generated more heat than light, and our understanding of the reception and influence of these ideas is limited due to the tendency to confuse open plan with built-in variety, conceptually its opposite.[41]

But most authorities were not as bold educationally, making gestures in the direction of child-centred education whilst placating the traditionalists who persisted with whole-class teaching. A typical compromise was to make the classroom sufficiently large and flexible to accommodate multiple activities and group sizes: one corner, perhaps opening onto a veranda, could be tiled and equipped for practical work and another carpeted or semi-enclosed for retreat and quiet study. Pairs of classrooms might be divided by a sliding door, thus allowing a newly-qualified teacher to work with a more experienced colleague, and might share a supplementary area. Rows of these expanded classrooms were often accessed from a shared practical area. From the mid-1970s Buckinghamshire and Hampshire cast these ideas into linear or centrally-planned layouts (pages 244 ad 272-74). The return of the cellular plan coincided with a return to a more traditional, subject-orientated curriculum.

Middle Schools

The story of the rise and fall of the middle school neatly sums up post-war tensions between the resources and priorities of government and the needs of the individual child. The term middle school is thus encountered in two contexts: organisationally, to describe a specific scheme of educational re-organisation as implemented by a local education authority; and educationally, as an approach to a transitional stage in a child's development. Both have implications on school design. Because of the highly devolved nature of education in England and because middle schools were bound up with the debate about non-selective secondary education, the middle school had no standard age range, although 8-12 and 9-13 years were most common, and sometimes different age ranges were encountered within a single authority.[42] The picture is further complicated by the phased, district-by-district implementation of middle school reorganisation.

Middle Schools and Educational Reorganisation

An early experiment with a three-tier system, but one which retained selection at age 11 plus, was the 'Leicestershire experiment' implemented from 1957-69 by County Education Officer Stewart Mason (pages 223-24). When the Leicestershire scheme was proposed for a West Riding district, the Chief Education Officer Alec Clegg came up with an alternative: a non-selective scheme of 5-9 first schools, 9-13 middle schools and 13-18 upper schools (pages 156-57).[43] But the 1944 Education Act stipulated transfer at age 11, and Clegg's plan could not be permitted without a change in the law. The 1964 Education Act, drafted by Conservative Education Minister Edward Boyle partly in response to Clegg's petitioning, received cross-party support.[44] It permitted LEAs to propose other ages of transfer than 11 and gave the middle school an experimental status.

In January 1964 Boyle set a date of 1970-71 for the raising of the school leaving age to 16, a policy recommended by the Crowther and Newsom reports.[45] Circular 10/65 of July 1965, which implemented the incoming Labour government's policy of non-selective secondary education, suggested 'the establishment of middle schools with age ranges of 8 to 12 or 9 to 13 has an immediate attraction in the context of secondary reorganisation on comprehensive lines'.[46] Secretary of State Anthony Crosland was initially hesitant about the number of three-tier schemes he would authorise but such was their popularity with LEAs of all political affiliations that general consent for middle schools followed with Circular 13/66, allowing LEAs to determine ages of transfer. The following year the Plowden report recommended setting ages of transfer at 8 and 12, but had already been pre-empted by the Circular.[47]

Three-tier reorganisation (and hence middle schools) allowed education authorities to respond to the twin challenges of 'comprehensivation' and an increased leaving age.[48] The structure was naturally non-selective, and by shortening the secondary age range, made smaller comprehensives viable. Crucially, this meant that an authority could 'go comprehensive' without a costly programme of new secondary schools. Caroline Benn of the Campaign for Comprehensive Education wrote that 'the main moving force behind most middle school schemes has been the desire to go comprehensive'.[49]

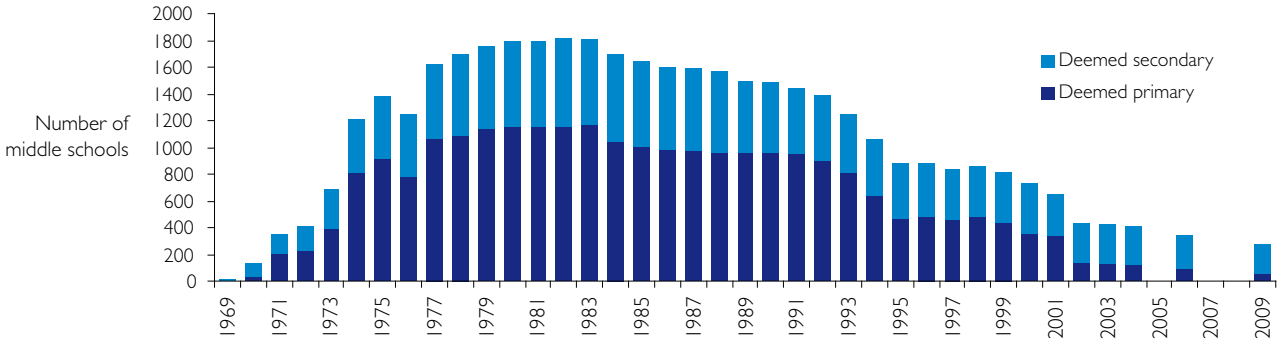


Figure 2.5: The rise and fall of the middle school. Source: Wyatt 2010, 6; reproduced by kind permission of Nigel Wyatt.

The national number of middle schools rose sharply in the 1970s, reaching a peak of 1,816 in 1982 (fig 2.5).[50] Since then there has been a sustained decline, with steeper drops in the early 1990s and early 2000s, when authorities reverted to a conventional primary-secondary structure. Several explanations can be offered for the decline of the middle school. If take-up was dependent on cross-party support, the lack of consensus that prevailed in the more fractious political climate of the 1970s and 1980s was likely to reverse the trend. The diversity of schemes, the lack of a national policy on the age of transfer and the presence of different teaching cultures all contributed to an identity crisis.[51] The introduction of the National Curriculum in 1988 made transfer at ages 12 or 13 problematic, as Key Stage Three was split between middle and secondary stages.[52] Education professionals with more child-centred conceptions of the middle school did not welcome the National Curriculum's emphasis on subject teaching and assessment, supplemented from 1998 by National Literacy and Numeracy Strategies. The viability of middle schools was further reduced by falling pupil numbers and the 1990 Audit Commission report *Rationalising Primary School Provision* proposed the conversion of middle schools to two-tier systems as a method of reducing surplus school places. The National Middle Schools' Forum was founded in 1991 to coordinate the isolated regions which still employ a three-tier system.[53] In 2011, 215 middle schools remained, of which 27 were deemed primary and 188 were deemed secondary.[54]

Inside the Middle School

Middle schools were one way of bridging the transition from child-centred primary education to a more subject-orientated secondary approach by providing the appropriate space, curricular specialisation and pastoral environments needed at this transitional stage. Some, like Alec Clegg, viewed the middle school as a place where the arts and crafts could thrive in the absence of examination pressure and where, unlike the lower secondary schools, younger pupils could retain their own teacher and enjoy a continuation of informal and individual modes of learning.[55] For Plowden too, the middle school was an upwards extension of the junior school, and indeed the pedagogy, staff and facilities of most middle schools were inherited from existing primary practice.[56] The oldest year groups were provided with more specialised facilities for science, crafts, language teaching and music. The thinking of the DES Architects and Building Branch—indicated by a Building Bulletin of 1966 on the design of new schools and the conversion of existing ones—was similarly primary-orientated in approach.[57]

Unsurprisingly, the primary ethos was especially strong in the 8-12 schools recommended by Plowden; over 750 new middle schools of this type were built between 1968 and 1979, more than any other type of middle school.[58] Combined 5 -12 schools developed alongside 8-12 schools in some areas such as Buckinghamshire (page 244).[59] Postponing transfer by a year brought about significant differences, as the 9-13 age range embraced an intermediate stage in the mental and physical development of children. 9-13 schools tended to be secondary in spirit and in curriculum and were staffed by secondary-trained teachers. That the middle school bore the imprint of the old two-tier system was confirmed by the DES's legal requirement that 8-12 middle schools were deemed primary and the smaller number of 9-13 schools were deemed secondary. This had significant implications on funding and staffing as cost places, space standards and other crucial yardsticks continued to be calculated on a two-tier basis.[60]

Generous pupil-teacher ratios of 22-26:1 or a flexible pattern of working groups reconciled a relatively wide range of abilities with a small age group.[61] The DES anticipated that some groups be 'as small as three or four; some of eighteen or twenty; others of thirty, forty or even of sixty or more – depending on the aptitudes of the pupils and the work they are doing'.[62] This was an opportunity for an integrated curriculum which loosened the boundaries between traditional subjects. In designing Delf Hill in Bradford, one of the first purpose-built middle schools, David and Mary Medd assumed the pupils would spend 30% of their time on scientific, mathematical and environmental studies, 30% in the field of language, literature and religion, 20% on 'making and doing' and 20% on music, movement, drama, gymnastics and games (see below, page 39).[63]

The majority of middle schools were converted from existing, non-purpose-built schools. At first the extent of reuse caught the Architects and Building Branch unaware, as former DES architect Guy Hawkins recalls:

> I was asked by one of our QSs [quantity surveyors], Maurice Sturt to talk to his children's school PTA [Parent-Teacher Association] about Delf Hill, as Surrey were going to go Middle School. I was taken aback when, at question time, someone said "This is all very interesting, but our middle schools will be using the present buildings!" I had no answer to that, but suddenly realised that there was a whole world of existing buildings which we were almost ignoring in the Development Group, and that ideas we were promulgating in new projects were beyond the reach of the majority of schools.[64]

An HMI survey of 50 5-12 combined schools and 8-12 middle schools undertaken in the late 1970s found that 20% were housed in purpose-built accommodation, 12% in former secondaries and the remainder in former primaries.[65] Most 9-13 schools were housed in ex-secondary modern accommodation, and a survey found that in one in four instances no adaptations had been made to cater for new age ranges and curricula.[66]

Most middle schools were organised horizontally into year groups or 'centres', each containing three or four classes. When *c*.1965 David and Mary Medd of Architects and Building Branch commenced collaboration with Alec Clegg on the design of a West Riding middle school, they reached an impasse on the role and degree of specialisation

Figure 2.6: Sketch design of 1966 by David and Mary Medd for an experimental middle school in the West Riding of Yorkshire. Institute of Education Archives: ABB/A/66/18

of the centre (fig. 2.6). Clegg wanted the centres to be as self-sufficient as possible, whereas the Medds expected older, more experienced pupils to venture out more, spending no more than 30% of their time in their bases.[67] The Medds instead teamed up with Bradford District Council on what became Delf Hill (fig. 2.7). It would appear that Clegg's conception of the middle school prevailed nationally. When Architects and Building Branch visited a number of middle schools in the late 1970s, by which time teaching practice had 'bedded down', they discovered that the two youngest year groups were most mobile, starting the day with their form teachers before venturing further afield for topic and practical work. In a small number of cases this pattern held for the entire age group, but in most schools older pupils spent more time in their own bases, only occasionally making use of specialised facilities.[68]

Three broad layouts emerged in the 1970s.[70] At Delf Hill, blocks for the lower and upper age groups were separated by communal teaching facilities. The model was followed at the Mayfield Church of England Middle School in Ryde, Isle of Wight, designed *c.*1968 by Guy Hawkins, a member of the Delf Hill design team.[71] In the plans prepared in the West Riding Architect's Department *c.*1967 to Alec Clegg's schedule of accommodation, centres were more isolated and self-sufficient.[72] Bedfordshire's prototype, the 600-place Linmear Middle School designed by job architects David Mennett and Allan Bigg in 1969-70, was organised around self-contained year groups.[73] Almost all combined enclosed or semi-enclosed class bases with access to shared practical areas. About half had specialist rooms such as language laboratories or workshops in addition.[69]

Elsewhere compact and deep plans were adopted, with perimeter teaching bases around specialist rooms and a central hall. At the Blackthorn Middle School in Northamptonshire of 1978-79 four courts provided light to a deep plan.[74] The ultimate example was probably The William Morris Middle School, London Borough of Merton, designed within a progressive Architect's Department under Bernard Ward. The Conservative-controlled authority was one of the earliest to adopt middle schools. One of the earliest built projects of noted architects Spencer de Grey and Richard Padovan, the school demonstrates the influence of the American schools without walls concept and Norman Foster's competition entry for Newport High School on a younger, aesthetically-aware generation of architects (page 50).[75] Its design was highly reliant on artificial lighting and

air-conditioning, and comprised a series of open spaces divided by sliding partitions fixed to rails on a one-metre ceiling grid.[76] The school was rebuilt after a fire in 1993.

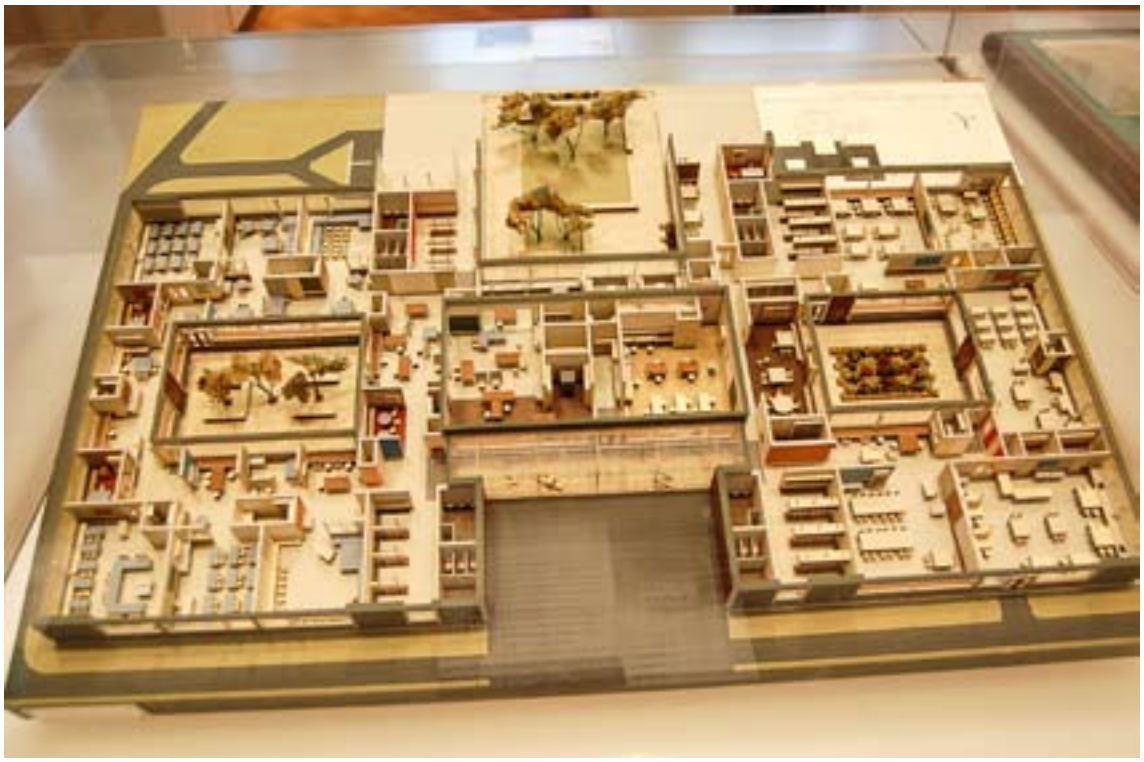


Figure 2.7: Delf Hill Middle School, Low Moor, Bradford; DES Development Group (job architect David & Mary Medd, Guy Hawkins) with Bradford Metropolitan District Council, designed 1966, built 1968-69, demolished 2001. This DES model now forms part of the RIBA Drawings, Archive and Manuscripts Collection housed at the Victoria and Albert Museum in London. Photograph © Fitim Mucaj.

Delf Hill was one of the first purpose-built middle schools and catered for the 9-13 age group. The Medds collaborated with B.J.R. Parker, the Deputy Director of Education at Bradford District Council, and they were feted by J.S. Nicholson, the first head and author of 1870-1970 Education in Bradford, as the latest in a line of educational pioneers working in the city.[77] The layout of Delf Hill comprised two ranges of teaching areas, for 105 pupils of age 9-11 and 11-13, separated by shared space for arts & crafts, domestic science, wood- and metalwork, music and a library. The layout of the main entrance, dining area and hall is clearly derived from Eveline Lowe.[78] The planning elements of verandas, practical bays and so on, devised by the Medds for primary schools, are supplemented by outward-facing classrooms of varying size, demanded by the more specialised middle school curriculum).

Bradford was a member of the SCOLA consortium. The architects would have preferred to use CLASP and were critical of the technical performance and appearance of SCOLA, but the system nevertheless proved pliant enough to realise the Medds' characteristically-intricate layout.[79] Guy Hawkins designed fibreglass rooflight linings and pressed-steel convector heaters for the school: many such trappings were contributed to the consortia systems in this way.[80] The interior was enlivened with a carefully-coordinated colour scheme in dark shades of red, blue and green that extended to the linoleum chalkboards and furniture and a set of bespoke tungsten light fittings designed by David Medd. Delf Hill was demolished in 2001 after Bradford reverted to a two-tier educational system.

Secondary Schools

The post-war period was dominated by the accommodation of competing conceptions of the secondary school and an ongoing debate about curricula, teaching methods and social relationships, all of which informed school design. Central government attitudes to secondary provision shifted from an early emphasis on consensus, empiricism and devolution to a more interventionist stance on selection and the curriculum. Comprehensive schools were large and complex organisations. Timetables and layouts had to accommodate a seven year age range, a range of abilities and aptitudes and the need to provide pastoral care and community facilities. The structure and 'bias' of curricula could be more or less academic, scientific/technical or vocational but the lower years generally shared a common curriculum, with exam preparation in the middle years and diversification into a range of different courses for the final few years. Progressive methods of teaching and learning included cross-curricular subject groupings and a mixture of study techniques. Teacher cooperation and a favourable pupil-to-staff ratio allowed greater emphasis on project work and private study. An increasing array of audio-visual resources became available including, from the 1980s, the personal computer.

The Ministry and the 1944 Act

The 1944 Education Act required local education authorities to implement a system of free and compulsory education between the ages of 5 and 15, organised into three progressive stages: primary, secondary and further education. The Act was silent on the subject of types of secondary school, specifying only that they be

> sufficient in number, character and equipment to afford for all pupils opportunities for education offering such variety of instruction and training as may be desirable in view of their different ages, abilities, and aptitudes, and of the different periods for which they may be expected to remain at school, including practical instruction and training appropriate to their respective needs.[81]

As much was made clear by James Chuter Ede, a former teacher and Parliamentary Secretary to the Board of Education, in a speech reported in *The Times* of 14 April 1944:

> I do not know where people get the idea about three types of school, because I have gone through the Bill with a small toothcomb, and I can find only one school for senior pupils – and that is a secondary school. What you like to make of it will depend on the way you serve the precise needs of the individual area in the country.[82]

Where, then, did 'the idea about three types of school' come from, if not the 1944 Act? 'RAB' Butler, the last president of the Board of Education (1941-44) and the first Minister of Education (1944-45), suggested that the Act that popularly bears his name was 'really codifying existing practice'.[83] A tripartite structure of grammar, technical and secondary modern schools, with entry determined by an examination at the age of 11 plus, was explicitly recommended in the advisory reports and papers upon which the Act was based, including the 1926 Hadow report; the 1938 Spens report; *Education*

after the war, the Green Paper of June 1941; the 1943 Norwood report and *Educational reconstruction*, the 1943 White Paper.[84] A ready-made collection of school types needed only slight amendment, and in many cases, existing buildings were simply relabelled. The grammar school enjoyed the cachet of being long-established and widely-recognised; its academic curriculum had long been emulated by maintained secondary schools.[85] The secondary modern school had been advocated by the Hadow committee, and had an origin in the central and senior elementary schools which emerged as a response to the 1902 Education Act.[86] Technical schools, proposed in the Spens report, grew out of trade schools and the junior departments established at technical colleges.[87]

The newly-formed Ministry of Education implicitly assumed that LEAs would submit tripartite education plans. *The Nation's Schools*, a pamphlet issued in May 1945 by a Conservative caretaker government assumed 'three broad types' of secondary education, making it clear that so-called multilateral schools, which provide more than one type of education, were an 'extreme measure', anticipated in areas of dispersed population or as a 'judicious experiment' to meet local conditions.[88] The tripartite course was cautiously held by the Education Ministers in Clement Attlee's Labour government, 'Red' Ellen Wilkinson (1945-47) and George Tomlinson (1947-51), encouraged by senior officials Sir John Maud and Anthony Part.[89] *The New Secondary Education* of 1947 professed 'to lay down no set guides for organisation', yet devoted 37 pages to describing grammar, technical and secondary modern school and only half a page to 'multilateral' or 'comprehensive' schools.[90] The latter, it was feared, would have to become excessively large in order to offer a sufficiently diverse range of courses.[91] The occasional comprehensive in the right place was permitted as an element of this empiricist, pluralist approach but a national policy of comprehensive reorganisation was, as Tomlinson remarked in 1950, 'not for our lifetime'.[92]

How are we to evaluate Wilkinson and Tomlinson's position? For David Rubinstein and Caroline Benn 'the relative ineffectiveness of the Labour left between 1945 and 1950 […] 'helped to delay this reform [the comprehensive movement] for the best part of twenty years'.[93] Post-war constraints (shortages of teachers and building materials) and priorities (primary schools had to come first) no doubt stifled the opportunity for major social reform. Although the multilateral schools had their supporters in the 1940s there was by no means a left-wing consensus, especially amongst the Labour-controlled authorities. Most in the Labour Party accepted tripartitism as a realistic means of securing equality of educational opportunity; they could, after all, point to R.H. Tawney's seminal tract of 1922, *Secondary Education for All*:

> All normal children […] may be transferred at the age of eleven + […] to *one type or another* of secondary school. […] The [Labour Party] looks forward to the time when Central Schools and Junior Technical Schools will be transformed into one part of a system of free and universal Secondary Education [emphasis added].[94]

Secondary Provision 1944-64

The population 'bulge' began to swell secondary school numbers in the mid-1950s, and the rate of secondary school completions peaked in 1958, the year of the government

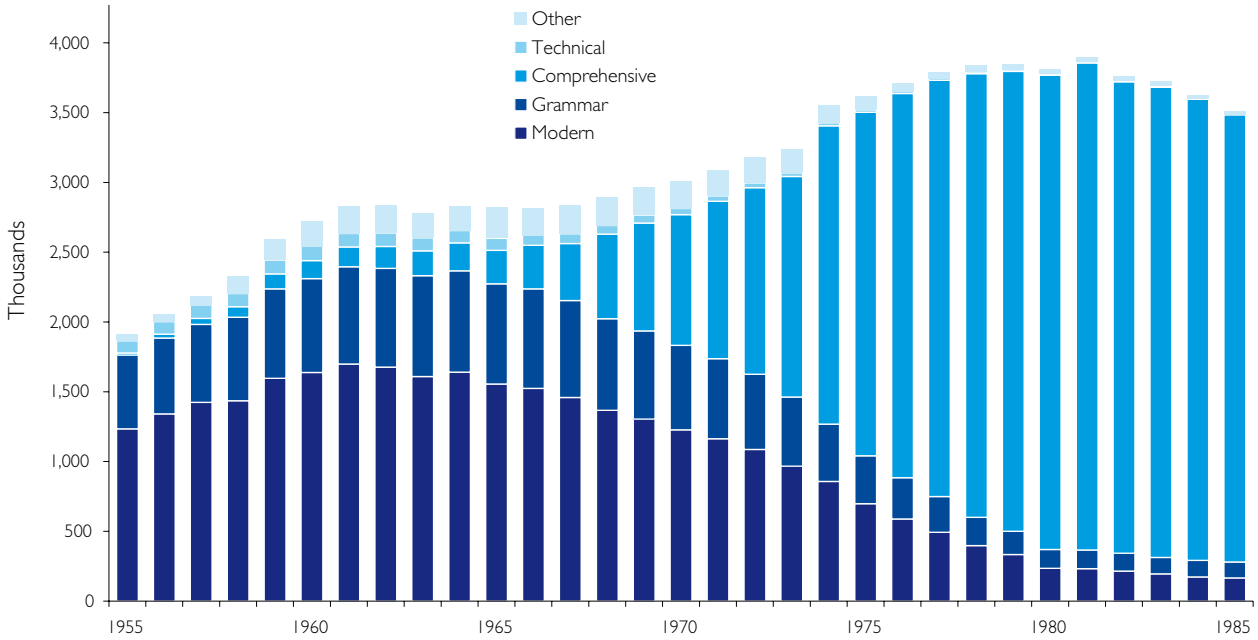


Figure 2.8: Maintained secondary schools by type in England and Wales, 1955-85. Source: Bolton 2007, 9. Data reproduced under the terms of the Open Parliament Licence.

White Paper *Secondary Education for All: a New Drive*.[95] By this time primary rolls were levelling off, and the Ministry turned its attention to improving secondary accommodation, particularly in science, technical and practical subjects. Most authorities opted for selective schemes, building secondary modern schools with a smaller number of grammars (fig. 2.8). Most took the form of phased expansions of existing sites. Despite the imposition of cost limits in 1950, secondary modern schools were generally better equipped for craft and physical education than pre-war grammars, and many had separate libraries.[96] For some Labour-controlled authorities in the north of England, the 1944 Act was an opportunity to extend the education franchise of the grammar schools.[97] They were geared to external examinations at age 16 and 18 and the number of 'early leavers' (those leaving at age 15), dropped throughout the 1950s.[98]

Nothing much became of the technical stream, except in those northern cities like Doncaster and Tynemouth which boasted a strong manufacturing tradition. Their numbers peaked in 1948 at 319 and had fallen to fewer than 100 by 1970.[99] Why did the technical schools falter? Many doubted that technical aptitude could be tested for at the age of 11. For this and historical reasons, a range of ages of admission existed: of the 268 technical school recorded in 1960, 1455 admitted at 11, fourteen at 12 and 101 at the age of 13. Technical schools were expensive to build, equip and staff; the alternative, junior technical schools within technical colleges, was tainted by pre-war associations with 'trade instruction'.[100] The 1980s saw the re-emergence of science and technology in the curriculum with the Technical Vocational Educational Initiative (TVEI) of 1983, City Technology Colleges from 1986 (page 119) and the role of Craft Design Technology in the 1988 National Curriculum.

A small number of authorities proposed amalgamating two ('bilateral') or three ('multilateral', later 'comprehensive') streams within a single building or site, which

allowed the entrance exam to be dropped. The Labour-controlled LCC had supported multilateralism as early as 1942, followed by Middlesex, Coventry, Oldham and the West Riding.[101] In Middlesex, Coventry and Bristol comprehensives accompanied large programmes of house building; they were also adopted in rural areas such as Anglesey in Wales (scheme approved in 1946) where population was small and dispersed. By the end of 1948 the Ministry had approved 16 comprehensive schools and rejected five; there were just over 100 schools by 1959.[102]

The strategy of comprehensive reorganisation adopted by the LCC was based on economies of scale: only schools with a roll of between 1,000 and 2,000 pupils, it was thought, would attract specialist teachers and a large enough intake of academic pupils to provide a lively sixth form. Planning strategies varied. Split sites resulted from combining groups of existing schools or where sites of sufficient size could not be immediately acquired. In 1976, one in five secondary schools occupied two or more sites (in Greater London the figure was closer to two in five).[103] The most insurmountable barrier to non-selective reorganisation was the perpetuation of the direct grant and voluntary aided schools in the 1944 Act (page 367). Where grammar schools could not be reorganised (where voluntary schools owned their buildings or trusts forbade), they 'creamed' the most able and brightest pupils from the neighbouring comprehensive schools, termed 'county compliments' in London. Where comprehensive schools entered into competition with their grammar neighbours on their own terms, the results could be a preoccupation with examination results at the expense of educational innovation.

Leicestershire, under Chief Education Officer Stewart Mason took a different approach to the upper and lower ends of the secondary school range (page 223-24). Mason's was a selective scheme in which secondary moderns became 11-14 Junior High Schools. At the age of 14 the brighter pupils, at their parents' request, commenced two-year Ordinary Level courses in the better-equipped grammar and technical schools, the rump staying for a final year of compulsory education in the High Schools. The plan was compatible with the county's existing building stock.

Going Comprehensive: National Policy 1965-88

The 1950s saw doubts cast on the efficiency and equality of the tripartite model and growing acceptance of non-selective education. It was clear that the much vaunted principles of the educational new deal, 'parity of esteem' and ease of transfer at age 13, had not transpired. The Crowther report of 1959 noted the benefits of comprehensive schools, and from the late 1950s the Ministry became more favourably disposed to non-selective reorganisation proposals.[104] The validity of selection at eleven plus was questioned, notably in *Educational Opportunity*, a 1963 pamphlet by Conservative Education Minister Edward Boyle.[105] 'Grammar schools for all' was Harold Wilson's perplexing slogan in the 1964 general election.[106]

Labour came to power in 1964 on an electoral platform that pledged reorganisation 'on comprehensive lines'.[107] Secretary of State Anthony Crosland's Circular 10/65 of July 1965 duly 'requested' authorities to submit plans for non-selective reorganisation. The number of comprehensives rapidly grew, although the wording of the Circular was not

strong enough to prevent LEAs as diverse as Birmingham, Kent, Bexley, Halifax, Southend and Reading from submitting plans which retained degrees of selection, or pursuing dilatory policies.[108] The internal organisation of the schools was considered a matter for governors and headteachers to determine: some schools introduced selective streams or sets whilst others opted for mixed ability groups. Most existing schools required extension to offer a sufficiently broad range of courses, and the DES offered practical guidance on adaptation.[109] Government backing for non-selective reorganisation waxed and waned with changes of government in 1970, 1974 and 1979, but with limited effect on local authority reorganisation plans.[110] As Education Secretary from 1970 to 1974, Margaret Thatcher sanctioned more plans for comprehensive schools than any other education minister before or since.[111]

The Sixth Form

The growth of the sixth form was one of the success stories of the post-war secondary school and contributed to the expansion of higher education in the 1960s. The raising of the school leaving to 16, coupled with the growing number and variety of pupils 'staying on' voluntarily and the greater demand for further education, led to a further transformation of the sixth form. Those schools which abandoned entry restrictions to the sixth form now had to provide a transition to the working world in addition to higher education. The recognition that students were maturing earlier and demanding greater responsibility and freedom in the sixth form resulted in more free time, study choice and a closer pupil/teacher relationship. The expanding 16-19 age group in schools—which trebled between 1956 and 1972—could be accommodated in different ways.[112] The retention of the attached sixth form, often through the addition of a separate block, was welcomed by teachers who enjoyed the more informal and self-directed study it offered and the stability that a mature sixth form brought to the secondary school as a whole. Attached 'sixth-form centres' were most often added to grammar schools, such as the Rosebery Sixth-Form Centre, Epsom, Surrey, built in 1966-67 to the designs of the DES Development Group (pages 115-16).

From the late 1960s, the sixth form college emerged as a separate building type, uncoupled from a secondary school and provided with a comprehensive intake and an adult learning environment. These functioned as an 'academic top' fed by a variety of secondary schools within a district. By 1988 around a hundred six-form colleges existed.[113] A third option was to integrate all education from 16-19 into a comprehensive further education college, such as Nelson and Colne College in Lancashire, blurring the boundaries between upper secondary and higher education. Falling rolls encouraged the concentration of sixth form education in sixth form or higher education colleges where numbers justified richer curricula. From the late 1970s awareness of youth unemployment brought about number of training initiatives for 14-18 year olds: some such as the Technical Vocational Educational Initiative (TVEI) of 1983 were school based. The 1980 MacFarlane report advocated a widening of the sixth-form curriculum to include technical and vocational emphases.[114]

The Secret Garden: Newsom and Curricular Reform

By 1960, the Ministry could point to numerous new primary schools (including their own development projects) which facilitated 'child-centred' approaches to teaching and learning in different ways (pages 32-34).[115] Reforming the fragmented secondary sector was a more protracted and contentious process. Timetables, staffing, departmental structures and, in turn, the design of buildings were traditionally compartmentalised according to subjects and teachers could be reluctant to exchange the specialisms in which they had been trained for a generalist approach.[116] But the move towards non-selective education, with its larger scale and ranges of abilities and ambitions, invited broader approaches and central government came to dominate curricular reform in the later twentieth century. An assertive tone was first struck in 1960 when Education Minister Sir David Eccles informed the House of Commons of a ministerial 'sally into the secret garden of the curriculum'.[117]

A number of governmental initiatives subsequently investigated aspects of secondary school teaching practice, and it was the job of Architects and Building Branch to articulate possible implications on school design. In 1961 Eccles commissioned the Central Advisory Council for Education (England) to examine the education of pupils aged 13 to 16 of 'average and less than average ability'.[118] The committee was chaired by John Newsom, Chief Educational Officer of Hertfordshire from 1940 to 1957, and its 1963 report *Half Our Future* reflected his convictions that educational reform could go some way to addressing social disadvantage. Despite its reformist tone—the report advocated the raising of the school leaving age to 16 and cast doubt on the intelligence and attainment tests that determined pupil selection—the timing of *Half Our Future* seems unfortunate in hindsight. It was widely assumed that its terms of reference were limited to secondary modern schools, and the policy of central government soon turned towards non-selective education. The Newsom report was consequently undervalued.[119] Yet it had a broader relevance to secondary pedagogy, particularly in its fresh thinking on the role of practical subjects and occupational interests, the contribution of social and extra-curricular activities and the relationship of schools to the wider community.

The Architects and Building Branch Development Group, working with senior advisors Leonard Gibbon and Eric Pearson crystallised the spatial implications of the Newsom philosophy.[120] They include the following:

> that [pupils] will be able to carry through a particular job of work, or pursue a particular interest with reasonable continuity - i.e. that the day will not be fragmented into 35 minute particles;
>
> that each will have some degree of choice in the work he or she does;
>
> that it will be hard to draw firm demarcation lines either between subjects or between the practical and the academic;
>
> that for part of the time pupils will work individually on both practical and reference studies, but with experts and helpers always available; and for part of the time in groups of varying sizes (half a dozen or so for special coaching; 15-20 for a discussion group; 50 or 60 listening to a lecture or watching a film);

> that the pupils will similarly be divided into socially identifiable groups, each with accommodation reflecting in some way or other the group's identity, and each with a stable relationship with one or more members of the staff.[121]

As part of the Newsom investigation the architects David and Mary Medd, at the suggestion of Architects and Building Branch's administrative head Derek Morrell, developed a series of theoretical studies and sketch designs, some of which were published in the ensuing report (fig. 2.9).[122] They include a science and craft centre, drama, music and art centre, arts centre, centres for younger and older pupils and a 'club house' which combined social facilities for older pupils and adults with acquisition of 'home management' skills. Large schools were to be broken up into upper and lower schools on a single campus, realised at the Abraham Moss School in Manchester (page 117). The Medds' work acknowledged a move away from a compartmentalised curriculum to more informal and flexible aggregations of related topics into 'centres of interest'.[123] This implied the cooperation of two or more teachers of related subjects and the sharing of resources in a more fluid layout. The legacy of the 1960s move towards more integrated and inter-disciplinary learning is a latter-day emphasis on investigative project work, such as the coursework component of the GCSE qualification introduced in 1988.[124] Aspects of Newsom's pedagogical aspirations and the Development Group's architectural response recurred in the secondary schools subsequently designed by Architects and Building Branch and by likeminded authorities such as Nottinghamshire (page 139).

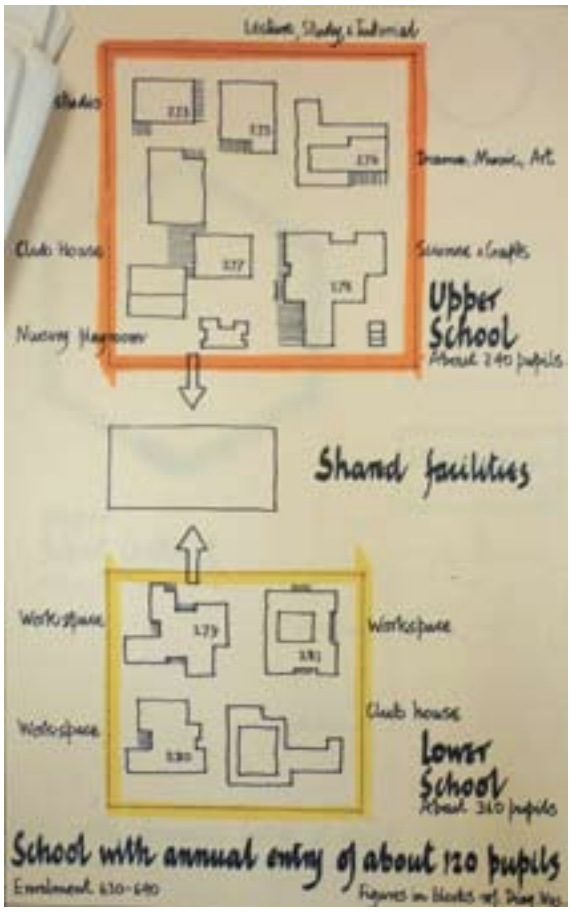


Figure 2.9: A design study of 1962 for a small secondary school organised into upper and lower schools, each with its own pastoral and social facilities. It formed part of the evidence submitted by the MoE Architects' and Building Branch to the Newsom committee. Institute of Education Archives: ME/T/1

Other curricular initiatives of the 1960s varied widely in their aims and agendas. The Curriculum Study Group (CSG) was established in 1962 by Sir David Eccles on the model of the Architects and Building Branch's Development Group, and Derek Morrell was transferred from Assistant Secretary of Architects and Building Branch to head it.[125] When the CSG aroused the suspicions of the teaching profession it was reconstituted in 1964 as the independent Schools Council for Curriculum and Examinations at Morrell's suggestion. Extending

the range of curricular resources became a goal of the Nuffield Foundation, which undertook influential projects on mathematics, science, languages and the humanities in cooperation with the Schools Council, inspired by the curriculum reform movement in the United States. The Curriculum Laboratory, established by Charity James at Goldsmiths' College, London in 1965, encouraged the assimilation of subjects into inter-disciplinary 'themes' or 'interest areas'.[126]

It followed that an interdisciplinary curriculum required a wide armoury of study techniques and resources. DES educationist Eric Pearson called for the assimilation of the investigative, 'multi-media' teaching associated with technical and science subjects with the academic approach of the humanities: 'we bring books to the benches and benches to the books'.[127] Cross-curricular approaches could be facilitated with more open layouts of the American variety, and Michael Hacker of Architects and Building Branch suggested in 1971 that 'for close and free interaction, nothing less than the dissolution of the physical boundaries surrounding subject group and activity will be necessary'.[128] Books were supplemented with tapes, slides, films and, from the 1980s, computers, although some cautioned that technology was subsuming first-hand discovery with more passive, retrogressive modes of learning.[129] Audio-visual media required more space for individual study and account for the popularity of the 'learning resource centre' in the late 1960s.[130]

Planning Secondary Schools

In the years after 1944 there was no generally-accepted layout for the new types of secondary school, due in part to the absence of a confident educational brief. The challenge was how to break up a big school into manageable, mixed-ability units which addressed educational and pastoral needs. Architectural ingenuity was required to overcome problems of scale and congestion (particularly in pupil transfer between lessons). The first secondary moderns built at Middlesex under Architect C.G. Stillman took the pre-war form of rows of classrooms off a spinal corridor. In early 1950 he commissioned seven experimental schools, three from three private architectural practices and four from his own department. Responding to limited sites and the imposition of cost limits, Stillman specified a compact plan, with as much teaching accommodation as possible within a two-storey block. The first to be completed was the Woodfield Secondary Modern School, Cranford, designed in 1950 by Denis Clarke Hall and built in 1953-54. It set first-floor classrooms around a double-height, top-lit core of hall, gym and entrance hall.[131] Smithdon School, Hunstanton of 1949-50, the first built work of Alison and Peter Smithson, was the winner of an architectural competition assessed by Clarke Hall. It retains the tight and formal double-courtyard plan of the pre-war county grammar, with a series of steel staircases ascending to paired first-floor classrooms with bi-lateral lighting.[132] On constrained sites, there was little option but to opt for teaching blocks or slabs of four storeys or more, adjoined by single-storey halls, gyms and workshops. Disapproved of by Architects and Building Branch, this became the default mode of planning in London, where the bulk of the block could be leavened by massing, materials or detailing (page 182).

But many educationists wished to dispel such monumentality in favour of more informal, diffuse and less institutional models. At St Crispin's Secondary Modern School,

Wokingham, Berkshire of 1951-53, David and Mary Medd of the MoE Architects and Building Branch devised a loose and informal single-storey layout, anchored by a four storey teaching block. Their education-led methodology, developed in the design of primary schools, translated in the secondary modern school to groups of classrooms adjoined work rooms with sinks and benches for joint practical projects. Where sites and budgets allowed, the constituent parts of a secondary school could be articulated as a series of freestanding blocks, linked by paths, corridors or covered ways, as at the MoE Development Group's Lyng Hall Comprehensive School in Coventry of 1953-55.[133] Such 'campus plans' permitted the prescribed levels of natural lighting and satisfied the Ministry's preference for single-storey buildings. A group of separate buildings was easy to extend, boasted good acoustic insulation and lent itself to selective community use, but circulation could be dispersed and confusing, and there was little opportunity for the traditional 'processional' entry into a foyer or crush hall. Christopher Dean, a job architect at Lyons Israel Ellis, a private practice who favoured campus planning, recalled 'the angst of the entry into a corridor instead of a space'.[134]

Campus plans and other layouts were sometimes based on social groups and a system of pastoral care. From independent boarding schools came the idea of a house system, with its connotations of separate social bases, a mixture of age groups and decentralised dining. Houses were adopted in the early comprehensive schools of London, Coventry, Nottinghamshire and Staffordshire. At Arnold Grammar School, Nottinghamshire of 1957-59, the Ministry's Development Group adopted a selective approach, with houses only for the middle years (page 127). The Wyndham School, Egremont in Cumbria of 1962-64 was organised into a reception group for year one, houses for years two-five and a self-contained sixth form.[135] The house system fell out of use in the early 1960s, although it persisted at Coventry (eg. President Kennedy School of 1965-67), the David Lister School in Hull of 1964-66 by Lyons, Israel & Ellis and Stillman and Eastwick-Field's Clissold Park Comprehensive School, north London of 1967-70. In its place, horizontal groupings of year groups gained dominance. The first London school planned with year rooms rather than houses was Malory School, London of 1958 by Bridgewater and Shepheard. The logical conclusion of horizontal organisation was separate upper and lower schools on a single site. Acland Burghley, Camden of 1963-66 by Howell, Killick, Partridge and Amis was organised into lower, middle and upper schools with year rooms rather than houses (pages 199-201).

Increased emphasis on private study and centralised resources led to a greater convergence in the planning of secondary schools and colleges from *c*.1970. At Leicestershire, a 'new wave' of school plans emerged at Manor High School, Oadby (finished 1968); Bosworth College, Desford (1967-70 by Gollins Melvin Ward); Wreake Valley College, Syston (1969- 71, also GMW) and Countesthorpe (1967-70 by Farmer and Dark).[136] Fluid layouts of teaching areas, planned around a central library or resource centre, encouraged private study and small group project work. Sixth-form, youth and adult facilities were separated out, as were sports facilities, creating an amorphous plan with a central core and long limbs (pages 224-25). The Leicestershire schools were widely published in the architectural journals, where they were favourably compared with John Bancroft's 1,725-place Pimlico School in Westminster, built in 1967-70.[137] This took the form of a long, low spine block with an internal 'street' (pages 201-03). The street

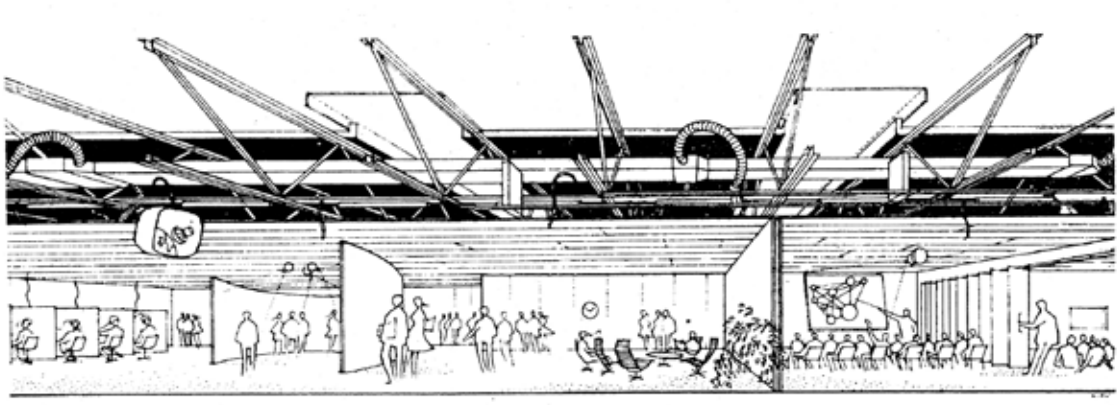


Figure 2.10: This sectional perspective, from Foster Associates' competition entry for Newport High School in South Wales, reflects the influence of North American concepts of the flexible subdivision of a 'universal' space. Reproduced with permission from the Architectural Review, *vol.147, no.875, January 1970, p.367.*

recurred at Hampshire County Council's Crestwood Secondary School of 1981-82 (page 302-03). In the United States, the idea of a single space flexibly divided with screens or furniture was promoted by the Ford Foundation's Educational Facilities Laboratory and adopted by Ezra Ehrenkrantz in his School Construction Systems Development (SCSD).[138] SCSD was the key influence on Norman Foster's 1967 competition entry for the Newport High School in South Wales (fig. 2.10), the US-designed American School in London of 1969-71 and the GLC's Waterfield Secondary School in Greenwich, c.1971-76 (pages 205-08). Few open plan layouts survive today.

Like Pimlico's street, late-twentieth-century attempts to humanise secondary school planning took cues from established urban typologies. Informal 'village' layouts were chosen for the DES community schools at Central Lancashire New Town and Victoria Centre, Crewe (page 118-19). The influence of 'low rise-high density' housing schemes was apparent at Lowton High School, Wigan, Lancashire, designed in 1975 by the Ellis Williams Partnership (page 363).[139] Further afield, Léon Krier's unbuilt design of 1977-79 for a school at the French new town of St Quentin en Yvelines took the form of a compact axial layout inspired by the classical city.[140] Christopher Alexander's Eishin Higashino High School and College Campus of 1982-85 was similarly 'urban' in character, with narrow streets, broad squares and a mixture of private and public space.[141]

The Community School

The principal of community education, a recurring thread in twentieth-century school building, was based on the enlargement of the range of resources provided by a school and the widening of access to those resources by combining building types, users and uses hitherto kept separate.[142] For Colin Ward, 'the trend for schools to become larger and more lavishly equipped underlined the absurdity of keeping the school as a separate and segregated community'.[143] Others stressed the social value of integrating schools with their communities, strengthening links between home and school, and embodying the principle of universal access to education.[144] The community schools of the 1960s and '70s anticipate a late-twentieth-century move towards mixed use as an agent in urban regeneration. The smooth running of a community school was dependent on synergies between its users and rapprochement between its managers.[145] In this sense, it was one of the key educational symbols of the post-war consensus (page 153).

Rationale and Precedents

At its simplest, community use meant making existing facilities available out of school hours. Sir Donald Gibson made the point at an RIBA conference in 1968: 'why should acres of playing fields and school swimming baths lie idle in the summer holidays when many children have only the street to play in?'.[146] The idea was not a new one: board schools had long been available for use by youth clubs, adult education classes and institutes of various kinds in the evenings, weekends or holidays. But the facilities of new buildings could be greatly enhanced by the post-war administrative innovation of 'joint provision' in which additional facilities, suitable for use by the general public, were funded by non-educational monies. Some amenities, such as sports halls, were managed and maintained by other service departments of the local authority. Rural or urban district councils might fund additional sports facilities, a parish meeting room or enlarged kitchen or dining room.[147]

The 1960s crop of community schools drew on two precedents. Henry Morris, Director of Education at Cambridgeshire County Council from 1922 to 1954, added social and educational amenities to all-age 'village colleges', which served large and dispersed catchment areas. The most well known was Impington Village College of 1938-40 by Walter Gropius and Maxwell Fry. Morris established contact with a younger generation, including John Newsom, Stirrat Johnson-Marshall and Stewart Mason, who would take his ideas forward after the war.[148] The challenge was how to adopt village colleges to more densely built-up districts with their smaller catchment areas and more complex patterns of users and needs. The second precedent was the 'youth wings' added to many secondary schools from the early 1960s on the recommendation of the Albemarle report of 1960.[149] These were used as informal drop-in centres in the school day and as youth clubs in the evening, and provided with their own entrances and sometimes a distinct architectural treatment from the school proper, as at Powell & Moya's additions of 1970-73 to Plumstead Manor School in Greenwich (page 204).

Dual Use

The influence of the village college movement was most apparent in the new secondary school buildings, usually in semi-rural locations, which included 'dual use' leisure, cultural or educational facilities. Halls, gyms, libraries, sixth-form common rooms and cafeteria as well as outdoor sports pitches and courts were usually most useful to the community at large. Joint provision was made feasible by certain developments in secondary schools: they became larger, reaching the critical mass for more specialised equipment, and some were organised around cross-curricular 'centres of interest' rather than subjects (pages 46-48). The balance of funding, conventionally shared between the county council and urban district council on a 40/60 basis, dictated that education priorities came first, and plans expressed a balance between integration and segregation which was determined by the local education authority, with varying degrees of consultation with teaching staff and users.[150]

Gordon Bessey, director of Education at Cumbria, was behind the integration of district sports centres into big new comprehensives such as Wyndham School, Egremont, Cumberland of 1962-64 by job architects Fred Bell and R. Clementson.[151] At Nottinghamshire, Patrick Shallard, Chief Education Officer from 1968-74 was another advocate of joint provision.[152] Wyndham was Nottinghamshire's model for the generous sports facilities in secondary schools at Bingham, Worksop, Newark, and Carlton

Figure 2.11: At the Cresset Centre, Peterborough (completed 1978, demolished c.2006) a sophisticated gradation was planned between exclusive and communal facilities, which allowed the Bretton Woods Comprehensive School it own site whilst pupils enjoyed use of the library and sports hall of the adjacent community centre, planned by the Peterborough Development Corporation.[156] See also fig. 1.2. Institute of Education Archives: ME/E/19/18.

Figure 2.12: The Abraham Moss Centre in Cheetham Crumpsall, North Manchester, built 1971-74 to the designs of the DES Development Group. An ambitious attempt to collocate a comprehensive school and further education college with a wide range of community facilities. Institute of Education Archives: ABB/B/1/41/1.

Cavendish (pages 139-40). Leicestershire, under Director of Education Stewart Mason, built three new community colleges in 1967-71 in which a central resource centre, and facilities for art, drama and sports could be shared with the community (pages 224-27). And at the new and expanded towns, the development corporations part funded dual use facilities at the large secondary schools to boost the limited community facilities of local centres (fig. 2.11).[153]

The Plowden committee suggested that the community use of primary schools take the form of a parents' room or a bigger hall with storage for community groups.[154] The DES Architects and Building Branch accordingly included a family centre at the Chaucer School at Ilkeston and Guillemont Junior School was 'zoned' so that facilities available for the community were separated from learning areas (pages 113-15). Exceptionally, a small number of places of worship, most of them Roman Catholic churches, were built with attached primary schools (page 380).

The Multi-use Centre

The logical conclusion of community education involved breaking the schools mould by co-locating educational provision along with other facilities into a new and urban building type, a single, multi-use 'centre' or 'complex'. This combined one or more schools with a wide range of community facilities, sometimes expanded to include civic and commercial functions in addition to sporting and arts facilities. The community centres were often envisaged as focal points in the renewal of deprived areas, as at the Abraham Moss Centre, Manchester and the Sutton Centre in Nottinghamshire (pages 117 and 146-47).

The concentration of a diverse range of functions and users under a single (usually sprawling) roof was a powerful expression of the integrationist, mixed-use philosophy of community schools, and can perhaps be related to the architectural interest in 'megastructures' briefly fashionable in the 1960s.[155] Part of the novelty for both planners and users was the blurring of public and private realms, also occurring in shopping centres. Indeed, some of the community schools of this period feature an internal street or 'mall' for pupils and adult users alike. The architectural challenge was how to produce

a welcoming and readily navigable layout, and how sets of users and activities were prioritised and segregated. Funding and managing such complex and ambitious entities called for co-ordination and compromise at all levels, from local authority departments and managers to groups of users. The privatisation of leisure and cultural facilities which became prevalent in the 1980s also had implications on community schools.

Aside from dual management, the biggest problems of the community school were balancing the need for security and supervision with encouraging access, a dilemma exacerbated by the prevalence of vandalism and arson in the 1970s. But to exponents of community education such as Ron Mitson, the first principal at Abraham Moss, accessibility was a principle to be upheld:

> 'the openness of the centre, exemplified by the public right of way, 25 different entrances, and the fact that once inside you can go virtually anywhere, makes security difficult. We must encourage use, not place physical or psychological barriers against entry, if we are to attract those who are most in need of our resources'.[157]

A series of 1970s designs by the DES Development Group reformed the single building multi-use centre, breaking it down into a series of separate buildings or 'sub centres' linked by open or covered paths. Components were thus clearly articulated and could be phased, funded, and managed as discrete entities. At the Victoria Centre in Crewe, Cheshire, community provision formed part of a wider strategy for urban renewal (pages 118-19).

Special Schools

The post-war era was a time of expansion and change in the provision of specialised education for disabled children.[158] By 1973, 7% of all new schools were special schools.[159] The trend reversed in the 1980s with the 'mainstreaming' of disabled children. The history of special education illuminates contemporary debates and conventions surrounding people with disabilities. The changing terminology used to describe and categorise disability is part of this history: adjectives such as 'delicate', 'defective', 'educationally sub-normal' and later 'handicapped' fell out of use in favour of terms such as 'disabled', 'learning difficulties' or 'special educational needs'.

The development of special education can be divided into four phases which relate to models of attitudes and policies towards disability.[160] In the charity model, the disabled individual is the recipient of welfare, provided by special services or institutions. The medical model emphasises the diagnosis and treatment of a particular condition in the individual, and implies greater specialisation. The social model, developed in the 1970s, views disability as the product of barriers within society, including prejudice, discrimination and exclusion from participation. Central to the rights-based model is a belief that people with disabilities have human rights to access, equality and participation; individual empowerment and institutional accountability is paramount.

'Building for Disablement'

Special schools have an origin in the blind and deaf schools provided from the mid-nineteenth century by charities, churches or the Poor Law for pupils whose disabilities excluded them from mainstream education.[161] The 1870 Education Act made no special provision for disability, but a small number of urban school boards erected special blind and deaf schools. Children exhibiting other types of disability were less well understood and generally excluded as ineducable or detrimental to the education of other children. The Elementary Education (Blind and Deaf Children) Act of 1893 compelled the boards to educate children between the ages of 7 and 13 with visual or hearing impairments, and a second, permissive Act of 1899 empowered the boards to train physically and mentally 'defective' and epileptic children. Classes were smaller and discipline

Figure 2.13: Meldreth Manor School, Hertfordshire, designed by the Architects' Co-Partnership for the Spastics' Society (now Scope). Reproduced from Era, *no.29, November-December 1972, by kind permission of* RIBA *East.*

and teaching methods could be more relaxed and liberal than in the elementary schools, but a vocational emphasis was also present, particularly in the industrial schools for maladjusted children.

In the early twentieth century, special educational provision became increasingly based on medical diagnosis and isolation. This can be seen in the light of more general trends such as the reform of school design to provide improved health and hygiene and the universal provision of medical schools inspections. The special education service provided by LEAs developed independently from their programmes of primary and secondary education. Some special schools reused redundant elementary schools or took the form of annexes or 'centres' to existing buildings. Detached country houses were acquired for residential special schools. Open-air schools, which usually took the form of light-weight, prefabricated and partially open-fronted pavilions were influential attempts to improve health and sanitation through ample natural ventilation and sunlight. Although usually provided for children identified by the Schools Medical Officer as tuberculous or 'delicate' (ie. underweight, undernourished or suffering from anaemia, asthma or heart conditions), some open-air schools also accommodated physically-disabled and partially-sighted children.[162]

Post-war Special Schools

After the Second World War disability continued to be seen as a medical matter and advances in diagnosis and treatment led to an increasingly classificatory approach through which children were fitted to a range of special schools. The Education Act of 1921 had charged LEAs with providing for four classes of disabled children: blind, deaf, defective (including physical and mental disability) and epileptic. In 1945 this was increased to eleven: blind, partially sighted, deaf, partially deaf, delicate, diabetic, educationally subnormal, epileptic, maladjusted, and physically handicapped and those with speech defects.[163] Some debilitating conditions such as poliomyelitis, tubercolis and spina bifida virtually disappeared in the 1950s and numbers within the delicate and blind categories sharply declined. But advances in medical practice meant that more babies with severe and multiple disabilities survived birth and early childhood, and more children were diagnosed with severe learning difficulties due to a greater understanding of neurodevelopmental disorders such as autism, Asperger and Down's syndrome.

Specialisation often meant all-age schools, long since banished in mainstream education and large catchment areas. Teaching was generally characterised by small classes, more teaching assistants and informal teaching methods with an emphasis on individual work and practical activities, anticipating similar developments in mainstream school design.[164] Buildings had to accommodate therapeutic treatments (hydrotherapy pools and housecraft units appeared from the late 1950s) and technological aids such as induction loops for the hard of hearing. From the early 1980s, computers came to play an increasing role in special education. A group of authorities in north-eastern England cooperated to form a regional education service for children with rarer conditions.[165] The larger cities, especially London, had the demand and the means to develop considerable educational and architectural expertise on design for disabilities, and to invest in technically-sophisticated facilities. By 1980, half of the places at some inner-London

Figure 2.14: Flight, *a bronze of 1960 by Heinz Henghes at the Elm Court School and Clinic for Deaf Children in West Norwood, Lambeth. Behind is the school, designed by the celebrated British practice of Fry, Drew and Partners. Reproduced by kind permission of Ian Henghes (www.henghes.org).*

schools were filled by children from neighbouring authorities.[166] Sites were designed to cope with bus services that ferried children large distances from home to school.

Challenging educational briefs, interpreted by designers with expertise in working with disabled people could result in highly-specialised buildings of intrinsic architectural quality. Special schools were usually tightly planned and inward facing. Load bearing cavity-wall construction was generally favoured for its acoustic performance and comforting solidity, and fairly deep plans were combined with more enclosed teaching areas than were encountered in mainstream schools. The GLC Bromley Hall School for the Physically Handicapped of 1966-67 (pages 209-10) featured enclosed home bases opening on to small courtyards. Spaces could be staggered for greater informality and enclosure as at David White's unbuilt design for St Francis Special School in Hampshire (page 277). At Foster Associates' schools for the Spastics Society at Hackney and Liverpool a single open plan space was divided by four service cores and moveable screens (page 363).[167] Administrative suites were often expansive and set apart, reflecting complex staffing patterns which included peripatetic or part-time specialists, student teachers or voluntary helpers. More provision was usually made for circulation, with wide corridors and doors, and lifts and slide emergency exits in multi-storey buildings. Much-needed design guidance came with *Designing for the Disabled* of 1963. Its author, Selwyn Goldsmith (1932-2011) contracted polio after graduating from the Bartlett School of Architecture in 1956.[168]

'Mainstreaming' and Universal Access

Only in the later 1960s did arguments emerge for greater assimilation of disabled children. First to receive attention were those children deemed 'incapable of receiving education at school' under the 1944 Education Act, for whom junior training centres, day care centres or hospital schools were provided by local health authorities or regional hospital boards.[169] Such buildings were not designed by schools architects under DES cost limits and often had a different appearance and layout to special schools. The

Education (Handicapped Children) Act of 1970 abolished the legal distinction between those children who were, and those who were not considered educable in schools, and transferred responsibility for the latter from the Department for Health to the Department of Education and Science (DES). Perspectives on children with severe, multiple and long-term learning disabilities became less medical and more educational, and the switch resulted in a small group of all-age schools for severely disabled children. The DES issued a Design Note on *Designing for the Severely Handicapped* in 1972.[170] The Queen Elizabeth II Jubilee School, Westminster of 1974-77 by GLC architect Brian Goldsmith was singled out by the schools inspectorate as a model of provision for the severely disabled.[171]

The integration of the majority of disabled children in mainstream schools soon followed. A more inclusive attitude to education was underpinned by the ideal of comprehensive education in its widest sense and rights to equal access and participation in society. Following the advice of the Warnock report of 1978, the 1981 Education Act replaced the statutory categories of handicap with a 'continuum of need' within a single, legally-defined term of Special Educational Need (SEN). Warnock later recalled:

> Children as far as possible who had special educational needs were to be educated with other children: they were no longer 'a race apart'. And we did try very hard to get away from the medical model in which one was concentrating on what was wrong with the child, [instead] thinking in terms of how far they could get along the common educational road.[172]

The Warnock report contended that although special education had been developed for one in fifty school children, a figure closer to one in five would require some form of special educational provision at some time in their school career, and much of this could be based in mainstream schools.[173] The report had an immediate effect on local authorities: Hampshire County Council cancelled a school for the severely disabled within months of its publication (page 277). Many special schools were closed and children were taught in special classes or units within larger mainstream schools. Warnock's presumption was that the school should fit the child rather than the other way around, but the new SEN framework was implemented without additional funding and often without adequate alterations to existing buildings.

The 1980s and 1990s saw a movement for disability rights, and access legislation followed with the addition of Part M of the Building Regulations in 1985 and the 1995 Disability Discrimination Act. In *Designing for the Disabled – The New Paradigm* (1997) and *Universal Design* (2000) Selwyn Goldsmith expanded on the social model of disability to suggest that access should be for all, not solely for the disabled. His concept of 'architectural disability' emphasised how the built environment can embody institutional discrimination against large sections of society including children, the elderly and adults with infants in pushchairs. The principal was applied to schools with *Inclusive School Design*, a Building Bulletin of 2001.[174]

ENDNOTES

1 Quoted in Saint 1987, 48.
2. http://www.ehs.org.uk/othercontent/Walsh30a.pdf (accessed 15 August 2012); DES 1968 (Design Note 1).
3. Darvill 2000, 25.
4. Medd 1976, 98-99.
5. MoE Circular 8/60 stated 'no resources can be spared for expansion and no teachers can be spared who might otherwise work with children of compulsory school age'. This was partially relaxed in 1964.
6. Bradburn 1989, 229.
7. For the influence of Piagetian thinking on English architects see Medd 1976, 11.
8. Parry and Archer 1974, xiii.
9. Medd 1976, 11.
10. Central Advisory Council for Education (England) 1967.
11. Central Advisory Council for Education (England) 1967, p.132.
12. *Urban Programme Circular*, no.1, October 1968.
13. Medd 1976, 8.
14. Part 1979, 231.
15. DES 1978 (Building Bulletin 56); DES 1980 (Broadsheet 1).
16. *A History of the Pre-school Learning Alliance* at www.pre-school.org.uk/document/599.
17. 'The mothers' loneliness and boredom are also major social problems which play centres and groups might help to solve': Note of Reservation on the proposed nursery expansion by Mrs Bannister, in Central Advisory Council for Education (England) 1967, p.486.
18. Cherry and Pevsner 2002, 705-06.
19. *Architect's Journal*, vol. 163, no. 25, 23 June 1976, pp.1225-38.
20. *Building Design*, no. 548, 5 June 1981, pp.22-23.
21. Medd 1976,12.
22. DES 1968 (Design Note 1), 6.
23. Medd 1976, 40.
24. Medd 1976, 39.
25. Parry and Archer 1974, 120.
26. Board of Education 1926.
27. Hansard, House of Lords Debate, 10 February 1965, vol. 263, cc.129-266.
28. DES Circular 16/69. McConnell 1968, 1307-1310.
29. Cunningham 1988, 11.
30. Medd 2009, 27.
31. Cunningham 1988, 192.
32. Central Advisory Council for Education (England) 1967.
33. Geen 1985; Cunningham 1988, 87.
34. Ministry of Education 1945.
35. 'Hen and chicks' plan: Saint 1987, 138; 'Cluster' plan: Wigglesworth 1965, 268.
36. Early examples are Aboyne Lodge School in St Albans, built in 1949–50 to the designs of job architect Donald Barron and Limbrick Wood Primary School in Coventry of 1951–52 by MoE Development Group (job architects Michael Smith, Jack Lloyd and E.C. Tory). 'Bays and backwaters': Ministry of Education 1964 (Building Bulletin 24), 4.
37. Ministry of Education 1964 (Building Bulletin 24).
38. Ministry of Education 1961 (Building Bulletin 18), 112.
39. Hertfordshire were again the pioneers. For early examples see Templewood Primary School, Welwyn Garden City (1949–50, job architect A.W. Cleeve Barr); Oakland Infant School, East Barnet (1950–51 by Architects Co-operative Partnership); Morgan's Walk School (1948–49, job architects Bruce Martin and Michael Smith); Greenfields Primary School, South Oxhey (1951–52, job architect Henry Swain) and Kenilworth School, Borehamwood (1951-52, job architects R.I.E. Haynes and L. Hope).
40. Two early Herts deep plans, Summerswood Primary School at Borehamwood (1950–52, job architect Bruce Martin) and Beechwood Day Nursery at Garston (1951, job architect Anthony Williams) were the result of an experiment with a new prefabricated system on a 3'4" module (Saint 1987, 103–05).
41. Brogden 2007; Franklin 2012b.
42. West Riding is the well-known example. In Worcestershire too, different ages of transfer were part of a strategy to maximise the reuse of existing buildings (Nigel Wyatt, pers.comm, 28 March 2012).
43. Benn 1973, 294.
44. Crook 2008.
45. Hansard, House of Commons debate, 27 January 1964, vol. 688, cc.40-164; Central Advisory Council for Education (England) 1959; Central Advisory Council for Education (England) 1963.
46. DES 1965 *The Organisation of Secondary Education*. Circular 10/65. London: HMSO.
47. Wyatt 2010, 8.
48. Crook 2008.
49. Benn 1973, 294.
50. Wyatt 2010, 3.
51. Crook 2008, 15.
52. James Parke, pers.comm., 11 January 2011.
53. Initially established as the Inter LEA Middle Schools Forum (Wyatt 2010).

54. National Middle Schools Forum, Middle School Directory 2011: http://www.middleschools.org.uk/documents/reports/Middle%20School%20Directory%20-%2020llvl.doc, accessed 15 August 2012.
55. Crook 2008.
56. Central Advisory Council for Education (England) 1967, 142.
57. DES 1966 (Building Bulletin 35).
58. DES 1983 (Design Note 32).
59. HM Inspectors of Schools 1983, 1.
60. Education Act 1964 (c.1), London: HMSO.
61. DES 1983 (Design Note 32), 6.
62. DES 1966 (Building Bulletin 35), 138.
63. DES 1966 (Building Bulletin 35), 137.
64. Guy Hawkins, pers.comm., 16 September 2009.
65. HM Inspectors of Schools 1985.
66. HM Inspectors of Schools 1983.
67. DES 1966 (Building Bulletin 35), 138; David Medd, pers.comm., 3 July 2008.
68. DES 1983 (Design Note 32), 2.
69. A DES investigation of 1979 visited 22 purpose-built middle schools in nine education authorities (DES 1983 (Design Note 32), 3).
70. DES 1983 (Design Note 32), 3.
71. Seaborne and Lowe 1977, 183.
72. West Riding County Council Education Committee 1967, Appendix B.
73. Chalk 2006, 35-36.
74. DES 1983 (Broadsheet 13).
75. De Grey later joined Foster Associates, where he remains to this day.
76. *Architectural Review*, vol. 153, no. 912, February 1973, pp. 111-18.
77. .Medd 2009, 34. W.E. Forster, MP for Bradford had been instrumental in introducing the 1870 Education Act. Margaret McMillan and Ralph Crowley (Mary Medd's father) both worked in Bradford in the early twentieth century.
78. Guy Hawkins pers.comm., 10 March 2011.
79. David Medd (2009, 34) felt that Delf Hill was 'not particularly pleasing externally'.
80. Guy Hawkins pers.comm., 16 September 2010.
81. Education Act 1944 (7&8 Geo. 6, c. 31), London: HMSO. According to Lord Alexander, much of the bill was drafted by Maurice Holmes (Alexander 1977, 380-81).
82. Quoted in Chitty and Dunford 1999, 20.
83. Lowe 1992, 15.
84. Board of Education 1926; Board of Education 1938; Board of Education 1943A&B.
85. In the first half of the twentieth century grammar schools were sometimes termed secondary schools (in a more restricted sense of the word).
86. 'Schools of the type of the existing selective Central Schools, which give at least a four years' course from the age of 11+, with a 'realistic' or practical trend in the last two years, to be known as Modern Schools' (Board of Education 1926, 175). The term senior school, tellingly derived from senior elementary school, was occasionally used for secondary modern.
87. Board of Education 1938, chapter 8.
88. MoE 1945b, 13, 22-23.
89. Francis 1997, 145.
90. Francis 1997, 143-44.
91. 'There is not sufficient experience at present to justify a general reversal of past practice which does not favour very large schools' Ministry of Education Circular 73, December 1945. *The Nation's Schools* and *The New Secondary Education* voiced similar reservations.
92. Hansard, House of Commons debate, 17 July 1950, vol. 477. cc.1973.
93. Rubinstein 1979, 161; Benn 1980.
94. Tawney 1922, 7; Francis 1997, 142-43.
95. Seaborne and Lowe 1977, 186; MoE 1958.
96. Seaborne and Lowe 1977, 186.
97. Maclure 1984, 240.
98. Maclure 1984, 240.
99. Bolton 2007, 8.
100. Bailey 1990, 97-98.
101. Classey 1998, 8.
102. Hansard, House of Commons debate, 2 December 1948, vol. 458, cc.209W.
103. *Education*, vol.152, no.21, 24 November 1978, p.505.
104. Pile 1979, 87.
105. Weekes 1986, 13.
106. Wilson 1964, 10.
107. *The New Britain*, Labour Party Manifesto for the 1964 General Election, published as Wilson 1964.
108. Weeks 1986, 32.
109. DES 1967 (Building Bulletin 40).
110. Circular 10/70; Circular 4/74; Education Act 1979.
111. Although Circular 10/70, introduced at the beginning of Edward Heath's premiership, announced that the government would accept no further LEA plans for wholesale comprehensivisation, LEAs continued to submit plans, presented as individual school plans, which were duly accepted.
112. Ward 1976, ix.
113. Lowe 1997, 9.
114. DES 1980; Hawkins 1984, 82.

115. DES 1964 (Building Bulletin 24); Franklin 2012b.
116. Maclure 1984, 249.
117. *Hansard*, House of Commons debate, 21 March 1960, 620 cc. 52. For later attitudes to primary teaching and curricula, see DES 1992.
118. Central Advisory Council for Education (England) 1963, v.
119. Maclure 1984, 243.
120. Maclure 1984, 251.
121. Central Advisory Council for Education (England) 1963, 88-89.
122. Maclure 1984, 252; Institute of Education Archives: ME/T/1.
123. Maclure 1984, 252.
124. Michael Hacker pers.comm., 2 November 2010.
125. Morrell was Assistant Secretary 1959-62. Fries, R 2004 'Morrell, Derek Holtby (1921-1969)', in *Oxford Dictionary of National Biography*, Oxford University Press.
126. *Architects' Journal*, vol.147, no. 26, 26 June 1968, p.1481; James 1972.
127. Institute of Education Archives: ME/E/10/3 includes an A&B Branch memorandum of 6 March 1968 by Eric Pearson, written for the Abraham Moss development project.
128. Hacker 1971, 27.
129. 'The Evolving School', *Trends in Education*, no. 2, April 1966, p. 5.
130. *Paul Hamlyn Centre, Slough by Richard Rogers Partnership, 1993-96*, report of 2010 by Geraint Franklin, English Heritage London Region historians' files, ref. OUT916.
131. *Architects' Journal*, vol.119, no.3093, 10 June 1954, p.709-14; *Architectural Association Journal*, vol.69, December 1953, pp.129-32.
132. *Architects' Journal*, vol.120, 16 September 1954, pp.336-51.
133. Campus plans were also termed pavilion, cluster, separate-block or exploded plans.
134. Forsyth and Grey 1988, 107.
135. Maclure 1984, 255.
136. Seaborne and Lowe 1977, 208.
137. *Architectural Review*, vol.150, no. 893, July 1971, pp.3-6, 17-18.
138. EFL 1965; EFL 1967a.
139. Michael Hacker pers.comm., 2 November 2010.
140. *Architectural Design*, vol. 52, nos. 5/6, 1982, pp.59-69.
141. *Architects' Journal*, vol. 186, no. 44, 4 November 1987, pp. 32-39.
142. DES Circular 11/64 / MOHLG Circular 49/64, *Provision for Sport*.
143. Ward 1976, xiii; Grace Kenny, pers.comm., 24 January 2011.
144. Douglas 1964.
145. *Building* 3 November 1978, p.78.
146. Quoted in *Architectural Review*, vol.147, no.875, January 1970, p.70.
147. Michael Hacker, pers.comm., 13 March 2011; David Meylan, pers.comm., 13 June 2012.
148. Institute of Education Archives: ME/B/3, transcript of 1998 interview with Mary Medd by Louise Brodie for the British Library Architects' Lives project.
149. MoE 1960; MoE 1961 (Building Bulletin 20); MoE 1963 (Building Bulletin 22).
150. Fletcher 1984, 50; Grace Kenny, pers.comm., 24 January 2011.
151. Harwood forthcoming; *Building*, vol.210, no.6409, 18 March 1966, pp.100-02.
152. Chalk 2006, 78.
153. James Parke, pers.comm., 11 January 2011.
154. Central Advisory Council for Education (England) 1967, 46.
155. Banham 1976.
156. Hacker 1976; Maclure 1984, 236-37.
157. Ward 1976, xiii.
158. This section has benefited from discussions with Rosie Sherrington and Simon Jarrett of English Heritage's disability history web project.
159. Ward 1976, 230.
160. Silvers 2009.
161. The Warnock report includes a useful historical summary of special education (Committee of Enquiry into the Education of Handicapped Children and Young People 1978, 8-35).
162. The Grade II-listed Newman School, Rotherham of 1939 by local authority architect Geoffrey Raven also accommodated physically-disabled and partially-sighted children, for example.
163. The Handicapped Pupils and School Health Service Regulations 1945.
164. Seaborne and Lowe 1977, 15.
165. Darvill 2000, 25.
166. Ringshall *et al* 1983, 216.
167. *Architectural Review*, vol. 160, November 1976, pp.270-75.
168. Adrian Cave, obituary of Selwyn Goldsmith, *the Guardian*, 31 May 2011.
169. *Education Act, 1944*. (7&8 Geo VI, c.31), London: HMSO, s.57.
170. DES 1972 (Design Note 10).
171. Ringshall 1983, 230-32; Goldsmith 1979.
172. Interview between Estelle Morris and Baroness Warnock, published in 2007: http://www.tes.co.uk/teaching-resource/Teachers-TV-

Baroness-Warnock-6048745/, accessed 15 August 2012.
173. Committee of Enquiry into the Education of Handicapped Children and Young People 1978, 50.
174. DfEE 2001 (Building Bulletin 94).

PART III: ASPECTS OF SCHOOL DESIGN

Construction

The Dilemma of Standardisation

The requirement for new school places after 1944 was such that it demanded a rethinking of school building. Reform had long been called for: in 1911 the Departmental Committee on the Cost of School Buildings suggested novel construction techniques and the use of timber, 'ferroconcrete' and steel, and the building regulations and loan period were accordingly revised in 1914. Many authorities built lightweight, 'semi-temporary' schools, usually loosely planned timber-framed structures, whilst others, notably Middlesex, combined a steel frame with brick cladding. There was no shortage of isolated experiments, but it was only in the mid-1930s that demand became sufficiently urgent to put prefabrication at the centre of a consistent, co-ordinated approach. This was best seen at the light steel-framed schools designed from 1936 under C.G. Stillman, the Architect to West Sussex County Council.[1]

After the War it was generally agreed that some sort of standardisation of construction was necessary, but a recurring debate was whether to standardise whole designs or provide a prefabricated 'kit of parts'.[2] The most rudimentary approach, the prefabricated classroom, was pressed into service at times of severe pressure of numbers, and included the Hutting Operation for the Raising of the School Age to 15 (HORSA), implemented in 1947 and the Raising of the School Leaving Age (ROSLA) units when the threshold rose to 16 in 1972.[3] 6,220 Hampshire pupils were accommodated in HORSA huts between 1945 and 1949.[4] Prefabricated classrooms were generally regarded by the Ministry of Education as a temporary measure of last resort. The standardisation of entire school designs were likewise discouraged on the grounds that it coarsened architectural response to site and brief, a volte-face from the recommendation of the practice in the 1944 report of the Wood Committee, set up by the Board of Education in 1943 to investigate prefabrication.[5]

The threat of huts galvanised some public architects to rethink processes of building from scratch. The stance of the Hertfordshire architects was summed up by the slogan 'standardise the means, not the ends'.[6] The way forward had been pointed by Alvar Aalto in 1938:

> The best standardisation committee in the world is nature herself, but in nature standardisation occurs […] almost solely in connection with the smallest possible units—cells. The result is millions of flexible combinations in which one never encounters the stereotypical. […] Architectural standardisation must head in the same path.[7]

Clear affinities existed between this position and the call of Walter Gropius for a 'large-scale building set'.[8] The ideas of Aalto and Gropius on standardisation were more inspirational to British school designers than their architectural style, and seemed to point to the manufacture of a range of building components that could be freely combined and assembled by the designer.

Dozens of educational building systems were developed from 1945-75, most based on a light steel, timber or pre-cast concrete frame with lightweight cladding panels and partitions and services accommodated within a flat roof deck. Columns and beams could be assembled rapidly (fig. 3.1) and the roof put up at an early stage, allowing the building to be finished under cover. Load-bearing stanchions permitted flexibility of planning and the possibility of later adaptation. One commonly-held principle was that components should be capable of being removed and replaced without affecting adjacent elements; another was that materials and techniques should be tried and tested: 'we weren't in the business of playing with public money' recalls one designer.[9] Claims about costs varied, but prefabrication was seldom founder cheaper than traditional building, especially once the 'lifecycle costs' of development and maintenance were taken into consideration. A prefabricated school could generally be completed faster than a traditional one, if the labour force was experienced and if components were delivered to site at the right time.

Prefabrication was developed as a response to exceptional circumstances. The schools programme in Hertfordshire arose from a post-war shortage of bricks, blocks and tiles and a skilled labour force to lay them. The Consortium for Local Authorities Special Programme (CLASP), to take another example, adopted a technical solution to building in subsidence areas (page 126). But these exigencies do not entirely explain why prefabrication became so widespread, especially when traditional materials and labour again became easily available and in non-mining areas. To some prefabrication was simply a logistical means of sharing resources efficiently and equitably. Others were

Figure 3.1: Erecting the steel frame at St Crispin's Secondary Modern School, Wokingham, built to the Hills system in 1951-53. Institute of Education Archives: ABB/B/1/75/1.

motivated by the ideology or the aesthetics of reforming the means of architectural production. Henry Swain, the doyen of CLASP at Nottinghamshire, was concerned with the inhospitable and hazardous working conditions of the building site. Why, he reasoned, should a labourer work in squalor and danger when most of the building could be completed in the better regulated, safer and sheltered environment of a factory?[10]

Prefabrication proceeded via an improvisatory approach which owed something to a generation of post-war architects who served in the Second World War.[11] Military methodology (and even technology in the case of the aluminium schools manufactured by the Bristol Aeroplane Company) was appropriated and adapted to school building.[12] Prefabrication was more successfully applied to schools than any other building type, notably housing.[13] Much has been written about the principles and methods of prefabricated school building, especially the immediate post-war period of 1945-57.[14] The focus of this section is accordingly on the maturity and decline of prefabrication in the 1960s and 1970s, which has received less attention. The development of prefabrication was fundamentally a decentralised initiative, and the most significant systems are described from the perspective of their local authority users in part four of this report (table 4.1). This section provides an overview of wider trends and characteristics, with cross references to specific examples.

Grids versus Bays: the Basis of Prefabrication

School design in the years immediately following the Second World War was dominated by questions of construction. It was generally agreed that only prefabricated building techniques could put 'roofs over heads' in required numbers, but the technical basis of standardisation had first to be settled, as it had critical implications on planning. The Wood report of 1944 recommended a planning module of 8'3" and a structural framework of light steel. [15] The report raised, but did not successfully resolve, a dilemma over whether a given module should be applied in one or multiple directions. It was, in other words, a question of bay versus grid. The bay method was widely favoured by manufacturers and local authorities in the period *c.*1947–52: it was endorsed by C.G. Stillman, one of two architects on the Wood committee.[16] The bays, of fixed section and span, gave rise to a limited number of permutations: linear 'finger' plans comprising rows of classrooms and corridors, or dispersed pavilion classrooms linked by corridors of in-situ construction. The rest of the school could not be prefabricated. The introduction of cost limits in 1950 made the rigid and inefficient bays, with their pre-war corridor plans, unfeasible.

A square grid, on the other hand, allowed flexible planning in two or three directions, with fewer constraints and easier changes in direction and level.[17] The grid was championed at Hertfordshire and later by many of the same architects at the MoE; it was not without its technical challenges, but essential if school planning was to be approached from first principles. Herts had demonstrated the technical basis of the grid, how its components and junctions related to each other and where the inevitable weaknesses lay. It was merely the starting point for the development of prefabricated school building but demonstrated an important principle: a viable constructional method must allow, not hamper, freedom of planning.

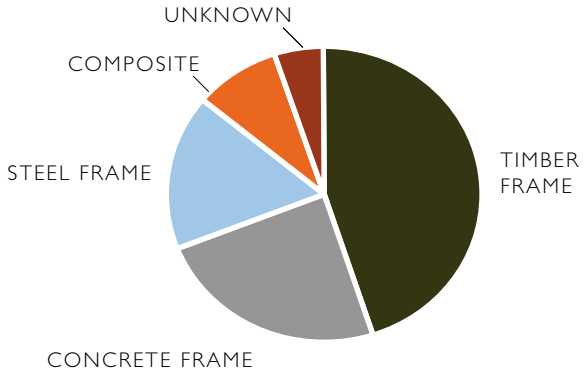


Figure 3.2: A snapshot of proprietary school building systems. Source: System Building and Design, *January 1968, pp.63-67.*

Proprietary Systems

Although the proliferation of different systems and dimensional bases can be bewildering, the policies of central government on school prefabrication can summarised in terms of three overlapping phases. At first the Ministry encouraged a wide range of systems based on hot and cold-rolled steel, aluminium and pre-cast concrete. Their development followed a model established by the architects at Hertfordshire County Council from 1947 in which a proprietary system was modified in collaboration with its manufacturer, Hills of West Bromwich. When Stirrat Johnson-Marshall was appointed as Chief Architect to the MoE Architects and Building Branch, he extended the approach to a series of experimental development projects, each developing a proprietary system in response to a particular educational need or a technical challenge (page 104). If the Ministry deemed an existing system satisfactory, they did not attempt to supplant it. The principal reason that the Development Group did not investigate timber construction was that they approved of the timber-framed Derwent system, developed by Johnson-Marshall's former Deputy Sam Morrison with manufacturer Vic Hallam (page 127, fig. 3.3).

The plurality of the strategy addressed the risks that Hertfordshire had taken on by entrusting an entire building programme to a single manufacturer.[18] Competition on an open market, it was assumed, would naturally drive technical development and respond to changes in the price and availability of materials. Most systems were developed entirely by small-scale manufacturers with a commercial interest in patented technology, although a few large construction firms tried the schools market. By 1968 local authorities could choose from around 80 proprietary school building systems (fig. 3.2).[19] Not all systems were commercially available: some architectural practices, such as Johns, Slater and Haward, developed a method of building for their exclusive use (page 336).

Figure 3.3: Hawkesley Farm Infant and Nursery School in Birmingham, an early 'Derwent' building. Institute of Education Archives: ABB/B/1/28/11.

The Consortia

From one MoE development project evolved an entirely new policy: groups of authorities collectively controlling the development of client-owned systems. The consortia were large enough to effect economies of scale by maximising production runs and bulk purchasing materials. Technical development was usually carried out by the dominant members; later, central development groups were established; in either case, costs and benefits were shared. Managerial innovations such as cost planning, critical path analysis, flow-line production, bulk purchasing and serial contracting were applied from other fields.[20] It was for these reasons that the architectural critic Reyner Banham acclaimed the consortia as 'one of the most remarkable bureaucratic achievements of post-War Britain'.[21]

Name	Active	Ref.
CLASP: Consortium of Local Authorities Special Programme	1957–	p. 125
SCOLA: Second Consortium of Local Authorities	1961-90	p. 268
CLAW: Consortium of Local Authorities in Wales	1962–	
SEAC: South Eastern Architects' Collaboration	1963-77	p. 314
Method /CMB: Consortium for Method Building	1963-88	p. 72
ASC: Anglian Standing Conference	1964–?	
MACE: Metropolitan Architectural Consortium for Education	1966-77	p. 191
ONWARD: Organisation of North Western Authorities for Rationalised Design	1966-75	p. 351

Table 3.1: the school building consortia

By *c.*1960, CLASP was the great white hope of school building; it was the first and became the largest and the longest lived of the consortia. A CLASP primary school designed by the Architect's Department of Nottinghamshire County Council won the *Gran Premio con Menzione Speciale* at the 1960 Milan Triennale. The following year the Ministry of Education devoted a Building Bulletin to *The Story of CLASP*.[22] International orders followed, and the system influenced school prefabricators in North America, principally Ezra Ehrenkrantz in devising his School Construction Systems Development (SCSD).[23]

The success of CLASP convinced the MoE and many local authorities of the rightness of the consortium approach. The formation of the Second Consortium of Local Authorities (SCOLA) followed in June 1961. Devised under Ralph Crowe and Geoffrey Hamlyn of Shropshire County Council, it had similar aims and approaches to CLASP, although there was no requirement to mitigate subsidence. Like CLASP, SCOLA boasted a range of vernacular-inflected cladding, including shiplap boarding, interlocking tile, slate and brick, but the system was dogged by technical glitches. The third group, the South Eastern Architects' Collaboration (SEAC), was based around Hertfordshire, Kent and the War Office, where Donald Gibson was Director General of Works.[24] Its technical basis was a trio of systems sharing a 2'8" module devised by Jack Platt and other Hertfordshire architects *c.*1956-58. Herts were reluctant to join a consortium and the deciding factor was probably the liquidation of the manufacturer Hills of (West Bromwich) Ltd in 1962.

The pattern of policy was set: by the mid-1960s the DES was encouraging the formation of consortia, partly in response to the incoming Labour government's reliance on prefabrication as a means of rapidly completing public sector building programmes.[25]

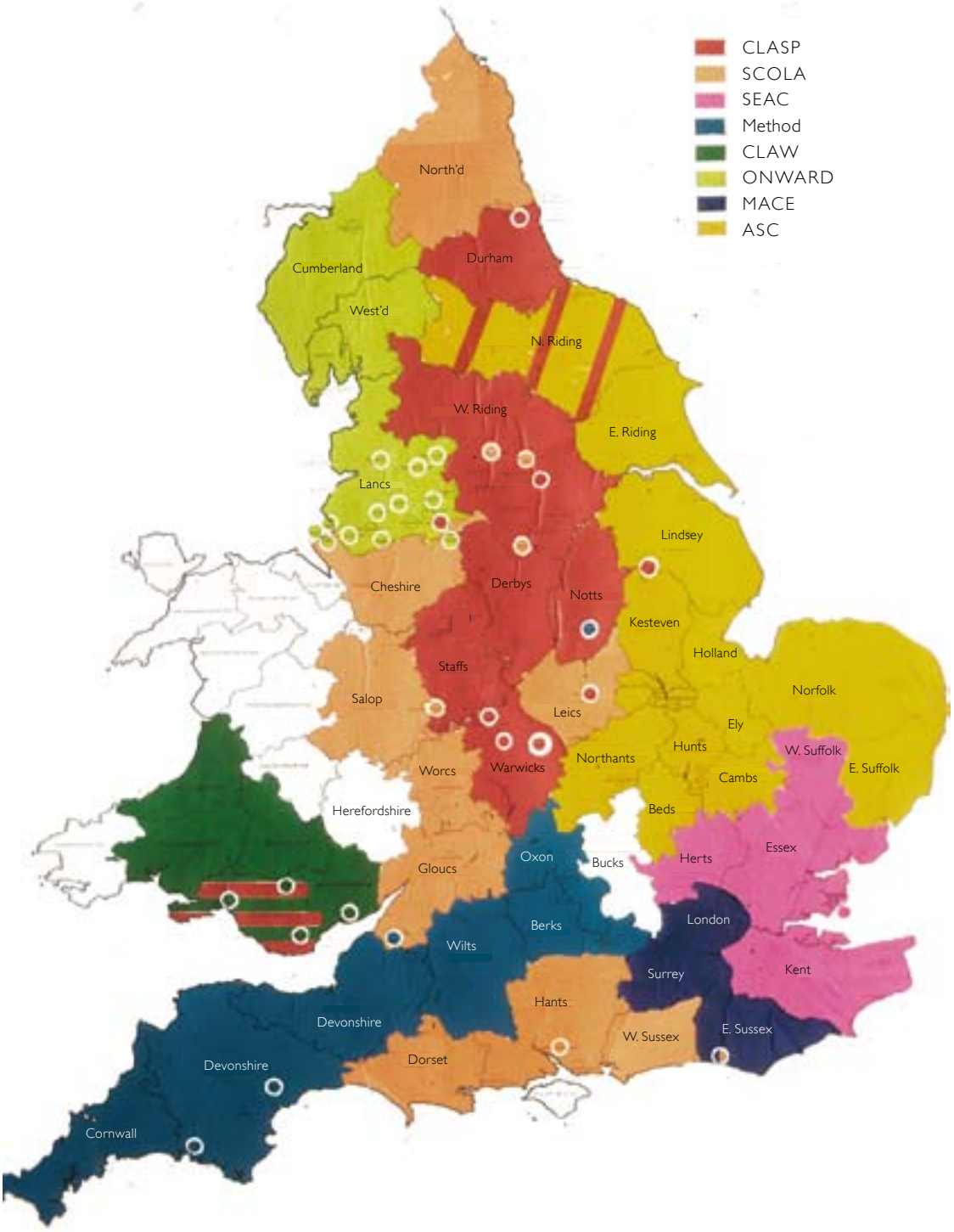


Figure 3.4: The regional distribution of the building consortia is clear in this DES map of c.1970. The conspicuous 'hole' in central England is Buckinghamshire. Institute of Education Archives: ABB/B/9/29/1

Five consortia were formed between 1963 and 1966 (table 3.1; fig. 3.4). The DES were nominally members of all consortia and hosted regular meetings of the Chief Architects of Consortia (CAOC) and a Technical Co-ordination Working Party (page 108-09).[26] Most consortia, like the South Eastern Architects' Collaboration and the West Country 'Method', were based on regional proximity (fig. 3.4). Not all were committed to the industrialisation of building: the Consortium of Local Authorities in Wales (CLAW), the Anglian Standing Conference (ASC) and Method, for example, aimed to reform rather than replace existing regional building economies and techniques through standardisation, bulk purchasing and the interchange of ideas.[27] The percentage of the annual programmes that used consortia varied from 30-90% from county to county, although full membership usually came with a minimum commitment.[28] Schools were the staple of the consortia programmes, but they also included further and higher education colleges and a wide range of public buildings such as libraries, sports centres and social services accommodation.

Alternatives to Prefabrication: 'Rationalised Traditional' Construction

Given the post-war push for prefabrication it comes as a surprise that most school buildings were brick-built.[29] Research into calculated brickwork, much of it commissioned with medium-rise housing in mind, had the objective of paring down brick walls to structural minima. Structural cross-walls of brick proved cheap and straightforward to build with good insulation properties, although they tended towards inflexible and repetitive rows of narrow, single-aspect rooms of equal size.[30] The architectural profession had been surprised by Powell and Moya's Mayfield School, Putney of 1953-56 which, the *Architects' Journal* reported, was built at 22% under the Ministry's cost limits. Job architects Peter Jones and R.H. Henley choose readily-available materials, combining three-storey classroom blocks of brick cross-wall construction with timber roofs; they switched to a space frame roof for the assembly hall when a supply of steel again became available.[31] The project inspired Buckinghamshire County Architect Fred Pooley to adopt 'rationalised traditional' construction for primary schools: 'Fred too had seen the figures in the *AJ* and simply pounced. Here was his prayer answered', Bucks architect Jack Speight recalled.[32] The London County Council also developed a standard form of construction for schools based on brick cross-walls, pre-stressed concrete floor slabs and glazed timber panels.[33]

David Medd's designs for primary schools at Amersham, Buckinghamshire (1956-57); Finmere, Oxfordshire and Great Ponton, Lincolnshire (both 1958-59), opened up cellular construction, alternating stretches of brickwork with storey-height timber and glass panels to provide plentiful daylight (fig. 3.5). The partitions dividing practical bays were also brick-built, and gypsum plastered finishes—more traditional than rationalised—were justified on the grounds that 'uses of traditional load-bearing materials leads to an acceptance of traditional finishes'.[34] Even the West Riding, a member of the CLASP camarilla, developed a standardised method of load-bearing construction (page 162). For Buckinghamshire and later Hampshire, brick construction became almost a statement of independence from central government policy. Even authorities signed up to a consortium, such as West Suffolk and Lancashire rewarded their architects with the occasional non-system job. With the decline of the consortia from *c*.1975 load-bearing brick became almost universal in school building.

Figure 3.5: 'Rat. trad.' construction at Finmere Primary School, Oxfordshire in 1959. Lightweight, exposed timber trusses rests on load-bearing panels of brickwork; the timber-framed window-walling is last to be installed. For the plan of this school see fig. 2.4. Institute of Education Archives: ME/Z/5/2/150.

Open Systems and Method

Any form of construction can be described in terms of a continuum from 'closed' to 'open', according to the degree to which components can be incorporated and interchanged. Most proprietary systems such as Hills and those of the earlier consortia were closed and thus mutually exclusive. In the 1960s, under the encouragement of central government, existing systems were modified to share components, with reluctance in the case of CLASP.[35] The later consortia—Method, ASC and ONWARD (Organisation of North Western Authorities for Rationalised Design)—represented relatively loose groupings which accommodated building products available on the open market—including bricks and tiles—within a framework of common dimensions. Specialist contractors could be bypassed and building methods adapted to suit local needs and economies. Such systems were classified by the DES as 'hybrid', as they represented a crossbreed of industrialised and rationalised traditional construction. ASC was established in 1964 as a direct response to Circular 1/64, aiming to 'pursue traditional building methods where they were allied to a high degree of organisation and management'.[36] A mere 6% of building materials was supplied through the consortia, mostly doors, windows, ironmongery and sanitary ware.[37] Its chairman was Bedfordshire County Council Architect John Barker, Pooley's former Deputy, and an early adopter of 'rat. trad.'.[38]

The most successful of the open systems was the Consortium for Method Building, known as CMB or Method. When the idea of a consortium for south-west England began to be discussed at 'tea cup level' during 1961, it became clear that any system would have to meet two broad requirements. The first was a design vocabulary flexible and sensitive enough to respond to the character of historic and largely rural landscapes. New forms of construction should be capable of erection by small- to medium-sized building contractors and utilise traditional building crafts and materials. Discussions continued throughout 1962 and, unusually, the formation of the Consortium for Method Building in July 1963 predated the elucidation of its technical basis. This was partly due to the architect's 'decision to assemble the market (consortium) first, rather than to develop a system and later offer it around on a take-it-or-leave-it basis.'[39] Method was developed at Somerset by County Architect Bernard Adams, his deputy and prime mover Martin

Kenchington and principal development architect Geoffrey Fullman.[40] Adams had previously been Deputy at Hertfordshire and before that Development Architect at Derbyshire, whereas Kenchington had come from the LCC Architect's Department. Unusually, the central development team engaged consultant architects and structural engineers to speed progress. Four pilot projects, three of them schools, were included in the 1964-65 building programme.[41]

The architects wanted not a system but a method of building that exploited an open market of components which shared a dimensional framework of 4" (or 10 centimetres). Method had to fit a wide variety of building types, only half of which were schools, and a fine one foot planning grid was found to offer suitable flexibility.[42] The influence of Jack Platt's work at Hertfordshire (page 314) may be seen in the constructional 'menu' of steel frame, pre-cast concrete frame, or load-bearing brick or block work, which could be used separately or in combination. Secondary components were interchangeable and roofs could be formed of corrugated metal decking or be pitched with timber or steel trusses. Variations in manufacturing sizes and thicknesses of joints demanded fairly wide tolerances and a large range of standard sizes. A wide variety of cladding types included timber boarding and facing brick (fig. 3.6).

Figure 3.6: Yatton Junior School, Somerset in construction c.1967. The Consortium for Method Building employed a wide range of materials and components, some prefabricated, others assembled on site. Institute of Education Archives: ABB/B/9/14/1

Dimensional Co-ordination

In the mid-1960s central government policy belatedly shifted towards a third position: aligning systems to a common dimensional framework. In 1963 the Ministry of Public Building and Works introduced *Dimensional Co-ordination for Industrialised Building* (DCI), which recommended a series of 4" increments as a standard for all public buildings.[43] This in turn formed the basis for DES recommendations of 1964.[44] Such a protocol had been suggested as early as 1945 by Donald Dex Harrison, a Ministry of Works architect who predicted that the building

industry would become choked with incompatible systems and fail to achieve the economies of scale necessary to make large-scale prefabrication viable.[45] Production runs for school programmes were small compared with orders from the housing or commercial sectors: former DES architect Michael Hacker recalls a representative of the window manufacturer Crittall who laughed that all the consortia combined would not equal a single London office job—they considered school orders as 'specials'.[46]

The state, as a sponsor and initiator of building systems, had a role to play in rationalising the building industry. Government intervention, Harrison suggested, should take the form of encouraging standard specifications and in particular the coordination of the dimensions, tolerance and jointing of components. This would achieve a pool of compatible components which could be mass-produced: an industrial vernacular. The Building Research Station based at Garston, Hertfordshire, played an important role in coordinating research and development. In 1953 Bruce Martin was appointed to lead a study team on modular co-ordination at the British Standards Institute and the same year the Modular Society was formed by Mark Hartland Thomas.[47]

But the reform of prefabrication came too late. In 1966 the government halted the development of further complete systems to concentrate on developing a pool of interchangeable components. Further impetus came from metrication, which caused many manufacturers to revise their product specifications around this time. The sharing of components between consortia was to be the first step in another drive to rationalise factory mass production and assembly.[48] A development group was set up to design standard components which could then be marketed to the consortia. The first such element to be developed, in 1967, was an ill-fated classroom partition system named Industrialised Building in Steel (IBIS).[49] But the dimensions of a component presented only a single aspect of their performance specifications and thus their fitness for purpose and flexibility. In 1966 David Medd cautioned the RIBA: 'Of course, size is important, but what on earth is the good of a product that fits if it doesn't work in other respects[?] To me "fit" means fit for fire, sound, weight, water, appearance and all the rest of it'.[50] During the 1970s system building would be found wanting in these very factors.

The Demise of Prefabrication and its Legacy

Prefabricated school building peaked in 1970-71, when the consortia accounted for 52% of capital expenditure on school building. Over the next few years the economic rationale of prefabrication was undermined by reduced public expenditure, falling school rolls and, crucially, inflation in the costs of building materials driven by the rising price of oil. Systems and procurement procedures were not flexible enough to permit one material to be substituted for another.[51] There was also a public backlash against prefabrication in schools and housing. The most common complaints—poor thermal and acoustic performance, seasonal extremes of temperature, high maintenance costs, vulnerability to vandalism—were characteristics not of prefabrication itself, but of lightweight and highly glazed structures in general, whether assembled from prefabricated components or not.

The final straw for the reputation of school building systems was a series of widely-reported fires and structural failures.[52] 'There is some comfort in the falling birth-rate',

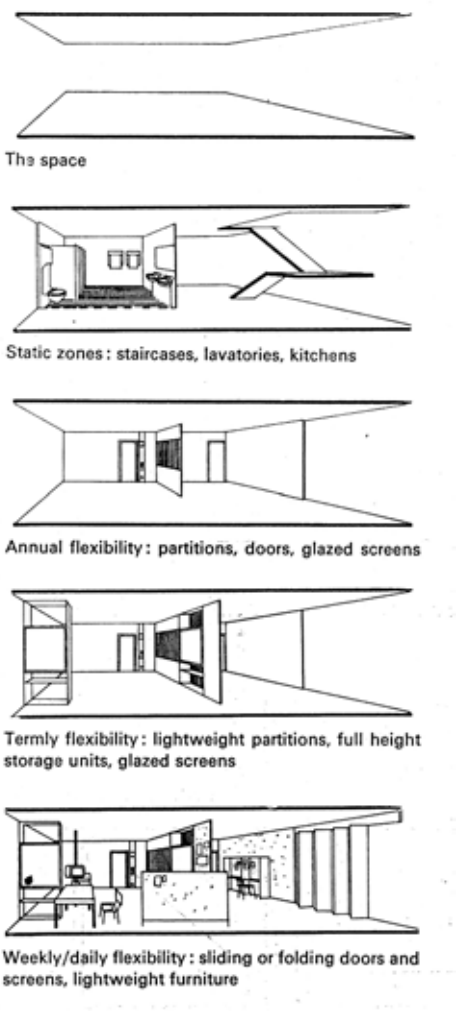


Figure 3.7: Several levels of flexibility, based on anticipated patterns of use and reconfiguration, were built into the ill-fated MACE *system (page 191).* Official Architecture and Planning, *October 1968, p.1291 by kind permission of* Built Environment *journal.*

Richard Sheppard wrote in 1977, 'no future building programme will ever be large enough to justify a fully-automated all-systems system again.'[53] MACE and SEAC folded in that year, though Method and SCOLA survived for another decade or so. The great survivor was the CLASP consortium which, having donned brick cladding from 1973-74 and pitched roofs in 1977, still operates in a much revised form under the name Scape System Build Ltd.[54]

What is the legacy of the prefabricated schools? To David Medd 'collectively they encouraged a craft-based industry to accept permanently the implications of industrialisation.'[55] This was borne out by the 1998 Egan Report, *Rethinking Construction*, which recommended the integration of standardised and prefabricated components into the procurement and planning of construction projects.[56] Off-site construction, under the guise of 'Modern Methods of Construction' (MMC) is today a growth industry and in 2010-12 the government again investigated the possibility of 'flat-pack schools' of fixed design; it remains a moot point whether future standardisation will be 'of the parts' or 'of the whole.'[57]

Figure 3.8: A complex rhythm of window mullions at South Bromsgrove High School, Bromsgrove; Richard Sheppard, Robson & Partners, 1968. Photograph by James O. Davies – English Heritage; DP030985.

How much attention did architects pay to the appearance of their schools? How were appearances perceived or valued by different sets of people: professional peers, clients or users? And to what degree can 'social architecture' be classified by style? The broad architectural context for post-war schools was the Modern Movement which, having been tentatively explored in Britain in the 1930s, quickly became a visual shorthand for the welfare state. European modernism contained both a strain of social commitment and an architectural vocabulary that translated easily to public architecture. The exposed construction, big picture windows and articulation of formal elements insinuated the moral values of reason, truthfulness and transparency. The combination of single storey construction, a flat roof and a flexible planning grid enabled something close to Le Corbusier's 'free plan'. Today modernism is seen as a plurality of movements, rather than a monolithic entity. Differing and opposing architectural viewpoints could exist between colleagues and departments; the glue that held them together was the social consensus of the post-war settlement. When that broke down, the strands diverged and the whole unravelled.

The self-conscious expression of architectural style was anathema to the architects at Hertfordshire and the Ministry of Education. David Medd was fond of quoting Philip Webb: 'I never begin to be satisfied until my work looks commonplace'.[58] Their 'studied anonymity', wrote Reyner Banham, 'suddenly seemed pusillanimous to a decade that demanded more powerful imagery'.[59] In the 1969 design of Great Waldingfield Primary School in West Suffolk, Jack Digby and James Blackie accepted the educational principles of the DES but strove for a stronger architectural expression. The *Architectural Review* reported:

> They also believed that the impact of the Ministry's schools had been lessened by their absolute Quakerism, their deliberate unconcern with questions of architectural style. While fully accepting the Ministry's educational achievement they wished to "give it architectural form".[60]

The 'Light and Dry' Aesthetic

The typical light and dry prefabricated school embodied a number of functionalist principles. They were designed 'from the bottom up': architecture was regarded as the sum total of a series of individual design problems such as the educational brief, services, fittings, drainage and so on. They were equally designed 'from the inside out', with more attention and resources devoted to users and their interior environments.[61] Cost limits and prefabrication imposed their own constraints on the architectural vocabulary. Yet the results elicited a range of aesthetic responses. In the late 1940s, Henry Swain, then a student at the Architectural Association, attended a trip to Hertfordshire schools:

> I can't impress on you too much how different these buildings looked. Seen in the context of the Modern Movement, everything monstrous and big and reinforced, here was something light and delicate and hammered out of the process of studying the problem. It was totally

new, it didn't seem to have roots in anything. Not a single concession to Banister Fletcher in proportion or materials even![62]

Prefabrication could itself form the basis of an aesthetic, and the clip-on, Meccano-like aesthetic influenced Archigram and the High Tech movement.[63] But panel-based cladding could result in a stiff, papery appearance and more vernacular cladding options, including ceramic tiles, were developed by the school consortia for their familiar appearance and good weathering properties. The Derwent system devised by the ex-Herts architect Sam Morrison sported vertical strips of stained timber. Later, brick cladding became popular, although somewhat defeating the object of prefabrication.

The New Empiricism and the 'Contemporary Style'

Milder, moderate forms of modernism were chosen for most public buildings. A mild and homely idiom based on blond brickwork, squarish picture windows and broad-eaved, shallow-pitched roofs became popular in the 1950s. Groups of buildings were carefully massed and grouped according to the site and surrounding landscape. This recalled the architecture of the Swedish welfare state and was perhaps the schools equivalent of the *Architectural Review*'s label 'the New Empiricism'.[64] Perhaps the best example, Woodside Junior School in Buckinghamshire, betrays the architectural inclinations of its designers, David and Mary Medd (fig. 3.9). Elsewhere in Buckinghamshire, and in other rural areas, the influence of local vernacular buildings and an interest in Scandinavian architecture mingled to produce an idiom characterised by clipped eaves, stained shiplap weatherboarding, and tiled roofs (pages 248-50). The so-called 'contemporary' style, associated with the 1951 Festival of Britain, combined a variety of decorative details including patternmaking in brick or tile, patterned curtains, wallpaper or lino, curved, cyma or tapered profiles, slender metalwork and 'flash gaps'. The style emerges convincingly at the Elliot School, Putney of 1953-56 by an LCC team including George Trevett, and additions to Sydenham School, also in south London of 1952-56 by Basil Spence and Partners.

Figure 3.9:Woodside Junior School, Amersham, Buckinghamshire; DES Development Group (job architects David and Mary Medd), 1956-57 (P5925002).

The 'Wet and Heavy' Aesthetic

The limitations of initial attempts at prefabrication persuaded some architects to return to prefabrication, encouraged by the wider availability of traditional materials and the lifting of building controls in 1954.[65] Arthur Donnan, who worked at the Hertfordshire

Figure 3.10: The poised volumes of the David Lister School in Hull, of 1964-66 by Lyons, Israel and Ellis. Photograph © Elain Harwood.

Architect's Department before moving on to the LCC, compared the 'light and dry' building of the former to the 'wet and heavy' of the latter.[66] The aesthetic appeal of in-situ construction was no less important. The more stylish of the private practices drafted in to help with the secondary-building programme exploited the aesthetic qualities of raw materials: fair-faced brick, white, hard concrete blocks such as 'Forticrete', and in-situ concrete (shuttered, bush-hammered or otherwise textured). From the late 1950s, patent glazing had the attractions of being cheap, widely available and flaunting the tough, off-the-peg aesthetic popularised by James Stirling's educational buildings.[67] The late works of Le Corbusier were important reference points, particularly the Maisons Jaoul at Neuilly-sur-Seine, France, completed in 1954. Peter Smithson observed of them that

> Le Corbusier's pair of houses caused people to fall in love with bricks, site-poured concrete, wooden windows, larger tolerances, and there was—unbelievable—a certain British public patronage for the manner; in county schools commissioned by county architects and paid for by the state as there had been for the dry-construction schools of the previous decade.[68]

Figure 3.11: Stillman & Eastwick-Field received more commissions for London schools than any other firm. The finest of these was Stoke Newington Secondary School, Clissold Road, LB Hackney, built in 1967-70 to the designs of job architects Ralf Smorczewski, Denis McCoy and Michael Plunkett. It was remodelled with a cor-ten steel facade by Jestico + Whiles in 2009-10.[71] © Elain Harwood.

Figure 3.12: The main entrance to Lilian Baylis Secondary School, LB Lambeth; Architects' Co-Partnership, 1960-64. Photograph by James O. Davies – English Heritage; DP031012.

The early 1960s saw a widespread toughening-up of architectural appearances which served as a riposte to the insubstantial appearance of the earlier prefabricated schools and the daintiness of the 'Contemporary Style'. An early example is Ken Jones' 1955 design for the Garratt Green School in South London.[69] In 1967 the GLC's Schools Architect Michael Powell justified the aesthetic in practical terms:

> 'Hundreds of children, all pouring into a school at about the same time, present one hell of a problem of maintenance and therefore choice of materials'. […] The early days of over-refined detailing, elegant curtain walling, sensitively chosen wallpapers are generally being superseded by buildings of a much more chunky character. Greater use is being made of fair-faced brickwork as an interior finish to classrooms and circulation areas. Fair-faced concrete, decorated, stands up very well to hard usage.[70]

This monumental, forceful style paralleled similar trends in university building but was often applied to formal or educationally-conservative school plans. Many of the key examples of the New Brutalism are now demolished or altered: Salt Grammar School in Shipley, West Riding, built in 1960-63 to the designs of Chamberlin, Powell and Bon, and recalling Le Corbusier's monastery of La Tourette in France (fig. 4.40); John Bancroft's Pimlico School in the City of Westminster (fig. 5.58) and Stillman & Eastwick-Field's Stoke Newington Secondary School in Hackney of 1967-70 (fig. 3.11).

Adhocism, Critical Regionalism, Romantic Pragmatism and Neo-Vernacular

The 1970s divergence of architectural styles was, in part, a reaction against modernism, which was blamed for the blandness of prefabrication and the heroic one-offs alike. Yet the various fall-back positions were devised to widen the scope of modernism rather than rejecting it outright. One was 'Adhocism', the creative appropriation of readily-available resources. The term was first used by Charles Jencks in 1968 to describe a recurring architectural trend.[72] Maguire & Murray's influential design for St Paul with St Luke Primary School in east London was the first of several schools to adapt an agricultural shed.[73] It is one of the ironies of the period that bespoke systems were cast aside in favour of 'off the shelf' sheds and shelters, used in an unexpected, almost subversive way.

Hampshire under County Architect Colin Stansfield Smith developed a position akin to what Kenneth Frampton defined as 'Critical Regionalism', combining relative cultural and economic independence with a willingness to assimilate external influence; a resistance to functionalism and historicism alike, an emphasis on individual responses to local conditions; and a contextualism in which vernacular forms and materials are accepted.[74] 'Romantic Pragmatism' was a similarly reformist position coined by the *Architectural Review* to describe the reconciliation of traditional materials and skilled craftwork with modernism, as seen in the architecture of Ralph Erskine, Edward Cullinan and Richard MacCormac and in the schools designed by the Architect's Departments of Buckinghamshire and Hampshire County Councils (fig. 3.13).[75]

Figure 3.13: Woodlea Primary School, Whitehill; Hampshire County Council Architect's Department, 1990-91. The Rousseauian image of a 'school in the woods' is a recurrent one: the German Waldschulen *(forest schools) appealed to the Edwardian builders of open-air schools, and Mary Medd (née Crowley) was inspired by similar schools in pre-war Sweden. Photograph kindly supplied by Nev Churcher.*

Related, albeit often less considered, was the neo-vernacular style developed in medium-density low-rise housing schemes. This often took the form of a big roof applied to a deep plan; a key example, Fort Hill in Hampshire, was a barn-like form rising out of nondescript housing estates (page 278). Preoccupations with presenting a legible image to the outside world sometimes created problems inside, and some architects regretted the planning constraints imposed by the widespread adoption of pitched roofs and load-bearing walls from the 1970s.[76]

Postmodernism, by contrast, was taken up for only a handful of mostly private schools (fig. 3.14). The most successful example is the tiny Bishop Wilson Memorial Library designed for the Bishops' Primary School in Chelmsford in Essex by Colin St John Wilson & Partners, the architect of the British Library. The memorable interior combines a Soanian handing of light with primary colours; a dark blue painted steel aedicule was pierced with constellations of the Zodiac (frontispiece).

Figure 3.14: czwg's Craft Design & Technology Block at Bryanston School, Dorset, a postmodernist jeu d'esprit. *© Jo Reid & John Peck; photograph kindly supplied by czwg Architects.*

The reform of school buildings in the early twentieth century was prompted by a desire to improve the health, hygiene and social welfare of the child population. A key reform was the establishment of a national medical schools service by the Education (Administrative Provisions) Act of 1907, administered by local authority medical inspectors of schools and overseen by the newly-established Medical Branch of the Board of Education. Under the influence of their medical inspectors and architects, authorities began to build schools incorporating cross ventilation, outdoor circulation and abundant daylight, none more so than the open-air schools provided for 'defective and epileptic' children. *Light, Air and Openness*, to borrow the title of Paul Overy's study, became desirable attributes in themselves, and the validity of their architectural expression was long unquestioned.[77]

Subsequent developments in school building demonstrate the consequences of standardising and prescribing reforming impulses. Attitudes to natural light are a case in point. It was commonly measured by a 'daylight factor, this being the proportion of daylight received at a given point indoors from a 'standard overcast' sky. The regulations made under the 1944 Education Act prescribed a minimum daylight factor of two per cent and recommended that 'a higher figure of up to 5 per cent should, if possible, be secured'.[78] The consequences for school design were immediate, far-reaching and often unforeseen, and included dual-aspect lighting, looser plans, roof lights and clerestorey lights, often in elaborate sections. The orthodoxy of lighting from the left, which assumed rows of desks facing a blackboard, could not hold where seating patterns were informal and multi-directional. But considerable technical ingenuity and no little expense was required to avoid glare, solar heat gain and poor insulation values.

By the late 1960s considerable opposition had built up to the contrivances and excesses required to observe the '2% rule', and many argued for a balance of natural and artificial light, now an economic possibly due to technical developments.[79] Derek Poole, the energy specialist at the Architects and Building Branch of the DES, armed with technical studies by the Building Research Station (BRS), persuaded the Chief Architect Dan Lacey to reappraise the subject of lighting. Guy Hawkins' account gives an insight into the sort of empirical fiddling that often lay behind 'buildings science' and official prescriptions on lighting:

> Derek's main contribution while I was at Architects and Building was to convince Dan Lacey that the 2% daylight factor was not sacrosanct, and to devise standards for an acceptable mixed lighting design allowing deeper plans, specifically at Maiden Erlegh [the DES-designed secondary school in Berkshire, pages 116-17]. At the time there was a lot of loose talk about windowless schools, and Dan didn't want to let that get out of hand. Derek did this by devising a series of tests with models in the sky lab at the BRS, with a large scale model of a deep part of the Maiden Erlegh humanities block. This was placed in the 'greenhouse' on the top of one of the BRS buildings, and we all stuck

> our heads up inside (in turn) and twiddled a rheostat until we thought it looked right, being part natural, part daylight. Derek altered the size and shape of the windows to judge the effect.[80]

A 1967 Building Bulletin on the subject of lighting conceded that the DES would 'consider on their merits and approve individually proposals to combined daylighting at less than a 2 per cent daylight factor with permanent supplementary artificial lighting'.[81] Architects anticipated with relief 'the whole approach to the interior design of schools could change'.[82] By 1980, the *Architects' Journal* reflected that 'the 2% daylight factor is outrageous and from another age'.[83]

As Hawkins implies, the DES's compromise on lighting was driven by a concern that the pendulum would swing to the other extreme. Some technologically-orientated architects, inspired by American examples, experimented with replacing climatic contributions with a 'controlled environment', characterised by deeper plans, reduced levels of glazing and artificial illumination and ventilation. This approach was promoted by the Electricity Council under the label of Integrated Environmental Design (IED), and the Eastergate Church of England Primary School in West Sussex of 1969-70 was the result of a collaboration between the Electricity Council, the Building Science Department of Newcastle University and the West Sussex Architect's Department (page 379; fig. 3.15).[84] The energy crisis of the early 1970s encouraged heavy and highly insulated cladding and smaller windows, as seen in the 'Method of Component Building' (MCB) developed in the 1970s by Essex County Council under Ralph Crowe.[85]

Figure 3.15: The 1970s saw a reduction in the glazed area of many schools. Eastergate School , seen here shortly after completion, was criticised by DES architects for its separation of 'inside' and 'outside': there were no verandas or opening windows. Institute of Education Archives: ME/2/5/2/179

But the home-grown principles of cross ventilation and natural lighting, so valiantly fought for in the early years of the century, were not so quickly dropped in favour of air-conditioning and florescent strip lights. So much had the *quantity* of light been measured and argued over that its various *qualities* and their effect on children had been overlooked. The position of the DES architects was innate yet formed by careful observation: addressing the technicians of the *Conseil International du Bâtiment* in 1974, David Medd passionately defended the intangible and capricious nature of daylight:

> There are children who have first noticed against the frames of their generous windows clouds moving, or through which have seen the moon by day. What starting points for education such observations can make. […] Shadows are cast obliquely, thus revealing texture and articulating form more clearly. […] The quality, colour and direction of natural light is always changing. As the sun and the clouds move; and as time moves on, so does everything inside change and move a little. Education *is* concerned with making people sensitive and not indifferent to those manifestations of life of which we are all a part.[86]

The oil crisis and a growing environmental movement inevitably focused attention on energy conservation—schools were commonly heated by oil-powered boilers—and greater interest in the relationship between a building's inside and outside, the latter anticipated by Reyner Banham's 1969 *The Architecture of the Well-tempered Environment*.[87] Applied to school buildings, the Long Life / Loose Fit / Low Energy (LL / LF / LE) approach advocated by RIBA president Alex Gordon seemed to point to the merits of refurbishing and retrofitting older schools of load-bearing construction.[88]

The 1970s saw a shift in the environmental design of new schools from an 'exclusive' to a 'selective' response to fresh air and sunlight.[89] At Architects and Building Branch, Derek Poole coordinated a series of guidelines on aspects of environmental design.[90] The Architect's Departments of Essex, Hampshire and Cornwall County Councils designed schools which combined ambient and generated heating, lighting and ventilation. Pitsea Briscoe Infant School, Basildon of 1976-78 incorporated a solar hot water system, with panels attached to the pitched roofs.[91] Poole, appointed Deputy Architect at Hampshire County Council in 1979, initiated a collaboration with Dean Hawkes and Nick Baker of the Martin Centre in Cambridge on low-energy school design. The team came up with a sophisticated 'passive solar' cross section where solar gains collected in a 'conservatory' on

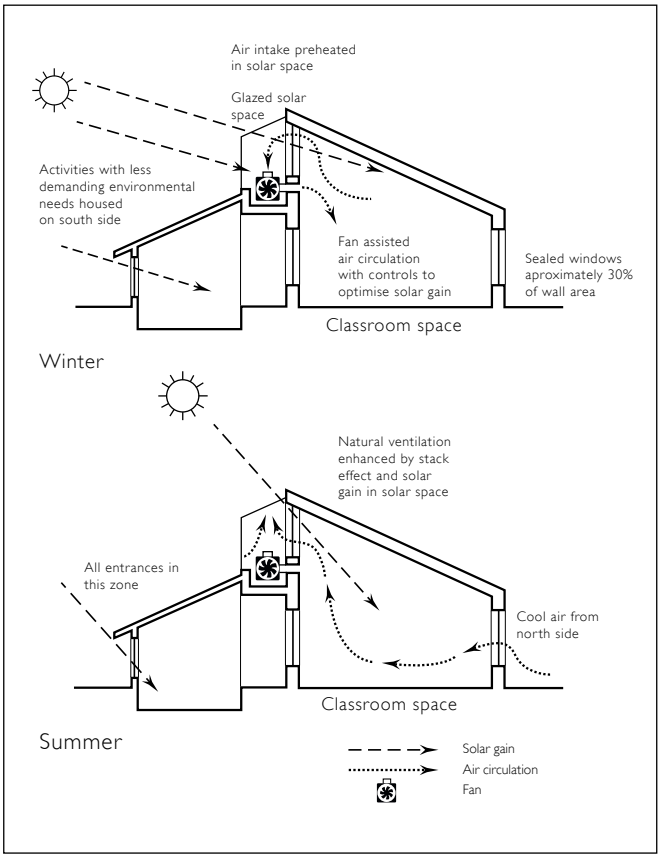


Figure 3.16: A passive solar energy system developed by Hampshire architects with the Martin Centre at Cambridge University and the Science and Engineering Research Council. It was implemented at Netley Abbey Infant School in Hampshire (pages 289-90).

the south side were circulated to north-facing classrooms (fig. 3.16). The concept, realised at Netley Abbey Infant School (pages 289-90), was in some ways a development of the pioneering 'solar wall' of St George's School in Wallasey, designed in 1957-59 by Assistant Borough Engineer Emslie Morgan.[92] Selective approaches to environmental design generally demonstrated a greater awareness of building maintenance and running costs and the responses and needs of occupants.

Despite contemporary concerns over the amount of space and time available to children for outdoor play, the exterior environment of schools remains a neglected subject.[93] An emphasis on outdoor recreation and experiential learning was shared by the 'health and welfare' and the 'child-centred' strands of early-twentieth-century educational reform. Designed responses to these influences were rare and unusual, especially as landscapes are particularly vulnerable to change. The dissolution of boundaries between indoor and outdoor was a central strand of architecture generally and of school design in particular, echoing Froebel's aim of 'making the inner outer and the outer inner'.[94] The idea emerged at its strongest in the teaching pavilions of the early-twentieth-century open-air school but became prevalent in the classroom doors, folding or sliding windows, garden courts, verandas, shelters, canopies, conservatories and atria introduced to mainstream schools in the following decades.[95]

Architectural responses to child-centred pedagogy influenced the layout of school sites. David and Mary Medd enumerated a range of outdoor 'planning ingredients', including gardens, grass and hard play areas, wild areas for adventure and discovery, 'rural science' areas, and the wider neighbourhood.[96] Contrasts in scale, spatial enclosure, texture, colour and character were achieved through a mixture of 'soft' elements such as banks, trees, shrubs, lawns, ponds and planting and 'hard' landscaping. A background of mature trees and other natural features made an effective counterpoint to prefabricated school buildings at Hertfordshire primary schools, while Maurice Lee designed landscaping for a number of the Ministry of Education's development projects in the 1950s.[97] The wilder corners of school sites, such as rough ground, long grass, a copse or stream were sometimes retained as an educational resource or 'adventure' area, reflecting the influence of the adventure playground. Mounds of excavated or unwanted material could be shaped into landforms, the improvisation of the designer in using found elements encouraging the improvisation of the child with the same objects. Thus at Delf Hill Middle School in Bradford (fig. 3.18), the Medds preserved a group of large stone blocks and 'a stone bridge [over] a ravine which imparted a character of bygone days, while the 'ravine' was a source of discovery'.[98] School sites had the potential to be a valuable and secure

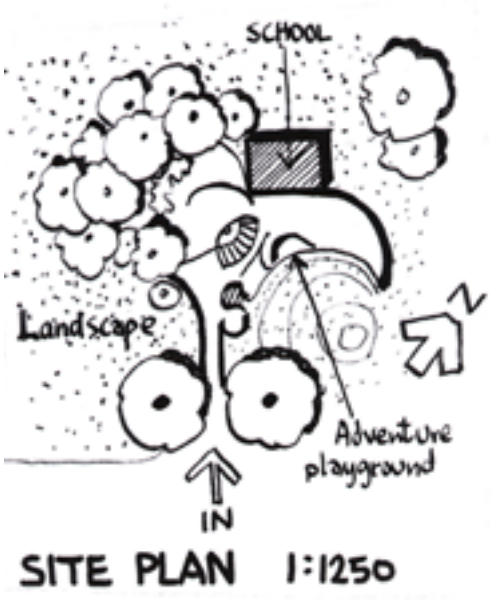


Figure 3.17: Louis Hellman's playful take on school landscaping. A detail from a cartoon published in the Architects' Journal *in 1970, shortly after Margaret Thatcher became Secretary of State for Education. The cartoonist was then a schools architect in the Greater London Council (Hellman 2012). Reproduced from the* Architects' Journal, *vol.152, no.44, 4 November 1970, p.1064 by kind permission of Louis Hellman and the AJ.*

Figure 3.18: Outdoor play at Delf Hill Middle School, Bradford; DES Development Group, 1967-68. The reused stone blocks probably had an origin in an earlier building on the site. See also page 39. Institute of Education Archives: ABB/B/1/52/4.

source of direct experience and contact with the outdoors, at a time when the freedom and mobility of a child in the external environment was being constrained by concerns about the dangers of road traffic and strangers.[99]

Standardisation and local authority divisions of labour and responsibility were the biggest barriers to the enrichment of sites. 'One-off' responses were rare and isolated exceptions to—and reactions against—the standard municipal treatment: acres of grey tarmac playgrounds, chain-link fencing and flat expanses of playing fields. In some authorities the county landscape architect, 'horticultural organiser' or estates department was responsible for the design and provision of school grounds, in others it was down to the job architect. Elsewhere, motivated teachers and pupils shaped their own school grounds. The perennial problem of landscape development is that it was one of the last elements of a construction project and thus a potential victim of depleted budgets unless ingenuity and improvisation could be brought to bear.[100] If landscape features were to survive the process they had to be costed into a project at the briefing stage and carefully 'sold' to the educational client: David Rock, working in the office of Basil Spence and Partners in the mid-1950s on the plans of Sydenham School in south London, recalls that Spence suggested relabeling a wildlife pool as 'biology tank' to get it past the LCC educational committee.[101]

Only exceptionally was a consultant landscape architect brought in, as when Brenda Colvin and Sylvia Crowe participated in the post-war Hertfordshire 'schools planting programme'. Maria Parpagliolo Shephard and Frank Clark's landscaping of the Festival of Britain site inspired many British landscape architects and may help explain the decision of the London County Council to commission the pair to design the grounds of a number of new primary schools in south London.[102] Merrick Denton-Thompson, the County Landscape Architect for Hampshire felt that architects' designs for school grounds were overly visual and missed the opportunity to create a rich and multi-functional learning environment, offering seating, shelter and places to play, talk and learn through direct contact.[103] These ideas came to fruition in the form of the Learning Through Landscapes initiative, which is considered below.

Jack Digby was one of a small number of school designers for whom landscaping was important as architecture.[104] He worked as a qualified landscape architect for the Development Group of the MoE's Architects and Building Branch in the late 1950s (page

313), and his landscape scheme for Arnold Grammar School, Nottinghamshire was exhibited at the 1958 Chelsea Flower Show.[105] When Digby became County Architect at West Suffolk in 1964, he saw the landscaping of schools as an educational resource and the key to integrating new buildings into urban and rural environments alike. Each building contract contained a small sum to cover the cost of plants. A good example of Digby's approach to landscaping is the Hartest Primary School of 1966, where he planted larch and tulip trees and seeded the steeper slopes with St John's Wort as there were then no flymowers for trimming the banks. The site at Great Waldingfield School was distinguished only by a muddy pond, which Digby relined and filled with oxygen-giving plants.[106] Digby worked closely with Frank Clarke, the County's Horticultural Organiser and a former gardener at Kew. One colleague recalls the two sitting on the office floor into the evening, planning landscaping schemes.[107] A landscape architect was maintained on the staff after Clarke retired in 1970 and the practice continued at Suffolk County Council after local government reorganisation in 1974.[108]

Landscaping was also a priority at Buckinghamshire, where Peter Aldington's garden at Turn End inspired the Bucks Architect's Department. Job architects were responsible for hard landscaping, and ambitious designs such as Tse Chiu Ng's brick-paved courtyard at Bradwell Middle School, designed 1976) had to be carefully cost-planned from the beginning, so the additional expenditure could be found.[109] Pat Green was the landscape architect for Milton Keynes, and much of the landscaping in the south of the county was designed by Godfrey Belger, a German-born horticulturalist who built up an extensive

Figure 3.19: Additions of 1983-85 to the Hurst School in Tadley, Hampshire, by Aldington, Craig and Collinge. When the Hampshire county architect Colin Stansfield Smith commissioned the scheme, he cautioned Peter Aldington 'it's not a building scheme, it's a landscape scheme – don't you dare spend it on building!' (Powers 2009, 96). Photograph reproduced by kind permission of Peter Aldington.

knowledge of child-friendly shrubs and hedges.[110] Both urban and rural conceptions of school sites were possible at the 'non-place urban realm' of Milton Keynes. The Watling Way Middle School of 1970-73 hugs its site boundary, addressing the adjacent streets and suggesting a return towards 'back of pavement' school buildings. John Stewart's Summerfield School of 1984-85 is aligned not to MK's orthogonal grid but to a retained hedgerow, in a reference to the relict landscape under the new town (pages 258-59).

The idea of landscape for play came into its own from the 1970s with the movement for adventure playgrounds and play centres, which developed independently of schools but came to influence their design.[111] In the 1970s and '80s the treatment of school grounds was also influenced by ideas of environmental and community education. In *Streetwork: The Exploding School* (1973, with Anthony Fyson) and *The Child in the City* (1978), the architect and political activist Colin Ward stressed the educational and social significance of the spaces around and outside of school grounds, encouraging children to explore the amenities of their neighbourhoods and talk to local people. 'Planning the School Site', a project run by Manchester Polytechnic with the support of the ONWARD consortium, canvassed the opinion of schoolchildren on outdoor facilities. Their 1975 report *Ask the Kids* is early example of the consultation of children in school design, a key topic today.[112]

Hampshire became a significant player in the landscaping of schools from the late 1970s. A multi-departmental landscape working party was established around 1977 under deputy architect John Robinson to explore alternative landscape approaches. Ken Johnson's imaginative landscaping for St Francis Special School, Fareham (1976-78), which includes a round playground fringed by a tree circle, was perhaps the first departure from a standardised routine.[113] The contemporary Fort Hill Secondary School near Basingstoke introduced a new palette which combined brick paving, curved pathways, gravel dressing, stockading and brick walls.[114] On later Hampshire schemes, architect and landscape architect Stephen Harte recalls 'a more environmentally appropriate approach was evolved including areas of grass which were less regularly mown, use of indigenous species, hedge layering, actively encouraging wildlife and use of more interesting and more responsive plant mixes'.[115]

The most significant and concerted post-war effort to improve school grounds was Learning Through Landscapes (LTL), an initiative which emerged from Hampshire. This was a research project which ran from 1986-90, taking as its starting point the educational and social potential of school grounds, which account for 54,000 acres spread over about 31,900 schools in England. In 1984 Hampshire landscape architect Merrick Denton-Thompson wrote to the Department of Education and Science, observing that the consequence of the lack of any advice, brief or performance specification for school grounds was 'the most bleak and sterile landscapes in the public realm'.[116] The introduction of Local Financial Management had given some schools greater control of their budgets and the potential to pursue local initiatives in improving school grounds, and the move towards a National Curriculum led to schools developing and sustaining gardens. But the subject was lacking the sort of advice and leadership which had been provided so successfully in the sphere of school buildings. When the schools inspector Brian Billimore and John Brookes of Architects and Building Branch were consulted, they said that the policy could not be changed without research into the design, use and

management of school grounds. So Denton-Thompson set about raising funds to pay for a research post, pooling resources with neighbouring authorities Surrey and Berkshire and receiving matching funding from the Countryside Commission.

The resulting research by Eileen Adams proved the scale of the problem and suggested a framework to transform the external environment into an educational resource (fig. 3.20). School grounds, with imaginative local authority management, could be components of a 'nature corridor' of wildlife habitats. The project informed *The Outdoor Classroom*, a DES Building Bulletin of 1990 which explained the process of specifying the external layout of new schools. Learning Through Landscapes was established in 1990 as a charitable trust with the aim of encouraging existing schools to transform their grounds. The research programme was continued and training provided to authorities, teachers, architects, landscape architects and others.[117] In 1997, LTL contributed to a second Building Bulletin, entitled *School Grounds: a Guide to Good Practice*.[118]

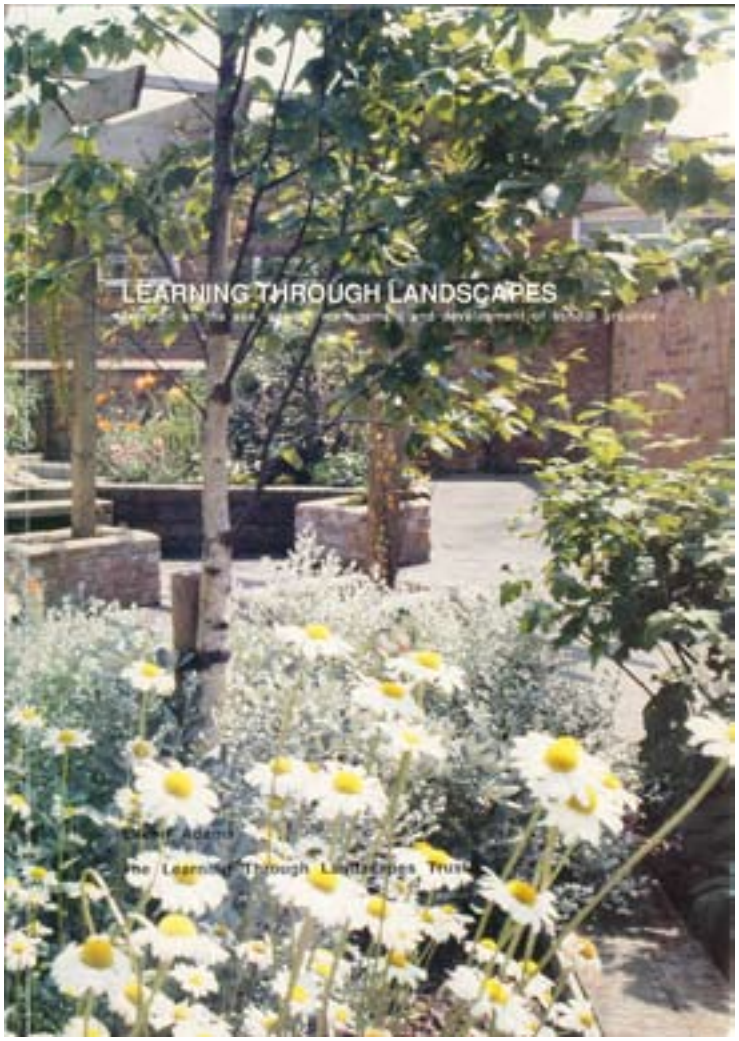


Figure 3.20: Eileen Adams' 1990 report for the Learning Through Landscapes Trust. The cover image features the Weaverham Forest County Primary School in Cheshire. Photograph reproduced by kind permission of Learning through Landscapes.

Figure 3.21: c.*1964 mural by Bill Mitchell, one of two for Islington Green School in north London. It is a bold composition which alludes to the New River, the seventeenth-century canal which passed close to the site. It was listed at Grade II in 2008, when the school, designed by Scherrer and Hicks, was demolished. Mitchell was one of two artist 'consultants' in the employ of the London County Council from 1958-65. Photograph © Elain Harwood.*

Art in Schools

The enrichment of school buildings with works commissioned by professional artists reveals much about state patronage of the arts in post-war Britain and the triangular relationship between artists, architects and their educational 'clients'.[119] Yet notwithstanding the exceptional projects, patrons and collaborations discussed here, a concerted, widespread movement for art in schools never developed thanks to a lack of funds, central direction and perhaps also appreciation. For artists, the 1960s expansion of universities and colleges presented a more lucrative and prestigious source of client. With the exception of a few big public patrons, school commissions began to thin out in the late 1960s as school building came under inflationary pressure. Moreover, as Andrew Saint suggests, the one-off nature of most commissions and the solitary working process of the artist ran counter to the developmental, collaborative ethos of post-war school building.[120]

This was not immediately apparent however, and the 1950s were a heady and optimistic period for school art. The educational potential of the decorative arts was indicated by pre-war pioneers such as Evelyn Dunbar's murals of 1933-36 for Brockley School in Lewisham, whilst the movement for 'visual education' was evangelised by Roger Fry, Marion Richardson and Herbert Read, author of *Education Through Art* (1943).[121] The Council for the Encouragement of Music and the Arts (CEMA) was established in 1940 and was reconstituted in 1945 as the Arts Council of Great Britain. It was joined in 1940 by the Society for Education in Art (SEA) in 1940. Henry Morris, the Cambridgeshire Director of Education and John Newsom, his Hertfordshire counterpart, believed that art and architecture were, as 'silent teachers' instrumental in a rounded and liberal education.[122] The value of art in schools, as Saint as written, was 'not so much as absolute cultural statements, more as attempts, like the colour schemes and the visible landscape, to develop children's visual experience'.[123]

The Festival of Britain of 1951 galvanised and connected those who would go on to create and facilitate art works in public building, through its sheer scale and diversity (over 100 art works by almost as many artists were included), and the effortless manner in which murals and sculpture were integrated with an architecture which itself embraced light-hearted, decorative elements.[124] The South Bank site 'blazed with bright nursery colours', enthused the Festival's Director of Architecture Hugh Casson. One 'exhibit' at the Festival's 'Live Architecture Exhibition' in the Lansbury Estate in east London was the Susan Lawrence Primary School, which opened in April 1951; the following year it was joined by the Elizabeth Lansbury Nursery School. Both schools were designed by Yorke, Rosenberg & Mardall, and the double-height hall of the primary school included a full height pattern-making mural of screen-printed tiles by Peggy Angus, one of about ten educational commissions from F.R.S. Yorke.[125] Some of art exhibited at the Festival found its way into schools; Henry Henghes' *Orpheus* was later installed at the Camden School for Girls.[126]

Sources of patronage and funding varied widely. School art could be funded through the capital grant or come out of the rates: the 1948 Local Government Act permitted

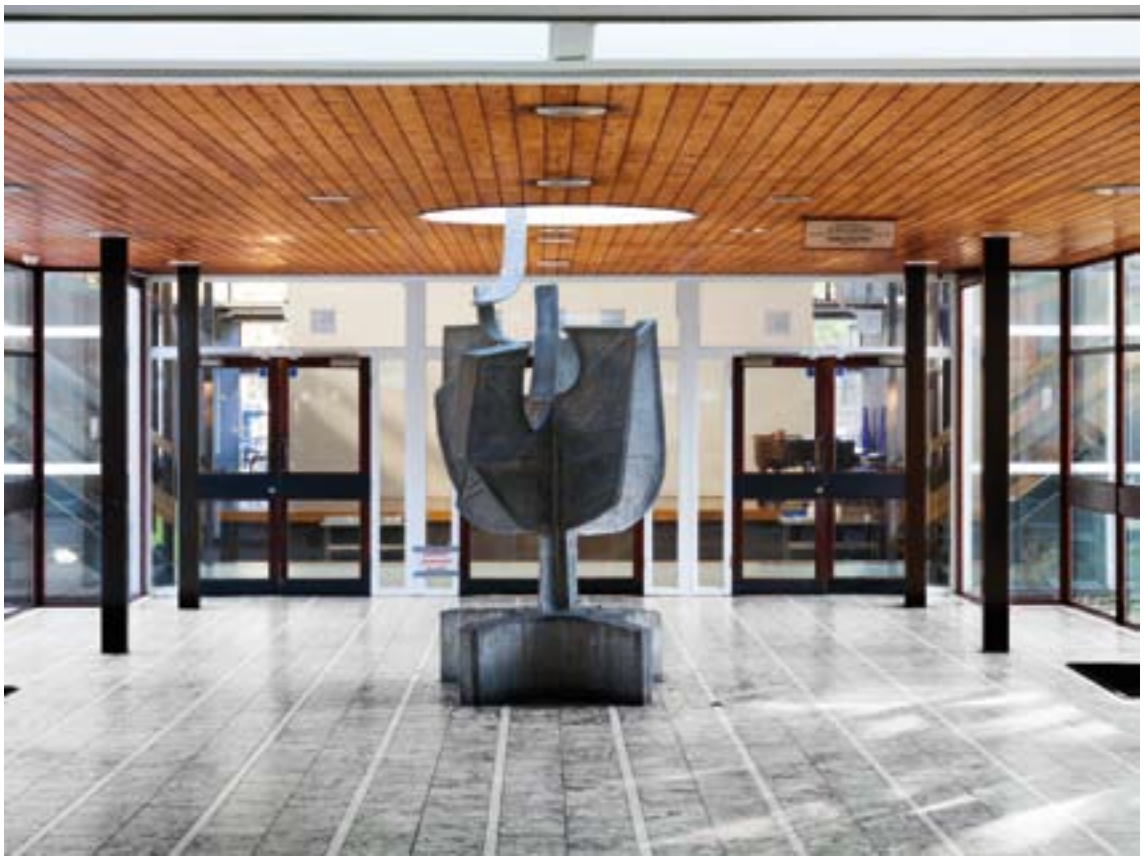


Figure 3.22: Sculpture by Hubert Dalwood in the entrance hall of the Rutherford School in west London, built in 1959-60 to the designs of Leonard Manasseh for the London County Council. Photograph by James O. Davies – English Heritage; DP138285.

authorities to spend up to a 6d. rate on arts subsidies). Other sources of funding were the Arts Council, the Contemporary Arts Society or a generous artist or benefactor.[127] 'One-off' commissions arose opportunistically and informally from personal contacts between clients, architects, artists, firms or schools of art. The contribution of Leonard Manasseh's geometrical sculptural group to his Rutherford School of 1959-60 (now King Solomon Academy) is reflected by its separate listing at grade II. At independent schools the tradition of commemorating founders and benefactors with representational works was supplemented with an interest in abstraction, as at Fred Millett's striking mural of 1964 at Kings of Wessex School, Cheddar. Voluntary schools brought in artists who had made their reputation at places of worship, notably the mural depicting the martyrdom of Saint Thomas of Canterbury at the Manchester school of that name (page 358). The architect was Desmond Williams and the artist Robert Brumby, creator of the ceramic Madonna and Child statue at the Cathedral of Christ the King, Liverpool.

Two contrasting but not mutually-exclusive schools of thought existed on public art. A 'collection'-minded authority might purchase or commission pieces from more or less well-known artists or galleries, perhaps with investment in mind or to enhance council buildings. Portable works were preferred so items from a centralised collection could be 'loaned' to schools. Saint describes a more collaborative and site-specific project, where

the aim was, in the words of Anthony Hollaway 'getting a bit of art into public buildings', often within a stringent budget and an aim of nurturing local artists or colleges of art.[128] This second type of commission encouraged artists to respond to the specificities of the brief, such as the possibilities of physical integration with the school building and reference to characteristics and traditions of place and the local community. The more collective and socially-motivated strand of public art continues today in the form of community art projects in which the participation of pupils and others is sought. Kevin Atherton's *Body of work* (1983) comprises ten bronze casts of the hands, feet and other parts of pupils and staff were integrated into the boundary walls of Langdon Park School, east London.

The relationship of art to architecture could be complex and at times controversial. Henry Moore resented 'the humiliating subservience of the sculptor to the architect' and his public work stands aloof from the buildings whose capital budgets often funded it.[129] But other artists chose to engage with architecture and the construction process, producing panels for cladding, screen walls and even formwork for in-situ reinforced concrete. William Mitchell worked 'closely with architects, contractors and the man on the job, and he knows his building materials. He rightly thinks that the artist must work in this way and be in close touch with building design from the start'.[130] There was inevitably conflict between this sort of enrichment of public spaces and the anti-ornamental premise of the architectural Modern Movement: Denys Lasdun attacked 'costume jewellery' on buildings.[131] Anthony Hollaway spoke for many collaboration-minded artists when he said 'I feel someone really ought to unsort the tangle of what is "decorative" and what is "art".[132]

Both the effectiveness and vulnerability of applied art is demonstrated by the Hammersmith School of 1954-58 by Edward Hollamby of the LCC Architect's Department. Hollamby commemorated the local connection with William Morris by designing patterned ceramic tiles and including Morris wallpapers. The decorative scheme was completed with tapestry curtains by Gerald Holtom depicting Burne-Jones, Rossetti, Morris and Wren's spires. The celebration is apt—Hollamby was a native of Hammersmith and was then restoring Red House, the home designed by Philip Webb for the Morrises— and an early example of the post-war revival of interest in the Arts and Crafts movement. The tiles alone survive.[133] Holtom's curtains also appeared at many other schools, including Hertfordshire schools, a number of the MoE development projects and the Pilgrim School, Bedford (the appliqué tapestry curtain *Pilgrim's Progress* of 1964).[134]

'My life-long dream', wrote the artist Mitzi Cunliffe in 1967 'is a world where sculpture is produced by the yard in factories and used in buildings as casually as bricks'.[135] But the dream was not prophetic, and few attempts were made to engage with techniques of industrial design and mass-production to enliven prefabricated buildings. Perhaps artists and architects alike feared a blurring of the line between art and decoration. Birkin Haward produced precast concrete tiles with repeating patterns from plaster casts for a number of Ipswich schools,[136] The German-born potter Hans Coper, resident from 1958-65 at the Digswell Arts Trust in Hertfordshire, worked with a development group of architects and manufacturers to produce a range of ceramic building components,

including cladding tiles, acoustic bricks and sanitary ware for manufacture, intended primarily for school buildings.[137] Hampshire County Council designed 'shadow blocks', modular concrete blocks with low-relief surface modelling, for the SCOLA consortium.[138] Factory-made patterned or profiled blocks and wall tiles of ceramic or concrete became easily available from the mid-1960s; GLC architect Brian Goldsmith included them in a tactile mural which enlivened a corridor at the Richard Cloudesley School for physically disabled children in central London.[139]

The sustained patronage of an education authority was usually the result of one or more determined individuals with the power and ability to transform a personal interest in art into a policy. Hertfordshire was the first authority to systematically fund and commission works of art in schools, a policy that can be ascribed to John Newsom, the chief education officer from 1940-57. Before the war, Henry Morris had commissioned Walter Gropius to design Impington Village College and Gropius discussed the possibility of a bronze family group with the sculpture Henry Moore, but the commission stalled for lack of funds.[140] The opportunity transpired at a Hertfordshire school, the Barclay Secondary School in Stevenage, built in 1948-49 to the designs of Yorke Rosenberg and Mardall, and also boasting murals by Kenneth Rowntree and Peggy Angus.[141] During 1949-53 Newsom was permitted to disburse a third of one percent of the capital budget on art.[142] In selecting artists he was assisted by Nan Youngman, an artist and Morris's art advisor in Cambridgeshire, and later by Audrey Martin, Hertfordshire's first Arts Organiser.[143]

Figure 3.23: Pupils of the North London Collegiate School in Edgeware assembling the panels of Psalm of Praise*, a large mural completed under the direction of Philippa Threlfall. This 1965 photograph is reproduced by kind permission of Philippa Threlfall.*

Newsom's thinking was in some measure transplanted to Architects and Building Branch who commissioned a variety of artworks for their development projects in the 1950s, notably the series of murals by Oliver Cox and Fred Millett at St Crispin's Secondary Modern School in Wokingham (1951-53) and Peter Peri's *Welcome* (1961) at the science building at Greenhead High School in Huddersfield. On a more modest scale, the ceramicist Dorothy Annan supplied painted and glazed tiles for the sinks at Woodside Junior School. The applied arts and crafts were preferred by architects such as David and Mary Medd, who introduced handmade furniture and handwoven rugs and curtains into their schools.

The largest and longest-running programme of art in schools, Leicestershire's, was down to Stewart Mason, Director of Education 1947-71. Prior to 1947 he had worked in Cambridgeshire as a schools inspector, and it was through contact with Henry Morris that Mason developed ideas of art education and community colleges that he would later implement in Leicestershire (page 219).[144] Despite the value of the Leicestershire Collection, Mason was not precious about the art being used and enjoyed by pupils:

> 'Sculpture must be touched to be enjoyed. And anyway, I prefer to think of some works of art as expendable. There ought to be a certain amount of wear and tear on objects like this which cannot be understood or enjoyed to the full unless they are played with'.[145]

The London County Council was also a significant patron of the arts. A 1948 open-air sculpture exhibition in Battersea Park, the brainchild of Patricia Strauss, art collector and chair of the LCC Parks Committee, was followed by the LCC's involvement in the Festival of Britain.[146] With the political support of Isaac Hayward, Labour leader of the LCC from 1947-65, an arts patronage scheme was instituted in 1956. This set aside an annual sum of £20,000, a tenth of a percent of its building programme. Its emphasis on contemporary art was clear: the General Purposes Committee reported 'although some existing works of art might be acquired from exhibition galleries and similar sources, the main emphasis would be on the commissioning of new work and the encouragement of living artists'.[147]

ENDNOTES

1. Seaborne and Lowe 1977, chapter seven; Saint 1987, 50-54.
2. Prefabrication is the most precise term but during the study period it developed connotations of temporary and substandard building (eg. 'pre-fab' housing). The more imprecise terms 'system building' or 'industrialised building' became preferred in the 1960s (Institute of Education Archives: ME/M/4/4: 'Will it Fit?', talk of 4 January 1966 by David Medd at Institute of Education Archives; unpublished 1998 paper by David Medd entitled *Outline of School Design*. Copy at Institute of Education Archives: ME/E/5/5).
3. Maclure 1984, 26-28; Cowan *et al* 2012.
4. Hampshire Record Office: H/ED2/8, chapter 2, p. 2.
5. Ministry of Works 1944, 2: 'there is no reason in principle why the same plan should not serve for two or more school of the same type and size'. It was relatively common for the same plan to be used at two or three sites.
6. Institute of Education Archives: ME/M/1/3: 'Recent Developments in School Building', a talk of 7 January 1953 by David Medd for a conference on 'Health Education in the Secondary School'.
7. Quoted in Quantrill 1989, 6. David Medd, a devotee of Aalto and probably in the audience in 1938, repeated this quote (Institute of Education Archives: ME/A/6/3).
8. Droste 2006, 112.
9. David Meylan, pers.comm., 13 June 2012.
10. Michael Hacker, pers.comm., 2 November 2010.
11. Saint 1987, chapter 3.
12. Saint 1987, 135-38.
13. Saint 1987, 226-29.
14. Saint 1987, Russell 1981.
15. Ministry of Works 1944. The committee was appointed by the President of the Board of Education in March 1943 and included four architects: Denis Clarke Hall, W.G. Newton, J.E. Richardson and C.G. Stillman.
16. As County Architect for West Sussex, C.G. Stillman pioneered 8'3" bays before the War; he continued to build 'bay' schools after 1945 at Middlesex.
17. Saint 1987, 56–57, 68.
18. Guy Oddie, pers.comm., 4 October 2010.
19. *System Building and Design*, January 1968, pp.63-67. These figures include 'hutted' classrooms.
20. Critical Path Analysis is a method of ordering the various stages of a job so that construction can flow steadily from start to finish (Hacker 1971, 34).
21. Banham 1981, 192. DES 1976 (Building Bulletin 54).
22. MoE 1961 (Building Bulletin 19).
23. Banham 1961; MoE 1961 (Building Bulletin 19); EFL 1962; EFL 1967a.
24. The War Office was also a full member of CLASP, and developed the NENK method of building from 1961 (Russell 1981, 418).
25. MoE Circular 1/64.
26. Chalk 2006, 23. Dick Thompson, pers.comm, 24 May 2012.
27. Russell 1981, 523.
28. DES 1976 (Building Bulletin 54), 6.
29. The proportion of the national school building programme allocated to the consortia peaked at 47% in the 1973/74 financial year, although this figure does not include proprietary construction (Maclure 1984, 100).
30. Cross walls were employed at Eric Lyon's SPAN housing (Parkleys, Ham Common was completed 1953) and in the maisonettes at Chamberlain Powell and Bon's Golden Lane housing, under construction 1954-56 (Russell 1981, 364-75).
31. *Architects' Journal*, vol.119, no.3087, 29 April 1954, pp.516-19. A three part series of articles subsequently examined aspects of the school's construction: *Architects' Journal*, vol. 120, no.3096, 1 July 1954, pp.23-27 [classroom blocks]; *Architects' Journal*, vol. 120, no.3102, 12 August 1954, pp.203-06 [timber roof construction]; *Architects' Journal*, vol. 122, no.3155, 18 August 1955, pp.229-37 [space-frame roof].
32. *Architects' Journal*, vol.124, no.3205, 2 August 1956, pp.163-78; Institute of Education Archives: ME/V/1: letter of 17 May 1987 from Jack Speight to Andrew Saint. For the term 'rationalised traditional' see Russell 1981, 381.
33. Ringshall 1983, 51.
34. *Architects' Journal*, vol.126, no.3257, 1 August 1957. p.191,
35. Dick Thompson, pers.comm., 24 May 2012; Institute of Education Archives:ME/T/7, David Medd's lecture notes for talk given at an Architects and Buildings Branch meeting on 13 May 1987, p.29.
36. *Official Architecture & Planning*, vol.29, no.9, September 1966, p.1343.
37. DES 1976 (Building Bulletin 54), 6; Chalk 2006, 23.
38. Ringshall *et al* 1983; Chalk 2006.
39. *Modular Quarterly*, no.1, 1967, p.6.

40. RIBA *Journal*, vol.88, no.9, September 1981, p. 24.
41. *Industrialised Building Systems and Components*, vol.3, no.10, October 1966, pp.40-45.
42. *Modular Quarterly*, no.1, 1967, p.6.
43. MPBW 1963.
44. DES 1964 (Building Bulletin 24).
45. Quoted in Finnimore 1989, 148.
46. Michael Hacker, pers.comm, 2 November 2010.
47. Oddie 1963, 182.
48. DES 1968 (Building Bulletin 42).
49. The process of designing and manufacturing it was protracted and many LEAs refused to commit themselves to the partition, especially when it was being claimed that open-planning would reduce partitioning by up to 80%.
50. Institute of Education Archives: ME/M/4/4: 'Will it Fit?', talk by David Medd at a meeting of the RIBA Standardisation Working Party on 4 January 1966, published in the RIBA *Journal*, March 1966, pp.128-31.
51. I am grateful to Andrew Saint for this point.
52. Eg, the collapse of roofs at schools in Ilford (*Architects' Journal*, vol. 161, no. 22, 28 May 1975, p. 1118-1119) and Camden (*Architects' Journal*, vol. 157, no. 25, 20 June 1973, p. 1518).
53. Sheppard 1977, 184.
54. Russell 1984,59; www.scapebuild.co.uk.
55. Institute of Education Archives: ME/E/5/5.
56. Construction Task Force 1998, 28.
57. 'Flat-pack schools': *Building Design,* 28 January 2011; French 2006.
58. Institute of Education Archives: ME/C/1/8: Notebook of David Medd, numbered 96 and dated 16 January 1970.
59. Banham 1981, 191.
60. *Architectural Review*, vol.151, no. 900, February 1972, p. 74.
61. Burke 2009.
62. Saint 1987, 75. Banister Fletcher was the author of a well-known primer, *A History of Architecture on the Comparative Method*.
63. Saint 1987, 232; Sadler 2005, 18.
64. 'The New Empiricism: Sweden's Latest Style', *Architectural Review*, vol.101, June 1947, pp. 199–204.
65. Clark Hall 2007.
66. Michael Morris pers.comm., 23 August 2011.
67. Leicester University Engineering Building of 1960-63, grade II*; Cambridge University History Faculty of 1964-68, grade II; Oxford University Queen's College Florey Building 1968-71, grade II.
68. Forsyth and Grey 1988, 92.
69. Ringshall 1983, 53-55.
70. Powell 1967, 34.
71. source: http://www.hackney.gov.uk/bsf-stoke-newington-school.htm, accessed 15 August 2012.
72. Jencks 1968.
73. Maguire and Murray were invited by Essex County Council to design a second 'educational barn', North Crescent Primary School, Wickford, which opened in September 1975.
74. Frampton 1992, 314-27.
75. Darley and Davey 1983.
76. Hawkins 1984, 83.
77. Saint 2003, Overy 2007.
78. Ministry of Education 1945, 14.
79. DES 1967c; Seaborne 1971, 71.
80. Guy Hawkins, pers.comm., 2 November 2010.
81. DES 1967 (Building Bulletin 33), 33: 'A revision of the regulations will enable the Department to consider on their merits and approve individually proposals to combined daylighting at less than a 2 per cent daylight factor with permanent supplementary artificial lighting'. Seaborne (1971, 71) cites a 1969 amendment to the Building Regulations to this effect.
82. 'Getting Rid of the Daylight Factor' in *Design*, no. 222, 1 June 1967, p.23; Eric Classey, pers.comm. 23 July 2010.
83. *Architects' Journal*, vol. 171, no. 12, 19 March 1980, p.578.
84. Electricity Council 1969; Hawkins 1996, 20.
85. Page 1982, 195.
86. Institute of Education Archives:ME/K/6: paper entitled 'The Importance of Windows' read at a colloquium of the Conseil International du Bâtiment working party at the Building Research Establishment on 21-22 October 1974. Medd had delivered a similar talk at a symposium organised by Robert Matthew Johnson-Marshall & Partners in 1964 (Institute of Education Archives: ME/K/5).
87. Banham 1969.
88. RIBA *Journal*, vol. 79, no. 9, September 1972, pp. 374-76.
89. Hawkes 1996, 15.
90. DES 1975 (Building Bulletin 51); DES 1977 (Building Bulletin 55); DES 1978 (Design Note 16); DES 1979R1981 (Design Note 17);
91. Guy Hawkins, pers.comm., 8 September 2010.
92. Poole 1982; Hawkes 1996 19, 118-40.
93. http://www.playday.org.uk/pdf/Childrens-time-to-play-a-literature-review.pdf, accessed 15 August 2012. Merrick Denton-Thompson and Jenifer White are thanked for their comments on a draft of this section.
94. Miller and Pound 2010, 65.
95. Saint 2003; Franklin 2009, 56-57, 70-76.

96. Franklin 2012b; Institute of Education Archives: ME/M/4/4: 'The Design of Primary Schools', in *Built Environment*, vol. 1, May 1972. Anonymous article, written by David Medd.
97. Saint 1987, 73, 88,153.
98. Medd 2009, 35.
99. Merrick Denton-Thompson pers.comm., 4 June 2012.
100. Nev Churcher, pers.comm., 10 February 2011.
101. David Rock, pers.comm, 4 November 2009.
102. These include Horn Park Primary School, Greenacres Primary School and Kidbrook Park Primary School, all in Eltham; Glenbrook Primary School in Lambeth; Sulivan Primary School in Fulham, and Langbourne Primary School in Dulwich (Dümpelmann 2004, 224; Gibson 2011, 241).
103. Merrick Denton-Thompson pers.comm., 4 June 2012.
104. Jack Digby, pers.comm. to Elain Harwood, 10 May 2005.
105. *Journal of the Institute of Landscape Architects*, no.43, August 1958, p.6.
106. Jack Digby, pers.comm. to Elain Harwood, 10 May 2005.
107. Obituary: 'Frank Clarke, NDH', in *The Journal of the Kew Guild*, 1992, vol.11, no. 96, p.61. http://www.kewguild.org.uk/media/pdfs/vlls96pl-61.pdf, accessed 15 August 2012; Ray Swann, pers.comm., 27 March 2012.
108. Jack Digby, pers.comm. to Elain Harwood, 10 May 2005; Suffolk Record Office: HG3/3/2/68/4/24, letter of 9 July 1968 from Jack Digby to Herbert Tayler.
109. John Stewart, pers.comm., 3 December 2010.
110. Ali Abidi, pers.comm., 22 November 2010. See also http://www.fmh.org.uk/FMHAnnReport2005-6.pdf.
111. Allen 1968; Kozlovsky 2007. See also http://www.adventureplay.org.uk/history.htm, accessed 15 August 2012.
112. Manchester Polytechnic, Institute of Advanced Studies 1975; Ward 1976, xiv; Clark 2010.
113. *RIBA Journal*, vol. 88, no. 8, August 1981, p. 43; Michael Morris, pers.comm., 1 September 2012.
114. *Landscape Design*, no.133, February 1981, p.11-12.
115. Stephen Harte, pers.comm., 24 September 2011.
116. Merrick Denton-Thompson pers.comm., 4 June 2012.
117. DES 1990 (Building Bulletin 71); 'Learning Through Landscapes', unpublished report of 1990 by Eileen Adams; Adams 1995.
118. DES 1997 (Building Bulletin 85); Merrick Denton-Thompson pers.comm., 4 June 2012.
119. The 'decorated school' is the subject of a current research project led by Dr Catherine Burke and Dr Jeremy Howard. http://thedecoratedschool.blogspot.co.uk/, accessed 15 August 2012.
120. Saint 1987, 92.
121. Powers 1987.
122. Maclure 1984, 45.
123. Saint 1992, 27.
124. Pearson 2007, 119.
125. Pearson 2007, 118.
126. It may have been given to the school in the 1960s by the American art collector Eric Estorick (Ian Henges, pers.com., 29 July 2012).
127. Cavanagh and Yarrington 2000, xvii.
128. Keith New, obituary of Tony Hollaway, *The Guardian*, 13 September 2000.
129. Rosenberg 1992, 52.
130. Perkin 1963, 17.
131. Orna 1964,58; *Concrete Quarterly*, no.112, January/March 1977,p. 40.
132. Mitchell 1977, 211.
133. Cherry and Pevsner 1999, 210.
134. Gerald Holtom is today better known as the inventor of the peace symbol for the Campaign for Nuclear Disarmament.
135. Pearson 2007, 131.
136. At Castle Hill School, diamond patterns recall the East Anglian vernacular. *Concrete Quarterly* thought Chantry Junior School possessed 'an irregularity reminiscent of some primitive African work' *Concre*te Quarterly, July/September 1958, no.38, p 27-37 (p.31). Sir Anthony Dean Secondary Modern School in Dovercourt was described by *Concrete Quarterly* as 'the most ambitious use of profiled and pierced slabs in this country.' (ibid).
137. Birks 2005, 44-49.
138. Martin 1970.
139. Pearson 2007, 127.
140. Morris also advised the New Towns Commission in the 1940s, and the development corporations of the new towns would be major patrons in the following decades, although their remit did not include schools.
141. Moore and Wilkinson 2002, 273-75. Rowntree (1915-97), a cousin of Mary Medd (Medd 2009, 4), taught mural painting at the RCA from 1948-58.
142. Maclure 1984, 45.
143. Parker 2005, 108.
144. Cavanagh and Yarrington 2000, xvii.
145. Levy 1963, 93.
146. I am grateful to Andrew Saint and Harriet Richardson for sight of draft text from the forthcoming Volume 49 of the Survey of London.
147. Mitchell 1977, 208; Garlake 1993.

PART IV: REGIONAL RESPONSES

ARCHITECTS AND BUILDING BRANCH

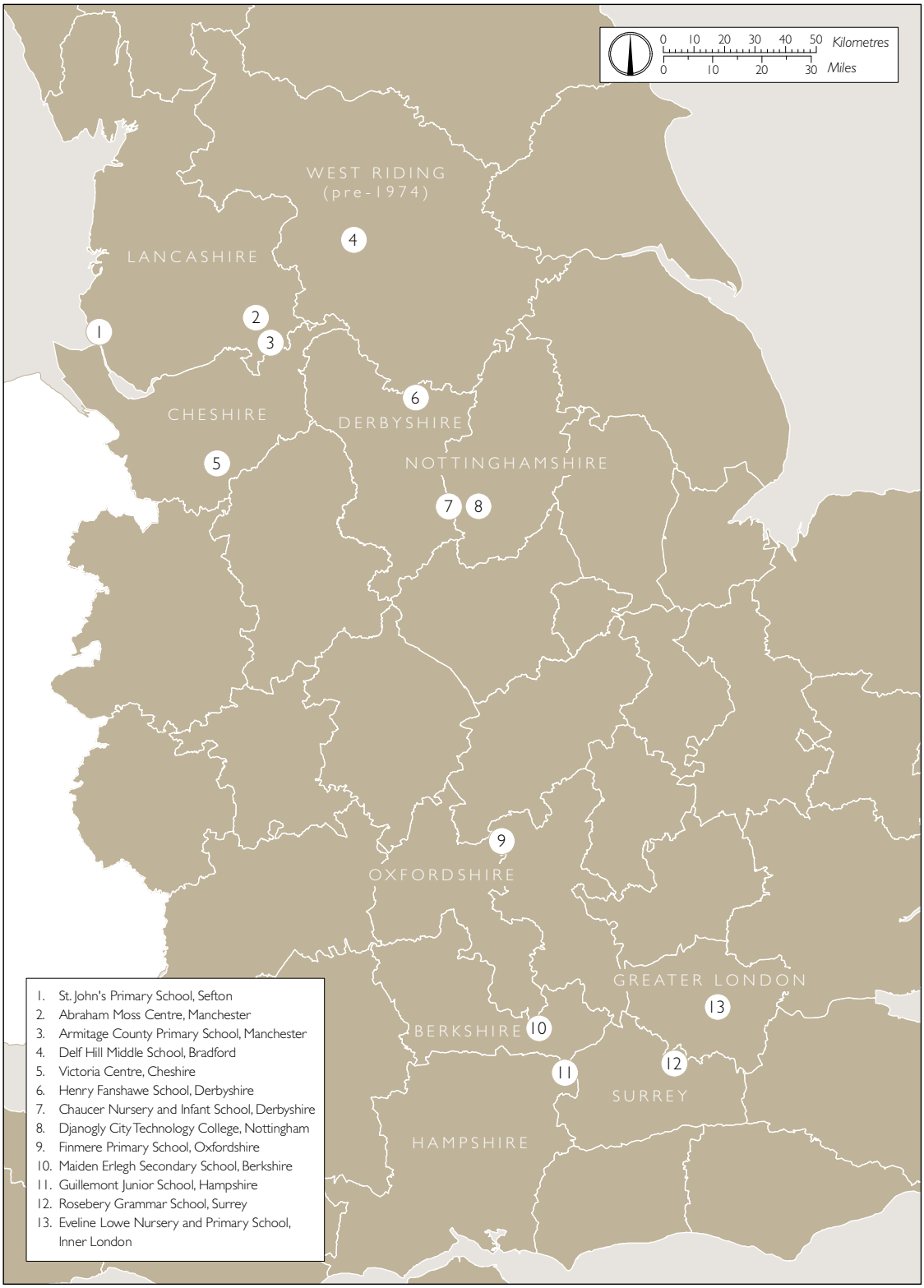


Figure 4.1: Schools designed by the Architects & Building Branch: location of gazetteer entries.

Architects and Building Branch

The Architects and Building Branch of the Ministry of Education, created in August 1948, was a product of the merger of the Architects Branch with the Building and Priorities Branch. The union between administrators and architects was symbolised by a joint headship between a Chief Architect, Stirrat Johnson-Marshall, and an Assistant Secretary, Anthony Part.[1] Johnson-Marshall was drafted to the Ministry on the basis of his achievements in a mere three years as Deputy Architect at Hertfordshire. 'A&B Branch' became the decisive force in post-war school building in England, in no small measure due to Johnson-Marshall's strategy of tackling construction and educational questions through building prototypes. These development projects, as they were known, form the principal focus of this section. No less important was the Ministry's later support for the school building consortia (page 69).[2]

Strategies and a Structure

To school builders A&B Branch offered the carrot of advice and example; and the stick of building regulations and cost limits. The team of 'territorial' architects at A&B Branch continued to vet annual programmes and school plans, a role long exercised by central government. For the first three post-war decades control was exercised by means of regulations, orders and circulars; thereafter occurs a tendency to self regulation by LEAs; the Education Act 1980, for example, transferred to the LEAs responsibility for ensuring that school premises conformed to the prescribed standards, although the Department and its successors have continued to vet local authority spending programmes.

But the chief ambition of A&B Branch was to raise standards in school building, not merely to enforce them. To this end Johnson-Marshall negotiated the formation of a Development Group, which was to lead by example, tackling aspects of educational policy or school building through empirical investigation. With the appointment of Johnson-Marshall, soon followed by former Herts colleagues David and Mary Medd and quantity surveyor James Nisbet, the Hertfordshire experience was effectively transplanted to central government. Working outwards from the centre, A&B Branch brought to bear an analytical approach to large building programmes based on a cycle of research, design, making and feedback. It was founded on inter-disciplinary teams collaborating across the professional and administrative boundaries that separate regional and central government, designers and makers, private and public sector and

Figure 4.2: Display of children's work at Delf Hill Middle School, Bradford; DES Development Group, 1967-68. Institute of Education Archives: ME/E/19/12.

architects and educationists. By 1966 A&B Branch comprised 26 architects, two furniture designers, four services engineers, eight quantity surveyors, five full-time administrators and four of Her Majesty's Inspectors of schools (HMIS).[3]

Johnson-Marshall accepted the post of Chief Architect on condition that he would be able to build schools, a somewhat controversial measure given the decentralised setup of school building.[4] About thirty schools and numerous smaller projects were completed over the next half century (table 4.1). These were regarded as prototypes and were much visited.[5] For their work to be exemplary and credible it was essential that development projects observed the same cost limits, space constraints and building methods as everyone else. Full specifications, including cost analyses, were usually published, so that they too, could be assessed. The cost analyses, however, were based on capital expenditure only and the significant amounts of time spent by the Development Group on initial research and investigation remained concealed.[6] Development projects were usually profiled in the architectural and educational press and disseminated in a series of Building Bulletins, Design Notes and other publications of the Department for Education and Science (a list can be found in the Bibliography). Notwithstanding the significance of the built projects, it was primarily though published advice and guidance that A&B Branch expounded the wider policy objectives of the Department of Education & Science.[7]

The development projects initiated under Johnson-Marshall aimed to reform and augment school construction, in response to the urgent need for secondary schools and shortages of materials and labour. From Hertfordshire came the opportunistic tactic of modifying proprietary systems in partnership with manufacturers. No fewer than five complete systems were developed in this way between 1949 and 1957, with the development projects serving as prototypes: a steel and aluminium system developed with the Bristol Aeroplane Company; a hot-rolled steel system on a 3'4" grid with Hills; the Intergrid pre-stressed concrete system manufactured by Gilbert-Ash Limited; another using cold-rolled steel, developed with John Brockhouse and Company at The Parks Secondary Modern School, Belper and lastly Laingspan, a second concrete system produced by Laings.

From one development project evolved an entirely new approach to school building. The Brockhouse system was developed in 1955-56 under Donald Gibson of Nottinghamshire County Council, and when larger orders became necessary to get the new system into production, Gibson brought neighbouring Derbyshire and Coventry on board. The formation of the Consortium of Local Authorities Special Programme in 1957 represented the withdrawal of Architects and Building Branch from the forefront of schools prefabrication, although they encouraged the consortia and collaborated on their technical development. Subsequent development projects could afford to turn to educational considerations.

Table 4.1: Major development projects by the Architects and Building Branch, c.1950-2000.[8] Notes. **Bold type** *indicates an entry in the gazetteer below. Demolished schools, where known, are indicated with a dagger symbol (†). The 'ref' column gives the number of the relevant Building Bulletin (BB), Design Note (D) or Laboratories Investigation Unit paper (L). Key: N: Nursery, P: primary; I: infant, J: junior, Mid: middle; S: secondary; C: comprehensive, G: grammar; S.M.: secondary modern, H: high, Tech: technical, Coll.: college, CTC: city technology college, FE: further education, Co: county, Dist. Ctr: district centre., Cx: complex, (a): additions, (r): refurbishment, (u): unbuilt. The word 'school' is omitted from names for brevity.*

Name	*LEA*	*Built*	*System*	*Ref*	*A&B job architects*
Limbrick Wood P	Coventry	1951-52	BAC Mkla	B1	Jack Lloyd, Michael Smith
St Crispins SM	Berks	1951-53	Hills	B8	David & Mary Medd, Michael Ventris
Worthing STH †	W. Sx.	1952-55	Intergrid	B2a	Maurice Lee, Mary Medd, John Kitchin
Woodlands C	Coventry	1953-55	Hills	B2a	Michael Smith, John Toomer, Guy Oddie, Pat Tindale
The Parks SM, Belper †	Derbys	1953-55	Brockhouse	B2a	Barbara Price, Don Barron, Pat Tindale
Lyng Hall C †	Coventry	1953-55	BAC MkII	B2a	Peter Newnham, Dargan Bullivant, Michael Greenwood
Woodside J, Amers'm	Bucks	1956-57	—	B16	David & Mary Medd, Clive Wooster
Arnold G	Notts	1957-59	Laingspan	B17	John Kitchin, John Kay, David Parkes
Finmere CE	Oxon	1958-59	—	B3	David & Mary Medd, Pat Tindale
Great Ponton CE	Lincs	1958-59	—	B3	David & Mary Medd, Pat Tindale
Harris FE Coll, Preston	Lancs	1960-63	—	B29	Guy Oddie, Tony Devonald with ACP
Greenhead H (a) †	Hudd	1960-62	Laingspan	B21	John Kay
Withywood Youth Ctr.	Bristol	1962-63	—	B22	John Kitchin, Len Holland, Frank Jackson
Science Laboratories, Oxford Co. S	Oxon	1963-65	Laing'n MkII	B39	Dick Thompson, Olgierd Stepan
Eveline Lowe N&P	ILEA	1965-66	—	B36	David & Mary Medd, John Kay, Norman Reuter, Guy Hawkins
Hailey Hall Residential	Herts	1965-66	SEAC	B27	
Rosebery VI Form Ctr.	Surrey	1966-67	SEAC	B41	Frank Jackson, Andrew Beard, Frank Drake, Brian Staples, Ian Fraser
Armitage Co. P	Mancs	1966-67	CLASP MkIV		David & Mary Medd
Delf Hill Mid. †	Bradford	1967-68	SCOLA	B35	David & Mary Medd, Guy Hawkins
Labs, Harpurhey Upper (r)	Mancs	1970-71	—	L6	Ian Fraser, Tony Branton, Frank Drake, Peter Bottle
Henry Fanshawe S (a) †	Derbys	1970-71	CLASP	D2	Len Holland, Jane Lamb, Keith Routledge
Sedgefield S (a)	Durham	1971-72	CLASP	D6	Len Holland, Jane Lamb, Michael Hacker
Abraham Moss Ctr.	Mancs	1971-74	CLASP	B49	Michael Hacker, David & Mary Medd, Ian Fraser
Maiden Erlegh S (a)	Berks	1971-73	Method	B48	Frank Jackson, Trevor Prosser, Catherine Edwards, Bryan Staples, Guy Hawkins, John Brooke, Graham Parker and Derek Poole
Chaucer N&I, Ilkeston	Derbys	1973-74	CLASP MkV	D11	Graham Parker, Dick Thompson, Liz Fraser, John Brooke, Derek Poole
The Darwin Building, Bristol Polytechnic	Avon	1973-76		L9	John Kay, Edward Williamson, Tony Branton, Frank Drake, John Grieves, Peter Bottle. Olgierd Stepan.
Guillemont J	Hants	1975-76	SCOLA	B53	Catherine Edwards, Dick Thompson, Jeremy Wilson, John Brooke, Jane Sachs
Clayton Green Dist. Ctr. Whittle (u)	Lancs	1976-77	ONWARD	D14	Michael Hacker, Trevor Prosser, John Brooke, Ian Fraser, Keith Routledge, Elizabeth Lloyd-Jones
Victoria Centre, Crewe	Cheshire	1976-81	SCOLA	B59	Michael Hacker, Graham Parker, Keith Routledge, John Marshall, Ann Hodges, Helen Sachs.
Penistone G (r).	Barnsley	*c.*1980	—	D26	Sam Cassels, Michael Hacker
Trubshaw Cross Mid.	Staffs	1980-82	—	D32	Andy Thompson
Weald FE Coll.,	Harrow	1985-87	—	B68	Roger Clynes, Paul Lenssen, Andy Thompson, Beech Williamson.
The Dukeries Cx (r)	Notts	*c.*1985	—	D42	Graham Parker, Michael Hacker
Djanogly CTC	Notts	1988-89	—	B72	Graham Parker, Andy Thompson, Beech Williamson, Lucy Watson, Diane Holt
St. John's P,Waterloo	Sefton	1989-91	—	D47	Jeremy Wilson, Bridget Sanders, Robin Bishop
Lord Byron, Gyumri	Armenia	1989-90	—	B74	Jeremy Wilson, Elizabeth Lloyd-Jones, Robin Bishop, Philip Orde
Victoria I, Tipton	Sandwell	1993-94	—	B90	Diane Holt, Robin Bishop, Jonathan Ibikunle, Alison Wadsworth
Millennium P	Gnwich	2000-02	—		Robin Bishop, Alison Wadsworth

The Development Projects

With the technical development of prefabrication largely entrusted to the consortia, A&B Branch could devote its energies to the design implications of education policy and practice. Their responses to the Newsom and Plowden reports, comprehensive reorganisation and the raising of the leaving age to 16, middle schools and sixth-form colleges, and 'community schools' are detailed elsewhere in this report. Christian Schiller, Leonard Gibbon, Eric Pearson, Peter Rattenbury and other members of the Inspectorate acted as conduits between the DES architects and education professionals in the regions.

Changing patterns of teaching and learning, along with the technical factors of lighting, ventilation and cost limits, spurred Development Group to reconsider every aspect of school design. Finmere Primary School was the first of a sequence of projects where the Medds explored what they termed a 'built-in variety' of teaching spaces. This village school in rural Oxfordshire was described by *Official Architecture and Planning* as 'a radical departure from orthodox design, and has had an enormous influence on subsequent building'.[9] These ideas were developed at **Eveline Lowe Primary School** in South London, **Armitage County Primary School**, Manchester and Delf Hill Middle School in Bradford (page 39).[10] For middle and secondary schools, with their greater intake and more differentiated and specialised curricula, 'centres of interest' were suggested as a means of implementing flexible, multi-disciplinary curricula whilst providing the basis for teacher cooperation, mixed age and ability learning and a system of pastoral care at larger schools (pages 46-48). Centres were implemented at the **Abraham Moss Centre**, North Manchester and **Maiden Erlegh Secondary School** in Berkshire.

All of the Development Group's work, whether or not it ended with a building, started with an investigation of the organisational, educational and technical aspects of their remit. School visits provided opportunities to observe teaching practice, patterns of circulation, the use of furniture and fittings. DES architects teamed up with key teachers, educational advisers and HMIs to discuss preliminary ideas.[11] Local authority architects, on the other hand, were not routinely consulted until the late 1960s, although they were often nominally credited when a project was published. The next step was a cost plan, prepared in consultation with the A&B Branch quantity surveyors and administrators. A series of givens and prescriptions, principally the number on roll, the site area, space minima and cost maxima were juggled to give an accommodation schedule and a breakdown of the total floor area. This formed the basis of block plans or more detailed interior layouts including possible configurations of furniture. A model, complete with miniature furniture, was usually prepared for discussion with the local authority (fig. 4.3).[12]

Only then was a design 'detailed up'. The larger development projects, such as secondary and community schools, were divided into components which were assigned to individual job architects. At this stage, the technical implications of the layouts would be considered, especially where a light and dry constructional system was to be employed. Guy Hawkins, a member of the Delf Hill team, recalls 'pushing David [Medd]'s plan "onto grid", setting out the columns and roof trusses, organising the wind bracing panels where they would least interfere with the plan, and checking the daylight factors'.[13] In other projects even the earliest conceptual designs were sketched onto a gridded layout.

Figure 4.3: Model of Guillemont Junior School, Hampshire; DES Development Group, 1975-76. Some furniture manufacturers sold scale models of their educational ranges for use in architectural models. Institute of Education Archives: ABB/B/1/221/1.

Later Developments at A&B Branch

Periods of adjustment and uncertainty followed the departure of Johnson-Marshall in 1956 and the premature death of his successor Anthony Pott in February 1963.[14] 1964 brought a Labour government, the reorganisation of the Ministry of Education into the Department of Education and Science, the appointment of John Hudson as chief administrator, and a new chief architect in the person of Dan Lacey, previously County Architect at Nottinghamshire. His two deputies were John Hudson and John Kay. These changes heralded a renewal of purpose for A&B Branch; its purview was widened to embrace new educational, administrative and technical challenges, although some became disillusioned with the increasingly hierarchical structure introduced by Lacey.[15]

The following years saw the familiar pattern of development projects and territorial work augmented by several new initiatives, some of which served the rapidly expansion of further and higher education. The Joint Development Project, led by John Kay, modified CLASP to bear the heavy floor loads required by university engineering and science faculties.[16] The Laboratories Investigation Unit (LIU), set up in 1967 under Guy Oddie and continued by Tony Branton, Frank Drake and Roger Clynes, developed an adaptable system of laboratory fittings for higher education and research institutions. A range of components were made commercial available through a partnership with manufacturer Sintacel Ltd. The LIU approach was trickled down to science provision in secondary schools through work at Harpurhey High School in Manchester; the Pembroke Comprehensive School in West Wales; **Henry Fanshawe Secondary School**, Derbyshire and the **Abraham Moss Centre**.[17] Other DES architects contributed to influential extra-mural initiatives such as Michael Hacker's secondment to the Nuffield Resources for Learning Project (page 48). The Branch was an active participant in the Programme for Educational Development of the Organisation for Economic Co-operation and Development and additionally visited schools in several countries such as the United States, France and the Netherlands.[18] A&B Branch also continued to design school furniture for mass production. David Medd and John Marshall cooperated with the Furniture Industry Research Association on a range of school furniture was later manufactured by Pel Ltd under the Forme brand (fig. 4.4.).[19]

Figure 4.4: Armitage County Primary School, Ardwick, Manchester; DES *Development Group, 1967. Special attention was paid to the colour coordination of fixtures, furniture and paint, used in combination with textiles and natural wood. The school was the first to be equipped with a new range of school furniture in wood, tubular steel and plastic designed by the Development Group for the* CLASP *consortium and marketed by Pel Ltd from 1969 as the 'Forme' range. This 1967 photograph by David Medd was published in* Design, *no. 227, p.42, and kindly supplied by the University of Brighton Design Archives. Crown Copyright; reproduced under the terms of the Open Government Licence.*

Lacey also turned his attention to development projects, which had fallen into a lull after a burst of activity in the late 1950s. He can be credited with a renewal of A&B Branch's commitment to school building systems.[20] The departure of Johnson-Marshall, the most zealous advocate of industrialised building in the public sector, and the transfer of much technical development work to the consortia coincided with a series of A&B Branch projects *c*.1956-66 which explored rationalised traditional construction (page 71). These exasperated former Hertfordshire colleagues such as Henry Swain:

> One cannot help regretting that the group of architects who have done most to establish prefabrication as the vehicle of good architecture have stepped aside from its development even for a time. There are few enough architects with this kind of experience.[21]

Development Group had, after all, been established with the principal aim of establishing and refining new constructional systems. Lacey, a staunch exponent of industrialised school building at Hertfordshire and later Nottinghamshire, ensured that new development projects were completed in the consortium system to which the host authorities had signed up. The Branch were instrumental in the establishment of further consortia in 1963-66 (pages 69-71) and formed a Technical Co-ordination Working Party in 1964, chaired by Dick Thompson.[22] A Building Productivity Group, headed by

John Kitchin, worked towards the quixotic goal of the convergence of 'closed' building systems and greater interchangeability of components through dimensional coordination (pages 73-74).[23]

The decisions of the incoming Labour government to support non-selective education and to raise the school leaving age spurred A&B Branch to consider the practical implications. Little architectural guidance on comprehensive schools had been issued during the Conservative administrations of 1951-64.[24] A slew of investigations, published as Building Bulletins and sometimes accompanied by built development projects, addressed the design implications of educational reorganisation, such as the adaptation and expansion of existing schools (**Maiden Erlegh** and **Henry Fanshaw**); middle schools (Delf Hill) and sixth-form centres (**Rosebery Grammar School** in Surrey) and community provision at large urban comprehensives (the **Abraham Moss Centre** and the **Victoria Centre** in Cheshire).

By this time wider shifts in the central-local governmental balance of power were apparent. The greater independence of local authorities was recognised by delegating portions of certain development projects to authority architects from *c.*1966. **Armitage County Primary School** was the first of several development projects in which development group were responsible for the outline design, with detailed design entrusted to the local authority architects.[25] Proclaimed as 'a new form of collaboration between central and local government', the reform was nevertheless disadvantageous from the A&B Branch perspective, as it undermined the reciprocal relationship between thinking and doing that underpinned all its activities.[26] With it came a loss of overall control over such manifest aspects of school design as furniture and fittings, lighting, colour and landscaping.[27]

In the climate of public-sector retrenchment which obtained from the mid-1970s, A&B Branch was placed on the defensive. It underwent administrative reforms, including the loss of the joint headship in 1982, and its advisory and regulatory roles were scrutinised in a series of civil service reviews.[28] In response to the declining school population, the emphasis shifted from from design to looking at the educational estate as a whole. Several development projects comprised the preparation of strategic planning frameworks with authorities for the rationalisation of their existing 'stock' of school buildings. Much of this work involved the organisation of local seminars or 'charrettes' where teachers, administrators and architects could work together to consider options and opportunities.[29] Maintenance also became a priority, and in 1986 the Secretary of State Keith Joseph commissioned a survey into the repairs backlog to the national schools estate.[30] Recent Building Bulletins have combined a focus on design regulations (such as access and fire safety) with guidelines on the more complex procurement procedures that exist today. Architects and Building Branch was renamed the Schools Building and Design Unit around 2001 and the post of Chief Architect was abolished in 2005.[31]

Gazetteer

Primary Schools

¶ **Eveline Lowe Nursery and Primary School**, Marlborough Grove, London Borough of Southwark; DES Development Group (job architects David and Mary Medd with John Kay and Norman Reuter) with LCC (ILEA after 1965), designed 1963-64, built 1965-66. Listed at Grade II in 2006.

In its inception and intention, Eveline Lowe is inseparable from the Plowden committee's review of the practice and policy of primary education in England.[32] It was also A&B Branch's sole collaboration with the progressive Education Department of the London County Council (reconstituted in 1965 as the Inner London Education Authority). Much of the educational thinking behind Eveline Lowe can be attributed to Nora Goddard, LCC Inspector of Infant Education and a member of the Plowden secretariat. The junior department of the school (for ages 9-11) was housed in a reconditioned inter-war elementary school adjoining the site, so the new building accommodated the 3-9 age range. This sleight of hand allowed the project to investigate Plowden's recommendations of nursery units within primary schools and transfer at the age of 8 or 9 to a middle school. The handpicking of staff and in particular the early appointment of headteacher Betty Aggett, who spent a sabbatical year visiting schools in Oxfordshire, Nottinghamshire and the West Riding, indicated that nothing was left to chance, although these circumstances were hardly replicable by local authorities.[33]

A large, inner-city primary school, Eveline Lowe's 320 pupils came from diverse social and cultural backgrounds, with a significant proportion of immigrant children. The Medds' approach, based on their earlier village school at Finmere in Oxfordshire, combined 'variety and fluidity in teaching and learning, especially across the established nursery/infant/junior divide; […] teacher cooperation; and […] the detailed design and layout to facilitate this', as their former colleague Guy Hawkins explains.[34] Eight home bases were loosely paired to encourage different learning groups and the cooperation of teachers and teaching assistants. Courts and verandas were incorporated into a rambling footprint and intricately-detailed interiors featured spaces of different characters: from cosy rooms for story-telling and rest, bays for practical work and raised, carpeted areas for play. A 'Pullman' dining area overlooking a court could also be used by parents, assistants or welfare-workers for one-to-one sessions and for the display of pupils' work.[35] David Medd designed a range of fittings and furniture with much emphasis on mobile units.

Eveline Lowe Primary School was ceremonially opened in February 1967 by Anthony Crosland MP, Secretary of State for Education and Science.[36] The project is perhaps most notable

Figure 4.5: The 'pullman' dining area of Eveline Lowe in July 1966. Note the 'warm' interior (handwoven wicker lamps, softwood boarding) and bays which alternate window seats with spotlit display areas. Institute of Education Archives: ME/Z/5/2/86.

Figure 4.6: A 1971 view of Eveline Lowe Nursery and Primary School, Southwark; DES Development Group,1965-66. Institute of Education Archives: ME/Z/5/2/86.

for its close affinity with the 'child-centred' educational aspirations of the Plowden committee, the school was widely published and visited.[37] Its elongated, irregular layout contrasts with a late 1960s move towards deeper and more compact plans, and the unassuming, brick-clad exteriors were perhaps more welcoming to children than they were appealing to architects.

But the underlying principle of 'built-in variety' was influential in Nottinghamshire, West Riding and other authorities. Eveline Lowe was listed at grade II in 2006 and 2009-10 saw refurbishment and extensions for a new upper school, designed by John Pardey Architects in association with HKR Architects, with Sir Colin Stansfield Smith as consultant.[38]

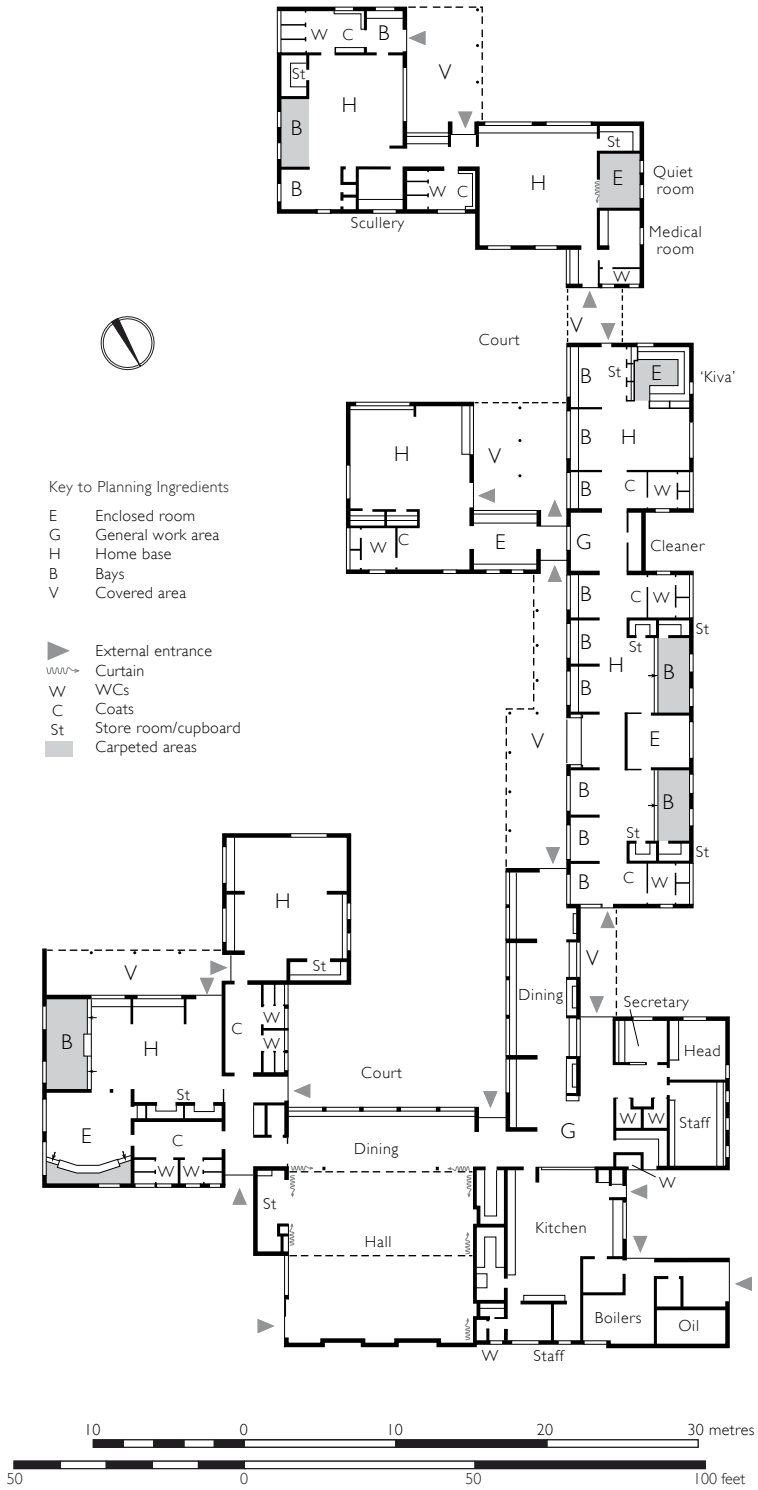


Figure 4.7: Eveline Lowe Nursery and Primary School, London Borough of Southwark; DES Development Group, 1965-66.

¶ **Armitage County Primary School** (now Armitage Church Of England Primary School), Rostron Avenue, Ardwick, Manchester; DES Development Group (main job architects David and Mary Medd) and Manchester City Council Architect's Department, built 1967.

This single-form entry school, for 310 pupils aged between 3½ and 11 years old, was an element of the Thomas Street comprehensive redevelopment in Ardwick, Manchester, which provided a mixture of new housing based on Radburn-type layouts.[39] The detailing of the school in CLASP Mark IV construction was overseen by Manchester City Council Architect's Department from sketch plans provided by David and Mary Medd (fig. 1.5). Four double classroom bases, each for about 80 pupils and two teachers, pinwheel off the corners of a central hall. Each base was provided with its own entrances, outdoor paved area, WC and other facilities and a high proportion of teaching space was shared between the two classes. The layout of the junior bases anticipated more varied and flexible groupings and included a workshop, kiln and carpeted 'sitting room'. The project was also the test-bed for a new range of CLASP furniture designed by A&B Branch and manufactured for the Supplied Division of the Ministry of Public Building and Works.[40]

¶ **Chaucer Nursery and Infant School**, Cantelupe Road, Ilkeston, Derbyshire; DES Development Group (job architects Graham Parker, Dick Thompson, Liz Fraser, John Brooke, Derek Poole) with Derbyshire County Council, designed 1971-72, built 1973-74.

Chaucer came only five years after the completion of **Eveline Lowe** and demonstrates how rapidly primary school design had developed in the intervening period. The initial project investigation had highlighted the

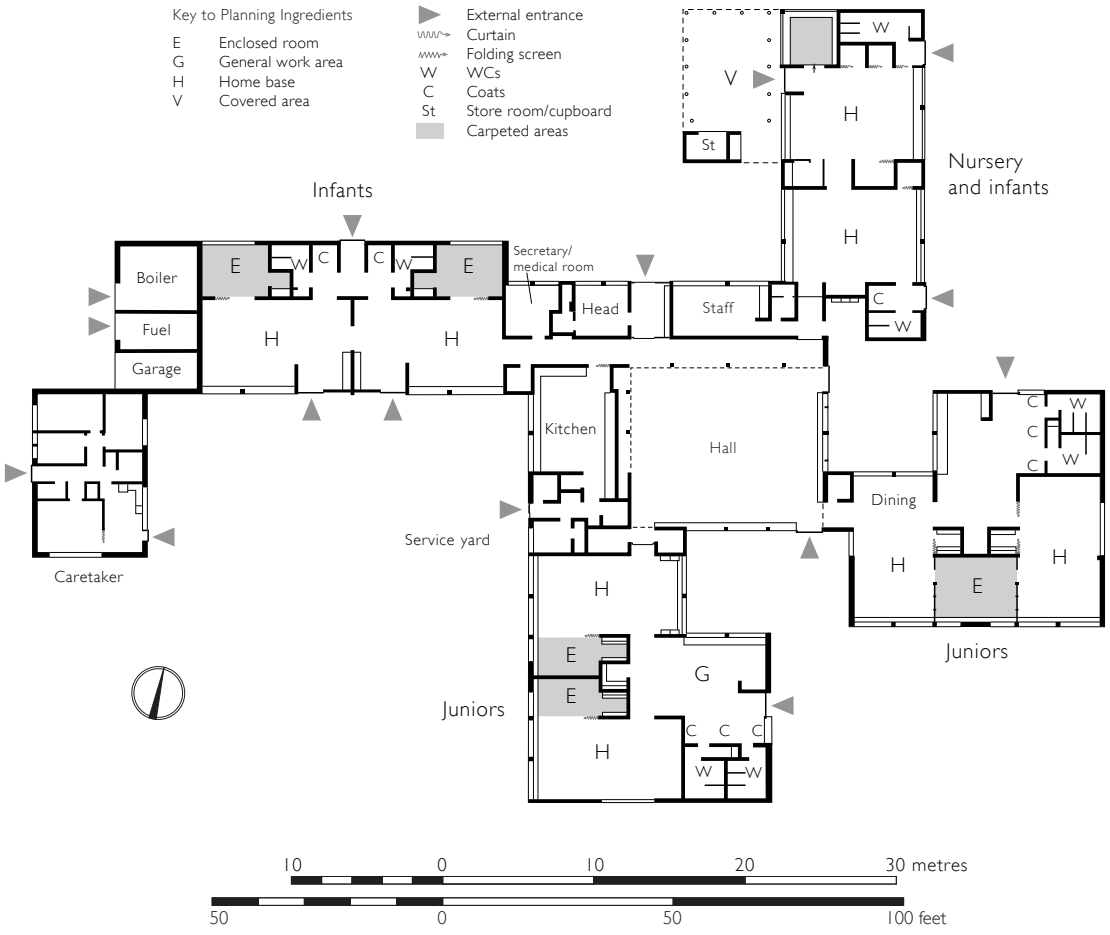


Figure 4.8: Armitage County Primary School, Manchester; DES Development Group, 1967.

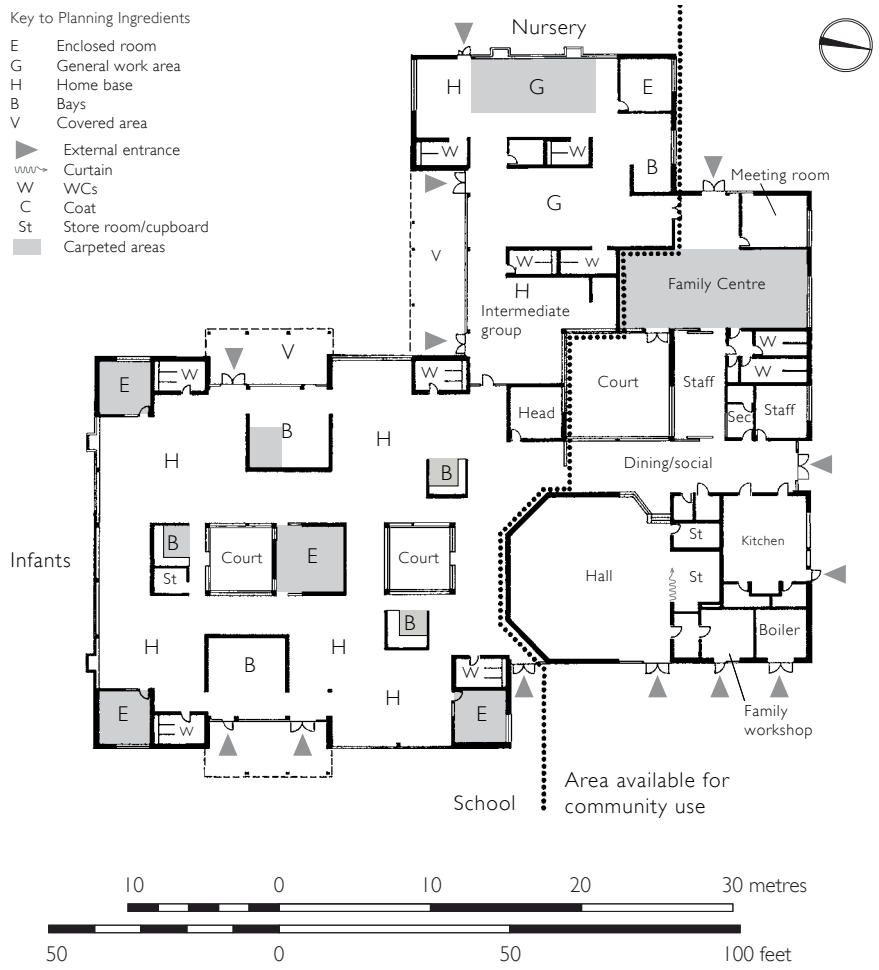


Figure 4.9: Chaucer Nursery and Infant School, Derbyshire; DES Development Group, 1973-74.

transition between nursery and infant stages, increased staff-pupil ratios, the growing presence of parents and welfare helpers, community use and new techniques of environmental servicing. The Medds were involved in the briefing stage and the influence of their child-centred methodology is apparent, but they withdrew from the project after disagreements over planning approaches, effectively marking the end of their direct influence on primary school planning in England.[41] In their absence the project was completed by a young design team led by Graham Parker, which started by visiting the type of open-plan primary schools rejected by the Medds.[42]

The nursery and infant centres were connected by a transitional group with a hall at the exterior angle, forming an L plan. The design is more reliant on artificial lighting and mechanical ventilation than **Eveline Lowe**, although rooflights bring natural light into the deep plan and bay windows frame views out. The heating and ventilation systems were ceiling mounted to free the floor and walls from obstruction. Inflationary pressure and the CLASP planning grid discouraged the rambling perimeter that characterised the earlier development projects. In recognition of the mix of teaching styles at any one school, the layout was 'deliberately not structured for any one form of organisation'.[43] External courts, group bays, play activity studios and outdoor workshops were distributed across a relatively open interior.[44] Apart from enclosed group rooms at the corners, the perimeter was kept relatively clear of partitions, a departure from the Medd's use of perimeter bays for practical work. The site was in the middle of a public park near to the town centre, giving the potential for community use. Supplementary

funding from Ilkeston District Council allowed a family centre for mothers and young children, supervised by a community teacher who divided her time equally between community activities and teaching. This was linked to the staff social area, hall and dining areas to open up the maximum extent of the school for a variety of community uses.[45] The building survives with new windows and internal replanning.

¶ **Guillemont Junior School**, Sandy Lane, Farnborough, Hampshire; DES Development Group (job architects Catherine Edwards, Dick Thompson, Jeremy Wilson, John Brooke and Jane Sachs) with Hampshire County Council, designed *c.*1973-74, built 1975-76, refurbished 2003.

At Guillemont, the challenge of designing a junior school was revisited by a younger generation of designers. A high turnover of bright pupils was expected in the 480-place school, which accommodated the children of the servicemen posted at Guillemont barracks. Hampshire County Council was then contemplating an educational reorganisation to include middle schools, so Guillemont was designed for easy conversion to a middle school of 420 or 560 places, including a phased extension.

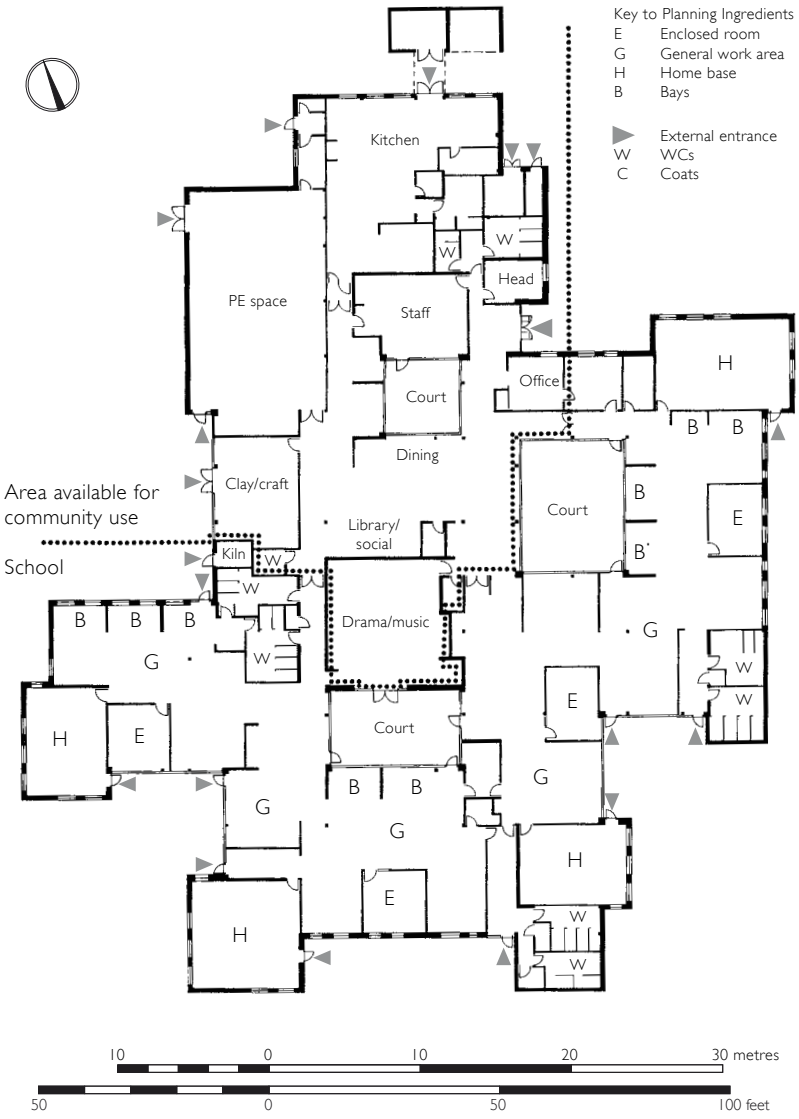


Figure 4.10: Guillemont Junior School, Hampshire; DES Development Group, 1975-76.

Figure 4.11: 'Pullman' dining area at Guillemont Junior School. Institute of Education Archives: ABB/B/1/221/1

The aggregative plan resulted from a desire for maximum flexibility of organisation and represents an early use—for A&B Branch and within Hampshire— of deeper plans. The indented outline and the three small courts allowed natural lighting, supplemented with a greater use of top lighting and artificial lighting than had previous A&B projects. The school was composed of four teaching clusters in which three or four teachers shared a variety of spaces, including carpeted home bases, investigation areas, and enclosed rooms for drama/music, clay/craft, reading and PE. The latter was designed for out-of-hours use by adult groups, although the school received no additional funding. The influence of the Medds shows in the bays, verandas and 'Pullman' dining seats looking out into the courts. Guillemont was built in SCOLA Mark III construction, yet its brick cladding and 'hole in wall' windows of vertical proportion mark a return to a traditional appearance that anticipates later developments at Hampshire.[46]

¶ **St. John's Primary School**, Denmark Street, Waterloo, Sefton; DES Development Group (job architects Jeremy Wilson, Bridget Sanders, Robin Bishop) with Ellis Williams Partnership (job architects Desmond Williams, Jim Buxton and Chris Martin), designed 1988-89, built 1989-91.

Although it lies just outside the chronological range of this study, St John's demonstrates the consideration of the National Curriculum, Information Technology, energy conservation, vandalism and crime in the planning of a single-form entry primary school. The school governors of this Church of England school asked A&B Branch to collaborate with their appointed architects the Ellis Williams Partnership (EWP) on the briefing and initial stages of the design; the detailed design and the elaboration of construction and services were completed by EWP.

A brief and accommodation schedule were drawn up after discussion with the head teacher, staff, governors and EWP. The cramped and noisy urban site dictated a fairly compact and 'defensible' plan, and the client chose from a series of sketch plans prepared by the A&B team. The selected design was a series of seven classrooms radiating from a shared resource area which doubled as circulation. Such layouts had long been in circulation in Buckinghamshire and Hampshire (qv), although normally with paired classrooms.. At Sefton the more costly arrangement of single classrooms with intervening quiet bays, WCs and cloakrooms was adopted. Extra space was provided for computer desks and the storage of IT equipment and each classroom has access to a covered area. A central atrium had to be substituted by an open courtyard on cost grounds. A glazed conservatory of cheap greenhouse construction was added between the courtyard and the hall with craft design and technology (CDT) in mind.[47]

Secondary Schools

¶ Sixth Form Centre at **Rosebery Grammar School**, White Horse Drive, Epsom, Surrey; DES Development Group (job architects Frank Jackson, Andrew Beard, Frank Drake, Brian Staples, Ian Fraser) with Surrey County Council, designed 1964-65, built 1966-67.

This sixth form extension to an existing neo-Georgian grammar school was designed using the SEAC system of which Surrey was a member. About half of the 300 girls were drawn from the school's own three-form entry, the remainder drawn from a wide and relatively affluent catchment of secondary schools. The planning of the two-storey block aspired to the diversity and informality of further education models, combining a lecture theatre and large group room for formal teaching, seminars and tutorial rooms with a study area with carrels designed by Frank Drake. On the ground floor were an

interlinked series of social spaces, including a carpeted lounge, common room and snack bar, with adjoining powder room.[48]

¶ **Henry Fanshawe Secondary School**, Green Lane, Dronfield, Derbyshire; DES Development Group (job architects Len Holland, Jane Lamb, Keith Routledge) with Derbyshire County Council (job architects John L. Carter and John A. Humpston), 1968-71, demolished.

The reality of comprehensivation was not new build but additions to hundreds of existing secondaries.[49] At Henry Fanshaw, a grammar school of 350 pupils had to be enlarged into a senior comprehensive school for 990 pupils aged 14-18. A series of extensions to the school's nineteenth-century buildings was sketched out by Len Holland of A&B Branch and detailed up in CLASP Mark IV by the Architect's Department of Derbyshire County Council. Pastoral care was organised on a year basis. The old school was reordered for humanities and maths, to which a new single single-storey crafts and science block was added, with a two-storey social block as a linking device. Beyond was a separate sports hall. The crafts and science block consisted of a partially-full height dining room with a common room-cum-study block arranged around a light 'well'—a noisy arrangement. The science, and arts & crafts accommodation was given a deep and semi-open plan to loosen inter-departmental barriers, with bays for engineering, woodwork, craft and painting.[50] The CLASP additions were destroyed by two fires in 1986 and 1993.[51]

¶ **Maiden Erlegh Secondary School**, Silverdale Road, Earley, Berkshire; DES Development Group (job architects Frank Jackson, Trevor Prosser, Catherine Edwards, Bryan Staples, Guy Hawkins, John Brooke, Graham Parker and Derek Poole) with Berkshire County Council, designed 1969-70, built 1971-73.

Maiden Erlegh was the second of a pair of development projects to tackle the twin problems of comprehensive reorganisation of an existing stock of school buildings and the raising of the school leaving age. The principal challenge at Maiden Erlegh was how to organise the expansion of a school: the roll was to be tripled from a 450-place mixed secondary modern school of 1961 to 1,200 places with a sixth form of 240. The DES educational advisor Eric Pearson suggested a lower school for years 11-13 and six relatively self-contained 'interest centres' for related subject areas. The horizontal organisation of the school allowed team teaching and flexible timetabling.[52] The team conceived the lower school as a transition from primary to secondary school teaching methods and organisational patterns.[53] It was a largely self-contained 'school within a school', offering 11 and 12 year olds a protective and identifiable base for up to half of their time.[54] Guy Hawkins' design for the lower school is detached and relatively open, with enclosed group rooms at the corners and entrances flanking a central studio and social area.

Each centre was provided with the variety of linked spaces, planned with flexibility in mind. They comprised an open-plan core of shared facilities, seminar or lecture rooms, a 'team workroom' for staff lesson planning; a small library, and study and social areas.[55] Shared areas are generally deep and open-planned, carpeted, divided by moveable storage units, largely artificially lit and serviced by drop-down electrical sockets. A few closed rooms for class teaching and tutorials were grouped around the perimeter. The planning of the interiors was influenced by the German *Burölandschaft* technique of office layout, which the architects had seen applied by the Ministry of Public Building and Works for an experimental Home Office building at Kew.[56] A '15+ club' combined a youth club with private study in common rooms and adjoining seminar rooms. Community

Figure 4.12: The north courtyard of Maiden Erlegh Secondary School, Berkshire; DES Development Group, 1971-73. Institute of Education Archives: ABB/B/1/72/1.

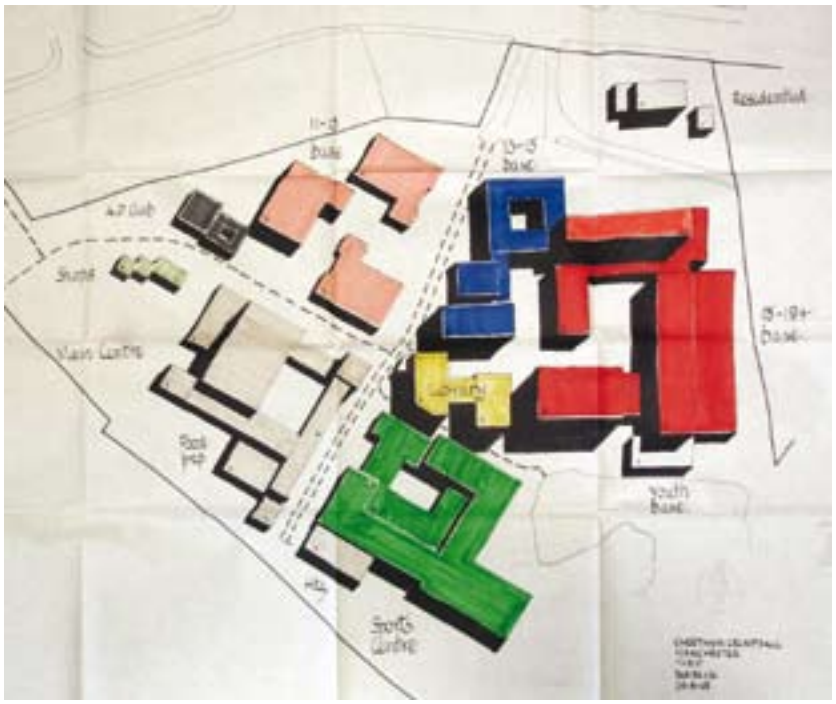


Figure 4.13: An early layout for the Abraham Moss Centre. This presentation drawing by David Medd is dated August 1968. Institute of Education Archives: ME/E/10/5.

provision took the form of a youth wing, adult education facilities and a small branch library. The additional buildings, realised in the Method consortium to which Berkshire belonged, were loosely grouped around the existing complex with much external circulation.

¶ **Abraham Moss Centre**, Crescent Road, Cheetham Crumpsall, North Manchester; DES Development Group (main job architects Michael Hacker, David and Mary Medd, Ian Fraser) with Manchester City Council, designed 1968-70, built 1971-74, since altered.

The Abraham Moss Centre arose out of a larger urban renewal strategy for a run-down area on the northern outskirts of Manchester. When the project investigation began in late 1967, Abraham Moss was conceived as a reorganisation of an existing secondary school as a 1,200-place comprehensive school with social and recreational facilities for the wider community. The following year, the City Council, with the encouragement of Chief Education Officer Kenneth Laybourne, approved a more ambitious scheme with a college of further education and a greater scope of community provision including a district sports centre, crèche, youth club, theatre, library, shops and old persons' day care centre, together with public open space and playing fields (fig. 2.12). The curriculum was be aligned with the organisation of the complex by means of multi-disciplinary 'centres' of different sizes and compositions, as at the contemporary Maiden Erlegh, an idea originally developed in response to the Newsom report (pages 46-48).[57] The 24,000m² complex was a low and compact network of CLASP blocks of up to three storeys, lit by small courtyards, entered by dispersed entrances linked by high level footbridges and 'internal streets'.[58] Phased construction meant that the school was a 'building site' in the early years.[59]

The Medds' design for the lower school and arts centre reflects their concern to provide a sheltered and identifiable environment for younger pupils amid-a large and diverse school community. Like their earlier design for Delf Hill, it was subdivided into four centres, each for 120 pupils and five teachers. The lower school was intended to be virtually self-sufficient in terms of resources, and the centres catered for about 90% of the curriculum, obviating the need for specialist accommodation and providing a transition to the upper school. It was provided with its own 'Pullman' dining area which doubled as a study area. The Abraham Moss school was severely damaged by fire in 1997 and the science and maths block has since been replaced.

¶ **Victoria Centre**, West St, Crewe, Cheshire; DES Development Group (job architects Michael Hacker, Graham Parker, Keith Routledge, John Marshall, Ann Hodges, Helen Sachs) with Cheshire County Council, designed 1975-76, lower school built in 1976-77, upper school and community provision (1978-79), PE, science and language centre (1980-81).

The Victoria Centre grew out of an abortive project for Clayton Green District Centre in Central Lancashire New Town. Both schemes incorporated community provision and were part of a larger urban plan. The Victoria Centre was seeded into a redevelopment area to explore the joint contribution of inner-city schools and community provision to urban renewal, objectives set out in the Plowden report. The lessons of planning **Abraham Moss** as a single complex was that different sets of users were better accommodated in separate buildings. The Clayton Green and Crewe projects were therefore planned as a village of separate buildings, which could grow and adapt with the town of which they were part. At Crewe, an open-ended, 'gradualist' approach was adopted in the face of uncertain financial commitment and population forecasts. A variety of building types and life spans were combined, including phased new build, the conversion of a

Figure 4.14: A DES design study for educational and community provision at a district centre, based on a 'classical planning solution of streets and building plots'. The study informed a development project, subsequently abandoned, for Central Lancaster New Town. Redrawn with permission from Architects' Journal, *vol.163, no.2, 26 May 1976, p.1051.*

1931 elementary school into a lower school and temporary accommodation including a giant inflatable PE dome. The three new centres were woven into the existing pattern of terraced streets between a shopping centre and the remodelled school. The detailed design was completed by the Architect's Department of Cheshire County Council in a modified version of SCOLA with brick cladding and monopitched roofs that was intended to be 'unobtrusive but inviting to passers by'.[60].

¶ **Djanogly City Technology College**, Sherwood Rise, Nottingham; DES Development Group (job architects Andy Thompson, Graham Parker and Beech Williamson), designed 1987-88, built 1988-89.

In 1986, the government announced a plan to establish a network of city technology colleges (CTCs) as part of their 'Action for Cities' initiative. These were effectively a species of urban comprehensive but differed in their vocational bias, partnerships with local enterprises, a curricular emphasis on science and technology and extensive use of IT. The first CTC, Kingshurst in Solihull was designed by the Ellis Williams Partnership and opened in September 1988. Sixteen more followed over the next four years; the need to build quickly led to the use of 'fast-track' construction techniques and design-and-build contracts usual in commercial development. The colleges were an early instance of public/private partnership in educational building, deriving a proportion of their capital funding from the private sector, usually local businesses or industries, who in return were given representation on the governing body. The balance and the maintenance costs were met by central government and the school was operationally independent from the local education authority. In many respects then, the CTCs anticipated aspects of the present educational landscape.

Djanogly CTC accommodates 1,000 pupils between the ages of 11 and 18. It was the first newly-built CTC and acted as a pilot project for the whole programme, providing the basis of a Building Bulletin.[61] The college occupies a small 4.5 acre site surrounded by Victorian housing. Three similar deep-plan blocks plus a linear block containing a sports hall, music/drama

Figure 4.15: Model of Djanogly City Technology College in Nottingham; DES Development Group, 1988-89. Institute of Education Archives: ABB/A/35/16.

studio and administration are grouped around a quiet courtyard. These house four faculties, each with its own director: 'enterprise and business links', 'expressive arts', 'heritage and communications' and 'science, mathematics and technology'. Each block contains rows of cellular classrooms ranged around a central, full height and top-lit atrium. Djanogly was designed, built and fitted out within two years. Perhaps because of this, or because of the leanings of the CTC programme towards the private sector, Djanogly less resembles a school than spec offices or a business park, and was planned to be adaptable. The three teaching blocks are steel framed with brick cladding and low-pitched metal roofs.[62] The building is now the 14-19 Centre of the Djanogly City Academy, which has two other sites nearby.

ENDNOTES

1. Maclure 1984, 66.
2. Maclure 1984, 104-05; MoE 1957.
3. Mills 1968, 1280.
4. Maclure 1984, 62-63.
5. Pile 1979, 79.
6. Guy Hawkins pers.comm., 28 September 2011.
7. Michael Hacker, pers.comm., 13 March 2011.
8. Sources: Maclure 1984, Saint 1987, DES Building Bulletins and Design Notes; Guy Hawkins, pers. comm. 8 September 2010.
9. Mills 1968, 1283.
10. Franklin 2012b.
11. Liz Fraser pers comm., 18 October 2010.
12. Twelve models have been accessioned to the British Architectural Library, and held at the RIBA Study Room at the Victoria and Albert Museum: reference MOD/EDUC/1-11 [outstore].
13. Guy Hawkins pers.comm., 16 September 2010.
14. Saint 1987, 187-90. At a Development Group meeting in September 1963 David Medd noted '1. Lack of Chief Arch. 2. Disentegration [sic] 3. Interest but not lead' (Institute of Education Archives: ME/C/1/6, Notebook 72, p.61).
15. British Library: C467/30, 1998 interview with David Medd; Dick Thompson, pers.comm., 18 June 2012.
16. DES 1970 (Building Bulletin 45).
17. Tony Branton, pers.comm., 17 February 2011.
18. Michael Hacker pers.comm., 2 November 2010.
19. Saint 1987, 192-94; Medd 2009, 38-40. Medd chaired the British Standards Institute committee on School Furniture Standards.
20. Dick Thompson, pers.comm, 24 May 2012.
21. *Architects' Journal*, vol.128, no.3321, 23 October 1958, p.610.
22. Dick Thompson, pers.comm, 24 May 2012.
23. Michael Hacker pers.comm., 2 November 2010; Dick Thompson, pers.comm., 18 June 2012.
24. The two Coventry comprehensives designed by A&B Branch in the early 1950s were not written up as Building Bulletins, no doubt to avoid political controversy.
25. Such a way of working had a precedent of sorts in the Hertfordshire projects where sketch plans were entrusted to selected private architects (Saint 1987,77). The practice continued at A&B as late as 1988-89 at Sefton Primary School.
26. *Architects' Journal*, vol.146, no.6, 9 August 1967, p.345.
27. Michael Hacker, pers.comm., 13 March 2011.
28. Maclure 1984, 265; *Architect's Journal*, vol.183, no.6, 5 February 1986, p.20; Thompson nd; Institute of Education Archives: ME/T/5: 'Efficiency Scrutiny of the Department's Architects and Building Group', unpublished report of 1985 by Sir George Mosely.
29. Michael Hacker, pers.comm., 13 March 2011.
30. DES 1987; Dick Thompson, pers.comm., 18 June 2012.
31. Andy Thompson, pers.comm.,22 February 2011. For an account of A&B Branch in the 1990s, see Thompson nd.
32. Franklin 2012b.
33. DES 1967 (Building Bulletin 36), 18; David Medd, pers. comm. 3 July 2008.
34. Guy Hawkins pers.comm., 10 March 2011.
35. Guy Hawkins pers.comm., 16 September 2010
36. The ILEA resolved to name the school after Eveline Lowe, member of the LCC for West Bermondsey and chairman of the Education Committee 1934-37, in July 1965 (Minutes of the ILEA Schools Subcommittee, 7 July 1965, p.127).
37. Bennett *et al* 1980.
38. http://www.johnpardeyarchitects.com/assets/Uploads/Eveline-Lowe.pdf, accessed 15 August 2012.
39. Alexander 2009, 77.
40. *Architects' Journal*, vol.144, no.18, 26 October 1966, pp.1035-40; *Architects' Journal*, vol.146, no.6, 9 August 1967, pp.345-350.
41. Guy Hawkins pers.comm., 8 September 2010; Liz and Ian Fraser pers comm., 18 October 2010. Mary Medd gave an account in a 1998 British Library interview (transcript at Institute of Education Archives: ME/B/3).
42. DES 1972 (Education Survey 16).
43. Maclure 1984, 186.
44. DES 1973 (Design note 11); Franklin 2012b.
45. *Architects' Journal*, vol.163, no.2, 26 May 1976, pp.1047-48. An A&B Branch report of 1984 describes an appraisal of the school made in 1978-81 (Institute of Education Archives: ME/E/12/2).
46. DES 1976a; *Architects' Journal*, vol. 163, no. 21, 26 May 1976, p.1049; *Building Design* no. 327, 10 December 1976, pp.16-17.
47. DES 1989.
48. DES 1967 (Building Bulletin 41).
49. DES 1968 (Building Bulletin 40) considered five LEA case studies.
50. *Architectural Review* vol. 110, no.893, July 1971, pp.35-42; DES 1969 (Design Note 2).
51. Source: http://www.dronfield.derbyshire.sch.uk/index.php/home/school-history
52. Guy Hawkins pers.comm., 10 March 2011.
53. Michael Hacker, pers.comm., 13 March 2011.

54. *Architects' Journal* vol. 163, no. 21, 26 May 1976, pp.1045-47.
55. *Architects' Journal*, 11 November 1970, pp. 1147-53.
56. Guy Hawkins pers.comm., 10 March 2011. The office was never occupied but was published *inter alia* in the *Architects' Journal*, vol.149, no.10, 5 March 1969, pp.606-09.
57. Institute of Education Archives: ME/E/10/3: memorandum of 6 March 1968 by Eric Pearson.
58. Banham 1976.
59. Michael Hacker, pers.comm., 2 November 2010,
60. *Architects' Journal*, vol. 166, no. 41, 12 October 1977, p.706.
61. DES 1991 (Building Bulletin 72).
62. DES 1991 (Building Bulletin 72), 14-21.

NOTTINGHAMSHIRE

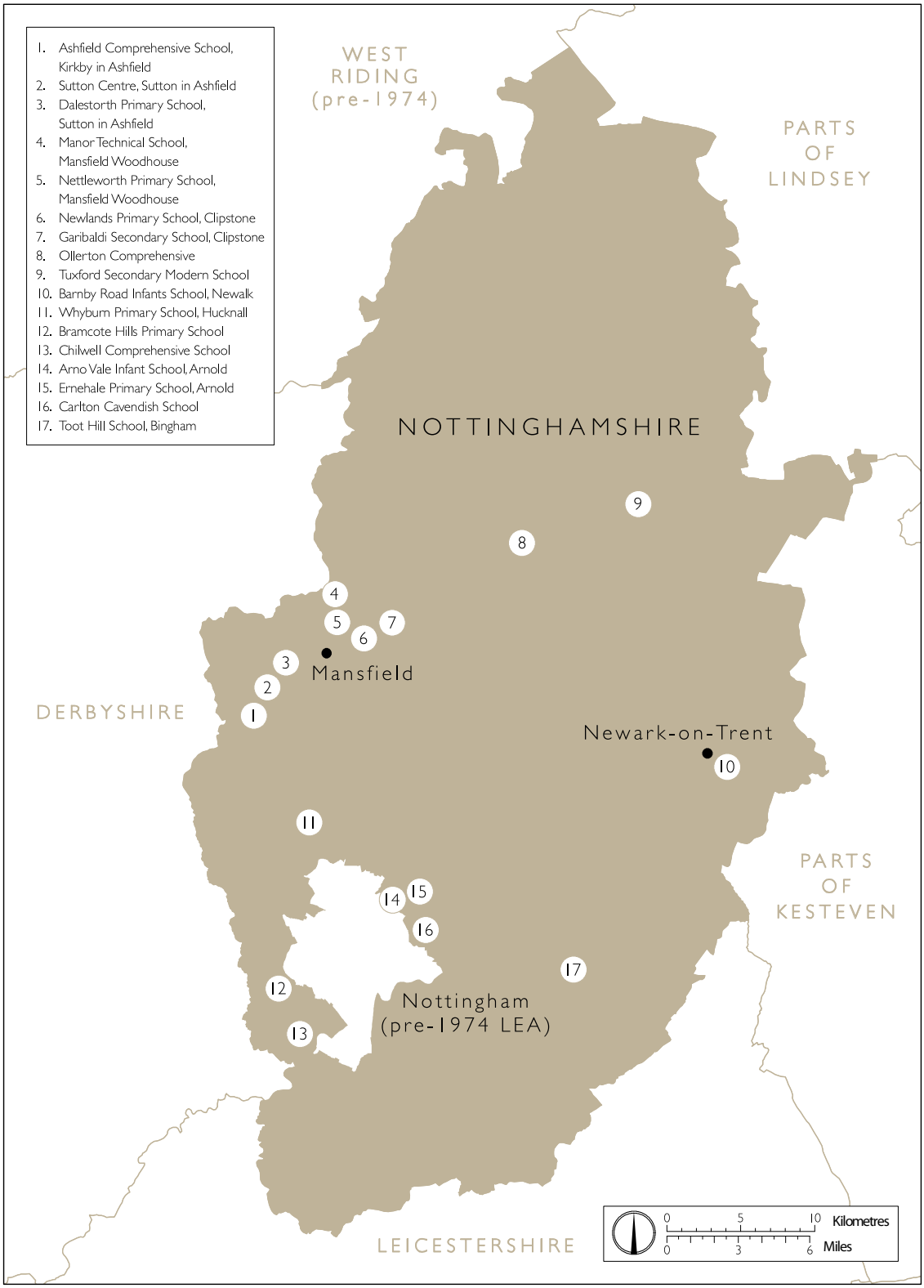


Figure 4.16: Nottinghamshire: location of gazetteer entries.

Nottinghamshire

The building of schools and other public buildings in Nottinghamshire after 1955 is umbilically tied up with CLASP – the Consortium of Local Authorities Special Programme which it launched in 1957 having developed a lightweight prefabricated system that was economical and withstood mining subsidence.

This section concerns the county rather than the city of Nottingham. Nottingham was a separate authority until 1974 outside the consortium; a number of new primary schools were built in the city using CLASP but since its return to unitary authority status in 1998 it has had an aggressive rebuilding programme. The county has rebuilt most of its schools in the north of the county (Bassetlaw DC) but its Building Schools for the Future programme has now stopped. In 2008 it reported that 67% of its building stock was system-built, mostly in CLASP, a percentage three times higher than any other authority. Its total of 730 CLASP projects (November 2008 figure) includes a great many buildings other than schools, including libraries, fire, police and ambulance stations, health centres and offices.[1] Later buildings from the 1980s onwards survive better than those from the 1950s and 1960s.

The Background: the Brockhouse System

Good quality, quickly constructed yet economical building systems were encouraged by the young architects based at the Ministry of Education who advised those working in local authorities. The Ministry's challenge was to take the success of the Hertfordshire programme and develop a cost-effective system suitable for the multi-storey buildings and greater facilities needed by secondary schools. One testing ground was Coventry, where Johnson-Marshall's friend and former colleague Donald Gibson was chief architect and whose problems of a rapidly rising population and labour shortages were among the most acute in the country. Three schools were built by the Ministry of Education in conjunction with Coventry City Architect's Department, who also built schools with Brockhouse Steel Structures.

Brockhouse was a West Midlands engineering firm who had expanded into military vehicles in the war after taking over the Southport motor manufacturers Vulcan. Under F. W. Lister Heathcote, a mechanical engineer, it developed its own building system based on a cold-rolled pin-jointed steel frame, which was used for three primary schools and a secondary school in Coventry, the first planned as early as 1948, with hollow clay blocks as cladding and Crittall windows.[2] Cold rolling saved steel and could more easily secure a licence.[3] The system was refined from an 8'3" bay approach on to a 3'4" grid when the Ministry took up with Brockhouse for an experimental secondary school at Belper working with Derbyshire County Council. As the Ministry's architects Barbara Price, Patricia Tyndale and Donald Barron later explained, 'the frame is braced within itself by steel bracing – a very slight restriction in planning flexibility. Foundations are very simple as the stanchions are pin jointed at the base. The stanchions are small in plan and a constant size, with more used when the loads are greater.'[4] In other words, there

were no posts in the ground, let alone deep piles, and so the basics of what became CLASP were already there.

Brockhouse supplied the frame and cladding – with concrete slabs made for them by Stent Concrete – and secured windows and sub-frames from Hope's, with Crittalls substituted for two secondary and nearly twenty primary schools when Brockhouse subsequently secured an independent contract with Essex County Council. The system, used by Kent County Council at Deal and in Birmingham for a school at Marsh Hill but not widely adopted as Brockhouse were interested in programmes rather than one-off commissions, was reported by the Ministry architects as more flexible and slightly cheaper than Hills. They noted however that the firm was 'very bad on delivery'.[5]

The Problems in Nottinghamshire

In late 1954 Donald Gibson resigned from Coventry following a dispute with councillors over his department's organisation and salary structure. He moved to Nottinghamshire, a county similar in population to Hertfordshire but whose rapid expansion since the late nineteenth century had enjoyed little formal planning and a paucity of public building. In 1944 there was not a single state grammar school in the populous western part of the county, save in Nottingham and Mansfield (the latter until that year a separate education authority). Notts urgently required more schools as light engineering industries encouraged suburban growth and its coalfield became the most productive in the country.[6] The annual school building programme was about £1 million, but by 1955 was alarmingly behind schedule. 'An amazing number of schools were needed' reported Alan Meikle. Secondary schools were a major part of the post-1955 programme.

Between 1944 and 1955 Notts under its county architect E. W. Roberts built 54 new schools, a teacher training college and two technical colleges – no mean feat.[7] Most of these buildings were traditional brick structures, with an implied order in the stout piers of their dominating assembly hall and long lines of heavily glazed classrooms, while there was a preference for shared sites for the secondaries, as at Worksop and Bramcote. However, these buildings were taking up to three years to complete, in part due to the shortage of materials, plasterers and bricklayers, the latter blamed on the demand for power stations in the Trent Valley. The Ministry of Education reported a static pool of building labour across Britain of about 1,400,000 men but, while their output had greatly increased since the war aided by mechanisation, demand had increased still more rapidly - especially after licensing had ended the previous November. This meant that contractors were turning to more lucrative work and there were some schools for which no contractor lodged a tender.

There was an additional problem in Notts - that of mining subsidence as coal was extracted. Roberts's team had used very heavy concrete foundations on a grid system so they could cantilever over the subsidence like a bridge, and their thinking was shared by the Building Research Station. Yet although the county was pumping ten per cent of its budget into foundations, the schools still cracked. Eight of the eleven sites identified for the 1957-58 building programme (for five primaries and six secondary schools) were in areas liable to subsidence. At his interview Gibson, with a tremendous authority born

of his achievements at Coventry, promised to find a solution in two years, and got a free hand on the basis of this commitment.

The Development of a System

To buy time, Gibson built the next annual programme (1956-57) of fourteen schools using an existing proprietary system, Derwent, a timber system suitable for one or two storeys developed just across the Derbyshire border with subsidence in mind, while he devised a more efficient solution. Gibson was one of the best of the team leaders of the post-war years, 'fixing his staff with his piercing blue eyes', as David Meylan recalled, and securing strong loyalties.[8] He recruited two of the architects who had done most to continue Hertfordshire's programme after Johnson-Marshall's departure, appointing W. D. (Dan) Lacey as Assistant County Architect and Henry Swain to lead a new development group. The two complemented each other, Lacey the level-headed one, and Swain radical and charismatic. Henry Swain (1924-2002) was, as his *Guardian* obituary noted, 'a rare combination of romantic rebel and a good technician', who had interrupted his studies at the Architectural Association to serve on the Murmansk conveys in the Second World War and who led on the development of CLASP.[9] By September they had been joined by Alan Goodman (acknowledged as the best designer by both Meikle and Meylan), A. E. Metcalf, David Moizer and Alan Meikle, the latter having worked at Herts after training at Birmingham School of Architecture, another valuable source of assistants. Derek Lakin, David Meylan, Bevis Fuller and Wally Wilson were there by December.

Gibson, Lacey and Swain carefully studied thirteen existing constructional systems and discussed them with the Ministry of Education at a series of meetings on 19-20 September 1955. They claimed not to look at educational needs, but (in order) at cost, speed of erection, site labour, maintenance, flexibility, stability faced with mining subsidence, mechanical properties and appearance. They also looked at furniture.[10]

The Ministry had come to favour pre-stressed concrete systems following the relative success of the Intergrid system it had adopted at Worthing Technical School, Durrington-on-Sea, Sussex, and which was taken up at some twenty other schools. By September 1955 Notts had already agreed to test a new system led by the Ministry architect Maurice Lee and the independent engineer Alan Harris at a new secondary school in Arnold. This was Laingspan, a system of concrete beams encouraged as a cheaper and better version of Intergrid. The Ministry hoped that this would not prove a one-off, but had to agree with Notts that pre-stressed and pre-cast concrete was too rigid for areas of mining subsidence. Arnold Grammar School, designed by John Kitchin and now part of Arnold Hill School, proved most interesting for its house rooms, set in pairs with shared kitchens around a partly-enclosed courtyard, and a Dutch barn that offered a semi-enclosed space for games. Timber had flexibility, but could not be built above two storeys and fire was a problem. The timber Derwent system was used with some imagination at the county's special school for the physically handicapped, Thieves Wood, in Sherwood Forest, but elsewhere it looked ungainly and the county wanted its own solution.[11]

Gibson looked at Roberts's deep concrete foundations and thought them illogical. He was very interested in trains, and later his lectures on CLASP included a slide showing the Flying Scotsman, which was 200 tons yet ran on rails – proving that very heavy moving loads could be held on almost nothing. He, Lacey and Swain determined that the answer lay in a steel frame that was pin-jointed so that it could ride on a raft foundation. Hills were no longer reliable, for as Guy Oddie of the Ministry reported:

> In the old days Hills was a medium sized firm. Now it has grown up and yet it still tries to run itself on the basis of one man alone steering it. It is completely dominated by its largest customers, who now appear to be in Canada. We have had dreadful service from them at Coventry – the delivery has been so erratic that any advantage gained from the rapid erection of the steel frame is lost in mismanagement. In my opinion it would be unwise to touch this firm. The system is not even complete in itself because you have to interest yourself in it to a certain extent. They have an overfull order book and this is their main trouble.[12]

Hertfordshire had developed a 3'4" system using Hills' hot-rolled system but it proved difficult to push it to two storeys and the majority of their schools were still built using 8'3", which despite being cumbersome for openings continued in production until 1964, long after Hills had gone bust in 1962. Jack Platt standardised the 8'3" system in 1956, producing a definitive set of components called the 'Blue Standard'. Subsequently all the 8'3" schools were built using identical components while Platt began to experiment with a new 2'8" system using Hills, first used at St Albans's College of Further Education.[13] The Notts architects all knew the Hertfordshire achievement, for even if they had not worked there it had been a preoccupation of their student days and they were similarly enthused by technical design, whether of a structural system or its fittings, so were anxious to produce their own system.

Aluminium was not an option as BAC was then giving up on schools. Notts turned therefore to Brockhouse, whose system was not only pin-jointed and light-weight, but which had been shown at Belper to be suitable for three storeys and had a high degree of off-site prefabrication. Heathcote was from the motor industry so Gibson's analogies with vehicles were appropriate. 'When the builders did their test frame, Lister [Heathcote] was there with a big smile – he saw it as the biggest chassis he ever designed', recalled Alan Meikle, who likened a CLASP school to a ship riding a giant wave as coal was extracted from below. Henry Swain was very good at maths and secured the confidence of W. H. Ward of the Building Research Station and Kenneth Wardell, a surveyor at the National Coal Board who revealed where the coal board were going to be digging next.[14] Wardell's paper on mining subsidence enabled the architects to calculate the magnitude of the ground curvature and hence the degree of movement transferred to a building.[15]

A report to councillors in November 1955 recommended that Brockhouse be commissioned to develop their frame for the 1957-58 programme. 'Belper shows it can be used for good quality schools within the cost allowance. It will be modified by a method of fixing the stanchions and the incorporation of a spring type bracing calculated

Figure 4.17 (left): Toot Hill School, Bingham, under construction c.1965. The spring-loaded bracing was unique to CLASP. Reproduced by kind permission of Nottinghamshire Archives.

Figure 4.18 (top): Bancroft Lane School (later Intake Farm School), Mansfield; Nottinghamshire County Council Architect's Department, 1956-57. The schools was listed at grade II in 1993. © Elain Harwood.

to withstand the normal loads caused by wind but [which] will expand or contract under the heavier loads created by mining subsidence movement.'[16] The frame with its distinctive cross bracing on springs was thus already being refined, by Notts architects working with Heathcote, the Ministry and R. C. Coates of Nottingham University (fig. 4.17). A further development programme began in January 1956, looking at flexible claddings such as weatherboarding, asbestos cement sheets, slate and tile hanging, with windows in timber surrounds. Services were a greater problem, and drains were put in oversized holes so they could move slightly; Swain favoured pitch fibre pipes for their flexibility.

A set of standard drawings were prepared for the components to be used. It was thought important that the building contractor should be keen to be involved and to collaborate – another lesson learned from the Ministry. The first school was **Bancroft Lane Infant School** at Mansfield, quickly renamed Intake Farm (fig. 4.18). Simms, Sons and Cooke, already erecting the Derwent school programme, built it after erecting a mock up in their yard close to the university at Lenton.

The designs and costings for Bancroft Lane formed the basis for negotiated contracts for the ten other schools in the 1957-58 programme and two other buildings, the county supplies depot and fire headquarters in Kiddier Avenue, Arnold. Contractors were invited to tender to supply the standard components in all these jobs. This meant that the cost of moulds, jigs, tools and other overheads would be spread over a number of jobs, and suggested that the system could be still more economical if there were more orders. Swain was later to recognise the importance of Heathcote's understanding of mass production.[17] After the first schools were erected by Simms, Sons and Cooke, Notts turned increasingly to Searsons, contractors based in Kirkby-in-Ashfield.

Notts's Education Department helped with the design brief and interviews were conducted with the Ministry's Inspectors, and with teachers, both individually and through conferences. The Director of Education for Notts, J. Edward Mason, recalled that before CLASP he and his chief officers had prepared briefs for new schools almost in isolation, and thus tended to ask for more than was realistic. By 1957 they were working 'at making the planning a joint exercise. They meet more informally, and are less reliant on the Building Bulletins. Now architects interview the teachers about their work and class sizes.'[18] In practice, however, Mason contributed little and the main collaborator on the education side was his assistant, Noel Jones.[19]

Henry Swain in 1974 described the tremendous sense of excitement in realising an engineering breakthrough: the design of the first building system consciously designed for building on ground liable to movement:

> In those days of the late '50s only a few of us really believed it would work – Dr W. H. Ward of the Building Research Station, Mr R. J. Orchard, subsidence engineers of the National Coal Board, Mr F. W. L. Heathcote and Professor Rex Coates of Nottingham University, to whom we used to go and talk when things seemed difficult. … Donald Gibson had strong nerves.[20]

To counter engineering conventions that favoured massive, expensive foundations with a light raft that could slide on a fine granular bed was daring. Such was their belief that 213 CLASP buildings were constructed before the system was tested in 1962, when five schools, of which Intake Farm and the Matthew Holland Secondary Modern School at Selston were in Notts, successfully 'rode' the excavation of coal from underneath. All survived with only modest repairs required. The most convincing test was at Heanor Gate School, just over the Derbyshire border, where a three-storey block rode the extraction of a four foot seam from relatively near the surface with only minor damage to the expansion joints. In all, repairs to the five schools cost £80.[21] Intake Farm had been subject to subsidence four times when in 1972-74 a survey was made of all Notts's 269 CLASP buildings, which found that nineteen had been damaged, costing £3,288 in total to repair, out of seventy exposed to mining operations.[22]

The Formation of CLASP

Bancroft Lane cost 74s 3d per square foot, 5% over the estimate, but subsequent savings brought the programme as a whole below the target sum of 71s 3d. A minimum order of 400 tons of steel had to be made to reach this figure, and even with the two Arnold buildings the Notts programme was too small. A telephone call from Gibson brought in a primary school from Coventry, Willenhall Wood, and the order went ahead. Meanwhile, officials at the Ministry of Education were discussing economies of scale with their Minister, Lord Hailsham, who proposed offering bonuses to authorities who chose to collaborate on industrial building. Bill Pile at the Ministry contacted Gibson, in whose hands the idea of a consortium of local authorities that jointly developed and managed a common system took shape. Stuart Maclure suggests that it was one of the few direct interventions on school building policy made by a Minister, and Hailsham chaired a meeting of local authorities on 24 July 1957. Gibson's network, and that between

councillors with a common mining background, brought in Coventry, Derbyshire, County Durham, Glamorgan, Leicester and the West Riding of Yorkshire to join Notts as founders of the Consortium of Local Authorities Special Programme. 'Special' was substituted for 'schools' at Swain's insistence to show that the system could be used for all kinds of projects.[23]

Gibson became chairman of CLASP, and continued in this role after he left Notts in 1958 for the War Office, which he brought into the consortium late that year. Gateshead and Lanarkshire also joined then, and a number of authorities (mainly small and including Roman Catholic dioceses) became associate members, of which Warwickshire advanced to full membership.[24] The Ministry of Education and Scottish Education Department also joined, followed by York, Bath and Cambridge Universities, the University Grants Committee and Scottish Health Service. The 1958-59 building programme was for 31 schools, at a total cost of £2,500,000, and 46 were included in that for 1959-60, costing £3m. The real growth came in 1961-62 with a programme of 57 buildings costing £6,700,000, and in 1963-64 with 103 jobs costing £10,600,000.[25] This growth was remarkable compared with the take-up of the Ministry's prototypes (only a fifth of that hoped for). In 1963, schools represented 60% of the programme, and university and further education buildings nearly half of the rest. By that time Notts was using CLASP for all its building work.

CLASP proved popular for other reasons than its ability to withstand subsidence, its economy and flexibility as well as suitability for building on any poor ground conditions being among those cited.[26] The mass production and bulk ordering of components, and serial contracting for a whole building programme, kept tenders down and less site labour was needed, ensuring that the price of materials and components remained stable during a time of inflation. Building Bulletin no. 19 reported that the cost of Notts primary schools fell by six shillings per square foot in 1957-61 while those in other counties rose. Two years later, Gibson boasted that components had reduced in price by 9% thanks to increased orders, leading to a 3% decrease in the overall building contract. Moreover, Notts continued to receive the Ministry's subsidies for building in mining areas, pocketing another £300,000 for use on additional schools.[27]

The seal was set on CLASP's success with the acclaim awarded the primary school sent as Britain's entry to the Milan Triennale exhibition in 1960 (fig. 4.19). Devised by Trevor Prosser at Notts, with Dan Lacey, it bore strong similarities to his school of 1958 at Barnby Road, Newark (now demolished).[28] The three classrooms and assembly hall, built in nine weeks within the normal Ministry cost limits, with furniture by the Ministry and CLASP, was embellished by the exhibition designer James Gardner to

Figure 4.19: The prize-winning CLASP primary school at the 1960 Milan Triennale. Reproduced by kind permission of Nottinghamshire Archives.

demonstrate creative learning techniques and visual stimulation for an imaginary group of children. 'The word "prefabrication" under the leadership of the Architects had won respectability', Henry Swain told the Northern Architectural Association.[29] The triumph in Milan led to orders for Brockhouse for modified versions of CLASP initially in Germany, e.g. at Bochum University, and Italy (in Rome and Naples) followed by larger programmes in France, an early use of computers.[30]

In its early days the CLASP consortium was purely voluntary and without legal status, with no constitution or standing orders, relying on the goodwill between a close-knit group of architects and education officers led by Notts. The chief architects met a few times each year under Gibson's chairmanship, and authorities hosted an annual conference by turn, showing off their buildings, and a working party was assembled from the authorities to discuss developments. It is notable that all the prototype schools built to demonstrate a new form of CLASP, including the extensively-used Marks IV and V, were in Notts.

Although the membership of CLASP became more diverse in the 1960s, and incorporated its supporters in central government and the universities, there was reluctance to add more large county councils. Shropshire and Cheshire applied to join CLASP in 1961 but were rejected as Lacey and Swain worried that their group's informality and flexibility would be lost, and that they might lose control of to such strong personalities as Ralph Crowe, the county architect for Shropshire, and his deputy Geoffrey Hamlyn, later county architect for Cheshire.[31] Instead these architects developed their own system and their own consortium, SCOLA – the Second Consortium of Local Authorities (page 268).

The Evolution of CLASP – Marks I to VI

Lacey and Swain were adamant that 'we don't want aesthetics – you look after the children and the components, and the aesthetics will look after themselves'.[32] In this they shared the view of Mary Crowley and David Medd, who said 'my starting point is the children', a catchphrase attributed by David to Mary, and by everyone else to David.[33] The *Architects' Journal* quoted the claim of a private architect on CLASP that 'it is not Architecture' and its architects were proud of that fact.[34]

CLASP Mark I is generally taken as the Brockhouse system, developed most thoroughly with the Ministry and with Essex CC, but whose glazing did not fit the 3'4" grid. Notts developed sliding glass panels in an aluminium frame to solve these problems, while retaining the rather complex clerestory glazing that became a distinctive feature of early CLASP, using high-quality frames of Columbian pine or Iroko hardwood. This first CLASP system became known as Mark II. Bancroft Road's windows comprised panels spanning between the stanchions and roof, with 10' as well as 6'8" and required some expensive fixings; subsequent designs were firmly within a 3'4" module.[35] A lighter frame with a modified roof deck and eaves detail, and cheaper redwood windows (a false economy, as they rotted), was introduced as a more economical Mark III in 1961. Cladding was of concrete panels, aluminium sheets or tiles, and occasionally horizontal boarding where the risk of fire was low; there were fifty types of window. The most attractive schools were the early primaries in Mark II or Mark III with their double line of top lights, some of them opening louvers (always draughty), the classrooms set in the corners and/or

Figure 4.20: Tupton Hall School in Chesterfield, Derbyshire; George Grey and Partners, 1965-69, now demolished. CLASP-built additions to an inter-war school by Derbyshire county architect George Widdows. Photograph by Mike Williams – English Heritage; FF003534.

Figure 4.21: Hans Coper tiles at Nettleworth Primary School, Mansfield Woodhouse; Nottinghamshire County Council Architect's Department, 1964-65. © Elain Harwood.

along one side of the main hall, particularly if the latter was given a gently pitched roof rather than a flat one. A good example is Arnold Arno Vale, by Grey Goodman and Associates of 1961-62, which survives with renewed (green) external weatherboarding.[36] Notts farmed a few of its projects to private architects, including Alan Goodman's practice Grey Goodman and Associates and Robert Matthew, Johnson-Marshall and Partners. Because the County Architect's Department was tied up with schools, much of the county's extensive public library building programme was designed in Derwent and CLASP by private firms.

The range of cladding materials, and perhaps the system's very flexibility, encouraged a bittiness in the elevational treatments, noted by the *Architects' Journal*. 'At Notts a great many more external cladding components have been introduced. This means of course a great deal more flexibility, but it also means that unless care is taken over their use and form, mediocrity will result from a confusion of planes, textures and materials … the assumption has clearly been made that since the system is designed to take a variety of cladding, therefore variety must be used.'[37] Meikle blamed this tendency on Lacey and Swain's background in primary schools, whereas the multi-storey elevations of secondary schools called for a clean overall design rather than patterns of different materials and window sizes. Tupton Hall in Derbyshire, by George Grey and Partners of 1965-69, was a widely-admired example of this smart simplicity, an extension to a 1930s school but which itself has been demolished (fig. 4.20).[38] A sliding joint was incorporated at all the internal intersections of partitions, while deep reveals and gaskets allowed movement for the windows. Tiles would slide over each other; they were supplied by Keymer of Sussex after Swain had become fascinated by traditional mathematical tiles in that area. Flat interlocking tiles were developed in the 1960s and Hans Coper – a friend of David Moizer – introduced a heavily profiled pattern, used at East Leake Health Centre and at **Nettleworth Primary School** at Mansfield Woodhouse but not widely adopted (fig. 4.21).

Figure 4.22: The CLASP Mark V elevations of the Chilwell lower school. © Elain Harwood.

The gentle tile-hung forms gave way to more concrete panels in the 1970s, some with a facing of brown brick chippings (fig. 4.22). A sharply pointed pyramidal top light was repeated from York University, and the Sutton Centre, Sutton-in-Ashfield, introduced a projecting bay window unit that gave the elevations more formality; nevertheless, criticism of CLASP's folksy qualities gave way to attacks on its concrete austerity. Most often, however, it was associated with the mundanely decent. As N. R. Goodwin wrote in 1964, 'CLASP is a heap of parts intended to be put together in many diverse ways, good or bad, but mainly indifferent. This is where the architect makes his greatest contribution, always remembering that while architecture is not an end in itself, it is not to be subordinated to the expression of the building technique alone.'[39] In 1972-73 GRP began to be used as a backing and new concrete panels were introduced, for example at Jacksdale Primary School.

Swain retained a firm control of the design, but other authorities obtained their own tenders and organised deliveries. In 1961 CLASP set up its own Development Section of architects at Nottingham under Sydney Bell, another ex-Birmingham student appointed by Gibson in 1956. He originally headed a team of four, of whom David Lakin was also an experienced Notts architect, which was joined by the quantity surveyor Henry Morris in 1964 and a separate Contracts Section responsible for organising the manufacture of components from 1967. Brockhouse supplied the early frames, but after Gibson brought in the Ministry of Works the Treasury insisted that a competitive tender was obtained for their part of the programme, which was won by Saunders and Forster. Later the Consortium also went out to tender, and Saunders and Forster also won that.[40] Claddings, windows and other fixtures were sourced from various manufacturers across the country to provide economies of scale. Bell was appointed to refine Mark III, introducing a cambered roof truss so that roofs were not entirely flat.[41] His refinements became Mark IIIb, and included a new range of windows after they had been rationalised as Mark III into smaller units that had to be joined on site, making for weak joints and requiring unachievable levels of site supervision, and his first task was to readdress these problems.

Syd Bell's prime responsibility was the development of CLASP Mark IV, beginning in 1963. Visually, it was simpler, without complex window opening patterns or top lights. Bell sought to reduce the weight of steel in the beams, to increase the number of components produced in the factory and to reduce the amount of skilled site work, most importantly by devising floor and roof decks in 3ft prefabricated sections.

To find out ways of reducing site labour Bell's team carried out an analysis of activities on site, conducted with the help of the Building Research Station. Clerks of Work throughout the consortium were asked to keep hourly records of what site workers were doing so that we could find how long operations took, and where delays occurred. It was found that the floor slab was causing tremendous delays because of the influence of weather, so Bell introduced pre-cast concrete foundations for the columns and a perimeter beam that enabled steel frame erection and roof sheeting to start earlier so that the in-situ slab could be cast under cover.

The frame was designed to a new 3' grid for greater flexibility, as requested by the Ministry of Education in accordance with guidelines of 1963 from the Ministry of Public Buildings and Works.[42] It offered I' increments to increase the flexibility of design, simplified stanchion headers and a slight camber to roof beams. External windows, of timber with metal opening inserts, arrived from the factory glazed and painted, and doors were pre-hung in their frames. Plastic-coated windows were also introduced by Bell as part of Mark IV.[43] Mark IV was also devised to be more flexible for non-school buildings, particularly residential buildings, where smaller rooms were required, and architects from RMJM, working on York University and other CLASP projects, were involved in the development. It was also related to the 5M housing system being developed by the Ministry of Housing and Local Government at Gloucester Street, Sheffield, and was extensively used for hostels serving schools and colleges in rural Scotland.[44] Mark IV was first used for the **Newlands Junior School** at Clipstone, built in 1965-66. Sheet steel cladding was developed by Brockhouse for CLASP in 1967-68 and featured on some later schools.

CLASP was used in university building at York, Cambridge, and Bath, the latter used as a Joint Development Project on Higher Education between the architects RMJM, the university, Department of Education and Science and the University Grants Committee. Phase IIIa of York University, including Vanbrugh College, was built in Mark IV after earlier stages had used a modified Mark III. CLASP Mark IVb, first used in 1969, introduced refinements to the windows, partitions and stairs, and was designed for higher education (the JDP programme) as well as schools.

CLASP also developed its own ranges of furniture, initially employing two furniture designers and (through Gibson) securing aid in its manufacture from the Ministry of Public Building and Works. In 1964 the Ministry of Education agreed to collaborate on the design of a common design for local authorities inside and outside CLASP, with the former getting priority. Bob Sutton from CLASP joined the Ministry's furniture designer, John Marshall, and with David Medd produced the Forme range in 1969, which was manufactured by Pel Limited, virtually eliminating fixed furniture.[45]

Bell succeeded Alan Meikle as Notts's Deputy Architect in 1971, and was replaced by David Lakin. There was thus a great continuity between Notts and CLASP. CLASP Mark V, introduced in 1971-72, was metric, and marked also the introduction of computers into the design of the system and its components. First used at **Dalestorth Primary School**, Mark V was cheaper, with fewer components and simpler site operations, yet more sophisticated in appearance. Steel and concrete replaced the last elements of timber in the roof and upper floors, partly to increase fire resistance; the steel roof decks were designed in conjunction with the South Eastern Architects Collaboration (SEAC). 80% of the early Mark V buildings were clad in concrete panels, given a white, red, grey, brown or green aggregate finish in the casting, although sheet metal and tile claddings were also developed and the first experiments were made in using brick as a cladding in 1972 (made up of brick bats backed with a formaldehyde resin in timber framed moulds, so no bricklayers were required) to meet resistance to the use of CLASP in historic areas. Mark V used plastic coated windows from the first, designed for ease of maintenance, with projecting 'oriel' windows in addition to the pyramidal roof lights.[46]

The largest CLASP's annual programme was in 1972-73 before a moratorium on public capital expenditure and local government reorganisation made their impact. The impact of reorganisation was greater on CLASP than on other systems, as its members included many cities and county boroughs which lost their educational function. CLASP responded by expanding into railway buildings, mostly for British Railway's Southern Region but later also for London Midland, and into the design of factory units, while Brockhouse also secured more commercial clients. While tile, made voguish in the late 1950s by Span, bridged the divide between modern and traditional claddings, CLASP turned to more conventional claddings from 1973, when a health centre at Mansfield Woodhouse used stone slates from a demolished building there. The first six-storey CLASP building was completed in 1974, for a hospital at Paisley.[47] Pitched roofs began to be developed in 1975, and hipped roofs became a regular feature of later CLASP buildings, beginning with an addition to a Derbyshire school and the new Warren Primary School, Top Valley, Nottingham (1976-77). Experiments in energy conservation also began in 1975, beginning with studies of existing buildings, where it identified the poor maintenance and management of heating services as the chief problems – a reflection on how relatively cheap heat had previously been taken for granted. The first new school to consider energy saving in its design was Hucknall Wood Lane Primary, in 1977 (demolished). A late and modified use of Mark V was **Whyburn School**, Hucknall, a courtyard plan with profiled steel and concrete tile cladding and a pitched tiled roof designed with increased thermal insulation and fire protection. In 1982 it won an *Education* magazine award (shared with Newlands School, Yateley, Hampshire), but it was reclad and extended in 2006.[48] Some of these ideas were developed further in the county's next primary school, at Kimberley, also from 1982.

The use of brick and pitched roofs, in a move from a closed to open system, was the secret of CLASP's longevity as modernism went out of favour. No other system did this. For Swain (and for his colleagues) the underlying logic of the modular system, its structural components and services, were always more important; he was after all the enthusiast for tile hanging in general and the development of a form of mathematical tiling. His later interest was in fire prevention and energy saving, and in site management

(RSM, see below) or direct labour, the latter shared with Alan Meikle and because of its encouragement of the builder as part of the team something always pertinent to those with left-wing convictions.

Work on Mark VI began in 1979, which considered energy and maintenance costs as well as the initial cost of components and their procurement. Mark VI reflected the smaller programmes and scale of building in the 1980s, and a more varied use of CLASP, so was more open in its tolerance of outside components.[49] Mark VI increased the structural grid from 900mm to 1.8m, although the planning grid remained the same 300mm as in Mark V. It offered a simplified structural system, with a steel roof and upper floor decks as Mark V, to meet rising inflation, while allowing for a greater range of external finishes, not all within the system – a recognition that more proprietary finishes had become available since the 1960s and that clients now wanted more flexibility.

Dan Lacey became head of the Architects and Building Branch of the DES in 1964. He was succeeded at Notts by Henry Swain, who served as its chief architect until his retirement in 1988, and who came to personify CLASP in particular and the county's architecture in general. Relatively few schools were needed in the 1970s and 1980s as mining and other industries declined and the population remained fairly static. CLASP continued to be used, and Notts schools continued to win awards. The adaptability of CLASP to be used with more traditional finishes was the secret of its longevity, although the earlier tile finishes or 'folkweave' mixed with industrial components became a local vernacular in themselves.[50] In the 1970s and 1980s CLASP continued to be promoted extensively abroad. Lakin obtained a contract from Caracas University to develop a system for Venezuela, and a CLASP Primary School was built at Guarenas, east of Caracas. He also secured a contract for three hospitals in Algeria.

Art

Donald Gibson came to Notts with a tradition of incorporating art into his buildings at Coventry, and a few early schools incorporated artist-designed play sculptures. Nevertheless, while Bancroft Road had a mural by Fred Millett and **Tuxford Secondary Modern** a patterned brick wall by Dorothy Annan, art did not feature in the CLASP programme for long. Syd Bell recalled that 'most schools had something' by artists, but wallpaper, tiled floors and curtains to give a sense of richness were more common.[51] Where there was a substantial art programme, as at Hertfordshire and Leicestershire, the impetus came from the Education Officer. Here the focus from the Education Department was not on art but on sport.[52]

Research into Site Management

CLASP was well placed to cope with the doubling of school building in the years 1964-68, when up to 40% of new schools were built using a system. It was a way of keeping down costs at a time of rapidly rising wage bills.[53] An important part of this was the idea of serial contracting, first introduced at Notts and adopted by other authorities with large programmes in the early 1960s.

To bring still more economies, Swain turned in 1967 to a programme of Research into Site Management (RSM), where the project architect worked directly with the foremen and builders in a sophisticated form of Director Labour Organisation. It began at Cotgrave Junior School, in 1967-68 as a means for Swain and his staff to find out more about the building process, and resulted in more straightforward and practical design work that saved in drawings, time and labour.[54] Contracting for CLASP had been reduced to a process of assembling components, and by cutting out the contractors' project management money was saved while the builders were given greater responsibilities, which boosted their morale and commitment to the work by being part of one team. The contractors got their 5% plus a share of any additional profit from the time and labour saved. The idea of bringing the contractors into the design process has some parallel with the multi-disciplinary practice of Arup Associates, who involved Bovis in the design of their John Player 'Horizon' Factory at Nottingham from 1968-72. In the early years RSM was largely concerned with the further rationalisation of CLASP and the development of Mark V, particularly in the reduction of labour content, early seen at the **Sutton Centre** in 1972. RSM continued to work with CLASP on the further development of the system, e.g. the rationalisation of slab design, on pitched roofs, health and safety issues, and at building as an educational tool; but above all its success was in bringing architects and construction together.[55] It continued until 1983.

School Plans

The first brief, for primary schools, allowed more space for children's activities by reducing circulation areas, creating a more informal and child-centred atmosphere than hitherto. A letter of 24 May 1956 to Swain from Mary Crowley, herself at Hertfordshire before joining the Ministry of Education (they may have just overlapped briefly in 1949) and with a keen interest in the needs of the child, recorded that 'it is most encouraging to see you and your advisers and teachers have confirmed many of the principles that seemed to emerge from our own investigations at Amersham'.[56] There were close similarities between the first primaries and those at Herts, with low windows and child-size furniture designed in-house, and a common plan that placed small lavatories between pairs of classrooms where they could be easily supervised, often set around a central hall. By the later 1960s class rooms were less self-contained, designed as a series of bases with group working becoming popular.

The first brief for secondary modern schools looked at the purpose of a secondary modern, and at house and form organisations, something only developed when the architects went on to consider the larger grammar and technical grammar schools such as the Manor, Mansfield Woodhouse. The earliest secondary moderns, at **Tuxford** and Retford Ordsall (both demolished) comprised informal ranges set loosely around a central entrance and library area; the frame system enabled ground-floor areas to be kept open to create vistas into partially enclosed courtyards, which became common elements. Courtyard plans and systems of house rooms with a concert space or theatre rather than a large hall were taken further once comprehensives began to be built, firstly at Ollerton, designed in 1961 for 1200 children, with a semi-roofed craft courtyard and six house rooms.[57] These plans owe something to Woodlands School at Tile Hill, Coventry, for as David Meylan said, 'we were great pinchers of other people's ideas'.[58]

Later schools adopted deep plans with more open areas, most notably in the special lower schools that were built for 11-13 year olds as distinct blocks within a comprehensive school. The latter served two purposes. They were Notts's solution to the problem of extending secondary modern schools into comprehensives without introducing separate middle schools, and by separating off the first two years the organisation of very large schools was broken down and made more personal. They also permitted all-new comprehensives to be built in phases, as at **Chilwell**, where a lower school was added in 1975-76 to the first school opened in 1970.

Nottinghamshire's most innovative planning feature was the integration of sports facilities and other local authority amenities into the schools. The idea began with the village colleges evolved in the late 1920s and 1930s by Henry Morris at Cambridge and was developed by Stewart Mason at Leicestershire, but Notts' model was Wyndham School, Egremont, Cumberland, a remote town that had to provide for an incoming and highly literate workforce at Calder Hall (Sellafield), with a library and sports facilities that were shared between the public and an ambitious comprehensive school.

At Notts the accent on shared sites was strongly weighted towards sport, encouraged by David Barnes, the county's gifted chief adviser on physical education. He believed that PE had become dominated internally by fixed Scandinavian gym equipment, such as expensive climbing frames and beams, and externally by team games; he sought a wider concept of physical education that would be of greater value to students in later life. By accepting slightly smaller gyms and less playground space there was money for a Dutch barn at Tuxford and Retford Ordsall, sourced by Meikle from Dales in Leominster at a cost of £1,750 and which could be used for less formal team games or in wet weather. Larger barns came from William Kay of Bolton in 1959 for the **Manor School**, Mansfield Woodhouse, and for Arnold at a cost of £15,000 for two, but they remained of limited use because of their open sides.

Figure 4.23: Sports hall at Carlton Cavendish School; Nottinghamshire County Council Architect's Department, 1968-70. Reproduced by kind permission of Nottinghamshire Archives.

Henry Swain at an RIBA conference in 1968 defined four areas of change that fostered an interest in community schools. They included the growth in adult education and leisure hours, and an encouragement to use expensive education buildings more widely which was led by a Department of

Education circular in 1965. This, coupled with Circular 10/65 calling for comprehensive schools, encouraged a new programme of school extension under the Education Officer, by then W. G. Lawson, that included extensive sports facilities developed with the local authorities, particularly the small urban district councils sprinkled across the area before 1974. The first of these grouped school and sports complexes was at **Toot Hill**, Bingham, opened in 1969 by the Minister for Sport, Dennis Howell, and was followed by a similar development at **Carlton Cavendish** (fig. 4.23). They comprised a large swimming pool, with a learner pool and café area, a sports hall, gymnasium and smaller activities areas. Carlton Cavendish, opened in 1970, included outdoor all-weather pitches, squash courts and a ski slope, paid for by the local authority. Other facilities, such as scout halls, nursery schools, or for adult education or pensioners' groups, were funded by local groups and parish councils. The programme was further encouraged by James Stone, Deputy Education Officer at Leicester who came to Notts first as deputy and then as chief. The ultimate realisation came at **Sutton-in-Ashfield**, where a secondary school was built in the centre of town with additional facilities for adult education, a day centre for the elderly and disabled, a youth club, theatre and a large sports centre that even included an ice rink (fig. 4.24).[59]

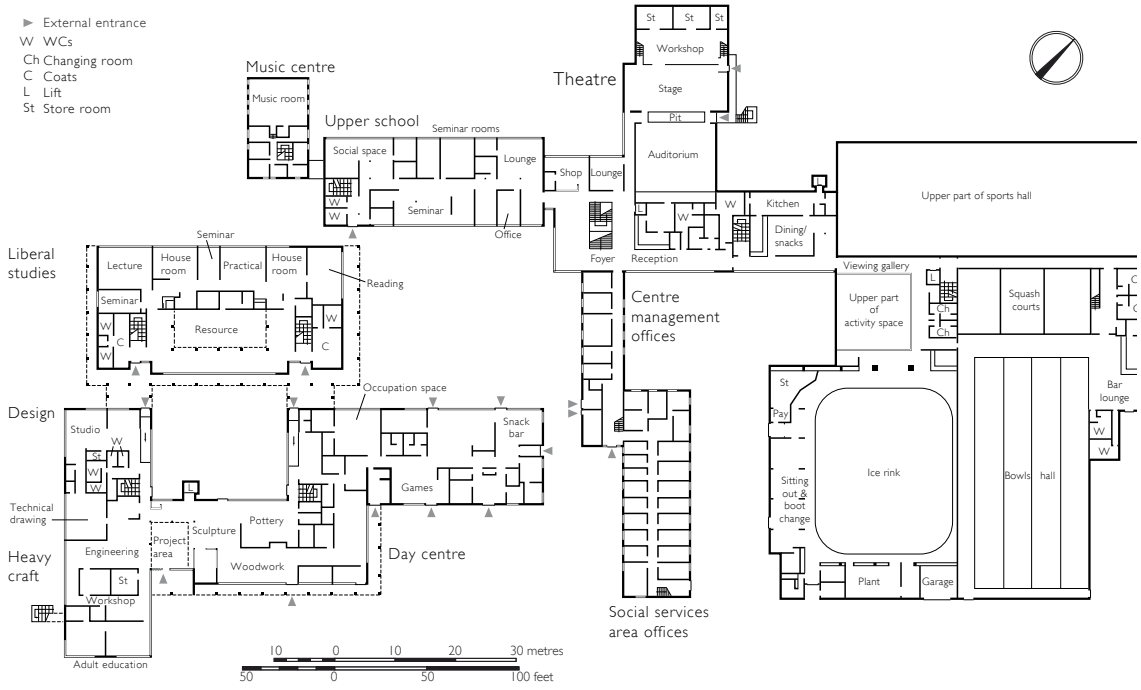


Figure 4.24: Sutton Centre, Sutton in Ashfield, built in 1972-78.

Problems with CLASP

CLASP's biggest problem was fire. The danger came when fire spread through voids, usually between the ceiling and roof, particularly in the earliest buildings; more fire stops were introduced after a fire in a school science block at Leicester in 1965, but thereafter arson emerged as a growing problem in schools. Notts was unusual in using CLASP in residential buildings and the most serious fires were in old people's homes in the early

1970s, usually started by a cigarette. The most devastating fire was that at the Fairfield Hospital for the more infirm at Edwalton, built in 1961 by RMJM, where a fire in 1972 caused thirty deaths.[60] Thereafter the problem was resolved by the introduction of still more and better fire stops.

A study by Norman Sidwell of Heriot Watt University in 1970-72 found that CLASP structures required no more or less maintenance than other buildings.[61] The County Council reported in 2008, however, that CLASP had difficulty in meeting modern building regulations and acoustic or environmental standards, while replacing drainage pipes and asbestos removal were problems. Strangely the report also criticised the flexibility of the buildings because of the need to retain columns and bracing. It is perhaps more significant that it also found that CLASP was unattractive to bidders in the private sector interested in investing in school building.[62]

CLASP Today

CLASP continued to be refined until 2005, by which time Mark VIb was in production, as seen at Oakwood School, Manchester, with exposed steel and aluminium finishes and a curved roof, and brick-clad extensions to the Cavendish laboratories in Cambridge. In April 2006 CLASP became part of Scape System Build Ltd, a local-authority controlled company wholly owned by Derby City, Derbyshire, Gateshead, Nottingham City, Nottinghamshire and Warwickshire in equal shares. Scape is a trading company for the CLASP consortium, to develop the successor Scape system and to service existing CLASP buildings. It has presented a considerable archive of CLASP-related material to Nottinghamshire County Archives. Most surviving CLASP school buildings are Marks IV, IVb or V, with examples at 46, 47 and 96 sites respectively. There are 31 Mark III and 14 Mark IIIb schools, but only sixteen sites still have examples of Mark II buildings. This is where the county conservation team has targeted its attention.[63]

Gazetteer

Primary Schools

¶ **Bancroft Lane School** (later Intake Farm School), Ladybrook, Lane, Mansfield; Nottinghamshire County Council Architect's Department (job architect A. B. Fuller), 1956-57, listed at grade II in 1993.

The first CLASP school and the only one to be listed, at grade II. It is in excellent condition, with original fenestration and tiling, though a mural by Fred Millett has gone. There is a sympathetic new addition at the rear, realised since the listing.[64]

¶ **Barnby Road Infant School**, Barnby Road, Newark; Nottinghamshire County Council Architect's Department (job architect Trevor Prosser), 1958.

This was perhaps the finest of the early Notts primary schools using CLASP Mark II, but it was reglazed in the 1990s and demolished in 2007 when replaced by a new school on a different site.[65]

¶ **Bramcote Hills Primary School**, Moor Lane, Bramcote; Nottinghamshire County Council Architect's Department (job architect N. R. Goodwin), 1959-60.

Built in six months using CLASP Mark II, an elegantly composed school with seven classrooms around a central hall with a shallow pitched-roof; similar to Barnby Road, Newark. It survives, extended and much altered by changes to windows and cladding.[66]

¶ **Arno Vale** (now Woodthorpe Infant School), Arno Vale Road, Arnold; Grey Goodman and Partners (job architects F S Bedford and A. J. Short), 1961-62

The school survives but with some new cladding. Civic Trust Award 1964.[67]

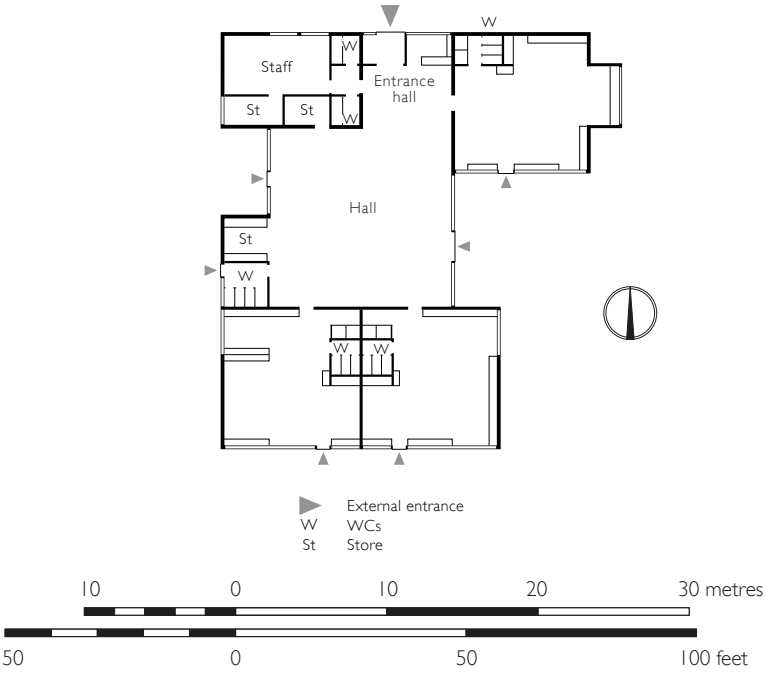


Figure 4.25: Barnby Road Infant School, Newark.

Figure 4.26: Interior at Bancroft Lane School. © Elain Harwood.

Figure 4.27: A c.1963 photograph of Bramcote Hills Primary School. Reproduced by kind permission of Nottinghamshire Archives.

¶ **Nettleworth Primary School**, Ley Lane, Mansfield Woodhouse; Nottinghamshire County Council Architect's Department (job architect David Meylan), 1964-65.

This CLASP Mark III school retains its Hans Coper tiles but has had crude new windows and some extension.[68]

¶ **Newlands Primary School**, Braemar Road, Forest Town, Clipstone; Nottinghamshire County Council Architect's Department (job architect R. W. Cheney), 1965.

The first Mark IV school. It had a 3ft grid to meet government standards, including a 3ft square pre-cast concrete foundation units brought, like everything save the timber internal partitions, ready to the site – including the windows. Construction time was reduced – foundations by 23%, windows and doors 49-60%, but drainage took longer and services required further development.[69]

¶ **Ernehale Primary School**, Arno Vale Road, Arnold; Nottinghamshire County Council Architect's Department (job architect R. W. Cheney), 1969.

The first CLASP Mark IVb school, built by the RSM team and faced in large concrete panels.

Figure 4.28: Ernehale Primary School, Arnold, under construction in 1969. Reproduced by kind permission of Nottinghamshire Archives.

¶ **Dalestorth Primary School**, Hill Crescent, Sutton-in-Ashfield; Nottinghamshire County Council Architect's Department (job architect Geraldine Blythe of the CLASP Development Group), 1971-72.

The first use of Mark V, now much extended and rebuilt.

¶ **Whyburn Primary School**, Roberts Lane, Hucknall; Nottinghamshire County Council Architect's Department/RSM, 1982.

This school, built using a variant of CLASP Mark V, was planned around two courtyards, inspired by Mary and David Medd's Ysgol y Dderi, in Llangybi, Wales (1975–76). Extensively remodelled and extended in 2006 when it merged with Spring Street School. It was originally clad in metal sheeting under tiled roofs, but now brick. Winner of *Education* school design award, 1982.[70]

Secondary Schools

¶ **Tuxford Secondary Modern School** (now Tuxford Academy), Marnham Road, Tuxford; Nottinghamshire County Council Architect's Department (job architect Alan Goodman), 1957-58, demolished 2006-07.

This was the first and most imaginative of the secondary moderns built in CLASP Mark II (the second job in the programme after Bancroft Lane), a three-storey classroom block with lower blocks arranged around it, partly reached through open ground floor area adjoining entrance. The arrangement of the housecraft and farm areas had some similarity with the Ministry of Education's school at Wokingham (the Medds with Michael Ventris), but with an emphasis on the library in the entrance area. Open air theatre area behind. RIBA Bronze Medal for Nottingham Derby and Lincoln area, 1958.[71]

¶ **Garibaldi Secondary School**, now Garibaldi College, Garibaldi Road, Clipstone; Nottinghamshire County Council Architect's Department (job architect Syd Bell), 1957.

CLASP Mark II. The classroom tower was later destroyed in a fire started by children. A lower school was added in 1971-72. Many alterations and remodellings since the late 1980s, and the school was identified for rebuilding in 2010.[72]

¶ **Manor Technical School** (now part of the Manor Academy), Park Hill Road, Mansfield Woodhouse; Nottinghamshire County Council

Architect's Department (job architect Alan Meikle), 1959.

Built in 1959 in CLASP Mark II, Manor Technical School was largely rebuilt in 1997-2000 after a fire, though two-storey blocks retain some mathematical tilework.[73]

¶ **Ollerton Comprehensive**, now the Dukeries College, Whinney Lane, New Ollerton; Nottinghamshire County Council Architect's Department (job architect A. J. Griffin), 1961-63.

This was the first comprehensive, built in CLASP Mark III as a series of courtyards and with six house rooms. A variety of community buildings were developed following a consultation programme led by Henry Swain and David Makin with other uses including a library, leisure centre and youth facilities in 1984 following falling rolls.[74]

¶ **Ashfield Comprehensive School** (now Ashfield Academy), Sutton Road, Kirkby in Ashfield; Nottinghamshire County Council Architect's Department (job architect David Meylan for part), built in two phases from 1964.

A new addition at the front, but the main CLASP Mark IIIb buildings survive relatively little altered, weatherboarding to the front range and tile hanging to the courtyard of more conventional classrooms and laboratories behind. No related sports centre. Built with a sports hall and swimming facilities as well as a gymnasium, but for school use only.

Figure 4.30: Toot Hill School, Bingham. Additions of 1967-69 by Nottinghamshire County Council Architect's Department. © Elain Harwood.

Figure 4.31: The sports hall at Toot Hill School, Bingham. © Elain Harwood.

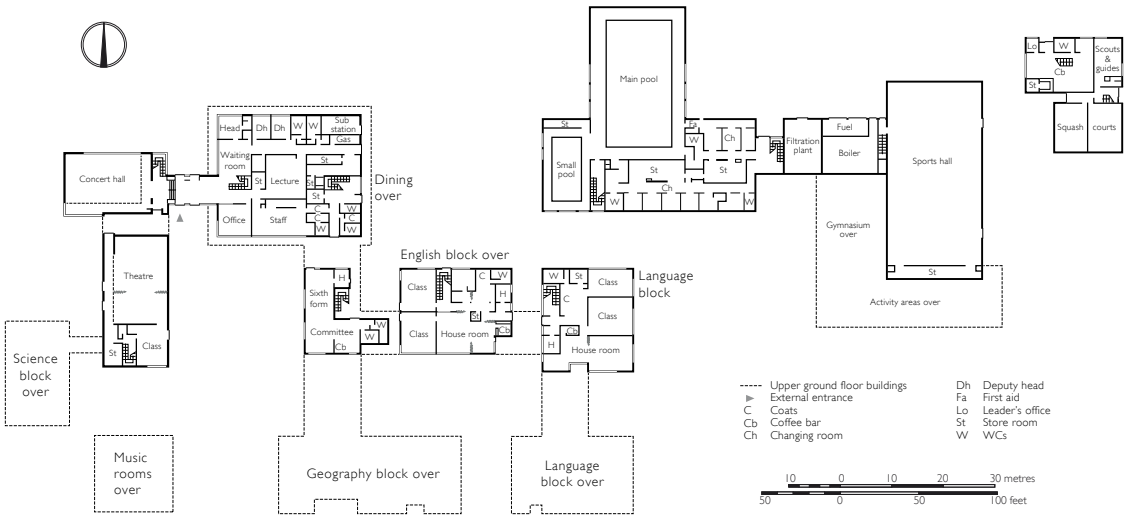


Figure 4.29: Lower ground floor plan of Toot Hill School, Bingham.

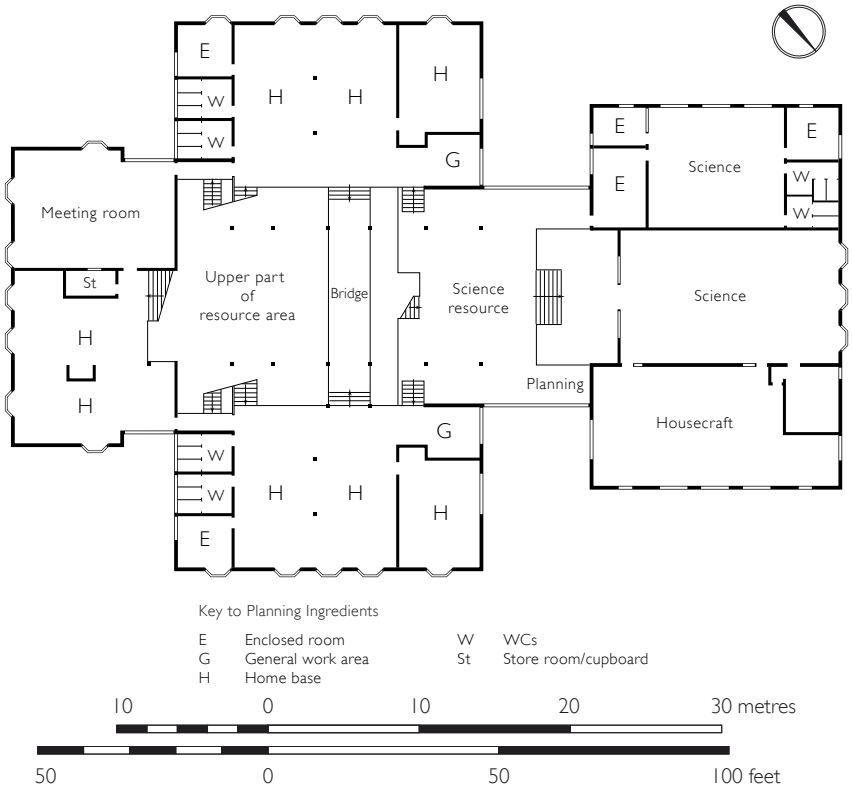


Figure 4.32: First-floor plan of the lower school of Chilwell Comprehensive School.

¶ **Toot Hill School**, The Banks, Bingham, Architects' Co-Partnership, 1956-57; Nottinghamshire County Council Architect's Department (job architect R. J. Patterson), 1967-69.

This comprises a secondary modern in Derwent built in two phases by ACP after the county architects had designed and costed a prototype. There was a glazed tile mural by the children. It was extended in 1967-69 in CLASP Mark III as a comprehensive school for 1530 pupils, with a sports centre developed with the district council. All phases are still recognisable and particularly the interiors of the sports centre are little altered, but there has been much recladding of the exterior and remodelling of the major school interiors. This was the defining Notts comprehensive school in being an extension of an older building, with sports facilities shared by the community.[75]

¶ **Carlton Cavendish School and Carlton Forum Leisure Centre** (now Carlton Academy), Coningwath Road, Carlton; Nottinghamshire County Council Architect's Department (directing architect R. J. Patterson, project architect Gilbert Mellers), 1968-70.

Built using CLASP Mark III, based on a school of 1939, which was adapted for art, science and technology. To this was added a three-storey courtyard building on a deep plan, a theatre and sports facilities. The site is divided between open playing fields on one side of the road and a tight area of buildings on the other, so the school is concealed behind the sports complex. It has had more rebuilding than Bingham.[76]

¶ **Chilwell Comprehensive School**, By-Pass Road, Chilwell; Nottinghamshire County Council Architect's Department (directing architect Michael Tempest, project architect Roger Bearsmore), main school 1970-71, lower school 1975-76.

This was a new school on a low-lying site, drained by a new pond, set between two overgrown villages with no proper urban centre and cut off by roads and fields from other buildings. The main school, in CLASP Mark V, is a smaller version of Bingham. More interesting is the lower school added, with bay windows

Figure 4.33: Chilwell Comprehensive School. © Elain Harwood.

Figure 4.34: The lower school at Chilwell, added in 1975-76. The glass roof brings light into the very deep plan. © Elain Harwood.

and pointed rooflights, which has become the Sixth Form Centre, known as Lakeview. Its interest is the unusual formal quality to the elevations, which show Mark V at its best, and the survival of the open plan around a stairwell (fine handrails) and resource centre. The central part is now largely filled with computers, around which are spaces for lessons, each one visibly in sight of the next. It seems to work because sixth form groups are small, and the murmur of lessons distils a working ethos across the computer areas.[77]

¶ **Sutton Centre** (now Sutton Centre Community College), High Pavement, Sutton in Ashfield; Nottinghamshire County Council Architect's Department (job architects Alan Meikle and Syd Bell with Andrew James), planned from 1970, built in 1972-73 for the school and 1974-78 for the sports centre and community facilities.

A site in the town centre was suggested by Alan Meikle as a way of bringing facilities to the area; a new shopping centre separates the school from the Market Square. For six weeks, Swain, Meikle and James Stone spent their evenings and weekends at Sutton, meeting up at the Wimpy

bar and 'following the threads of Sutton's social life'. Swain noted:

> There was nothing to do in Sutton except rev up motorbikes in Portland Square […] What they wanted was somewhere to meet casually; coffee, disco, games room, a hole for the skinheads to hide in, other facilities too but always on a casual basis.[78]

Meikle developed the original concept and when he left Notts in 1971 to become county architect of Worcestershire, Bell replaced him as Deputy and took over responsibility for the design, with Andrew James as Group Leader. The sports centre, programmed as a second phase, was delayed by inflation and local government reorganisation. Sutton was the largest and most socially ambitious of Notts's sports and schools complexes, developed in CLASP Marks IVb and V, with a dark brick base and concrete panels incorporating brick chips set above. Rear rooms in the community facilities use the pyramidal rooflights first developed for use at York University.

The site originally contained a school for 1200 pupils, youth centre, adult education centre, offices for youth employment and a day centre for the elderly and physically disabled. Sporting facilities proposed for the school and public were a large sports hall, smaller activity spaces, squash courts, bars and catering, a theatre boasting fly tower and orchestra pit, bowls hall and an ice rink. The school survives but some of the social facilities, including the ice rink, have been rebuilt on an enlarged scale on a new site, and the school and adult centre have been enlarged. The crafts areas were unusually large as they were shared by adult classes at all hours and a day centre for the old and handicapped. The front is quite handsome, but the scale is massive and amorphous while the interiors as remodelled are pedestrian. The running of the Centre, as Colin Fletcher's 1984 account revealed, was a fusion of conflict and cooperation, including inevitable frictions between the county and local authority in their dual management, but its social value to the town took on a new significance as traditional industries faltered and unemployment rose.[79]

ENDNOTES

1. Nottinghamshire County Council, *Issues of Using CLASP to Transform Learning Through BSF*, unpublished report, November 2008.
2. *Architect and Building News*, vol.193, no.4134, 12 March 1948, pp.244-52; *Architectural Design*, vol.20, no.10, October 1950, pp.266-70.
3. David Harrison, pers.comm., 5 May 2010.
4. Nottinghamshire Archives: CC/AR/4/1, Pat Tyndale, Barbara Price and Don Barron to Dan Lacey and Henry Swain, report of meeting 20 September 1955.
5. ibid.
6. Saint 1987, 163-4.
7. Alan Meikle, pers comm., 16 January 2012; Nottinghamshire Archives: CC/ED/5/35/13, Ingles, R. E., 1989, The Development of Education in Notts over the last one hundred years, unpublished.
8. David Meylan, pers.comm., 29 February 2012.
9. *The Guardian*, 12 April 2002.
10. Nottinghamshire Archives: CC/AR/4/1, Report, 13 September 1955.
11. 'Three Nottinghamshire Schools', *Architects' Journal*, vol.129, no.3341, 12 March 1959, pp.411-4.
12. Nottinghamshire Archives: CC/AR/4/1, Guy Oddie, Pat Tyndale and Barbara Price, 19 September 1955.
13. Jack Platt, pers comm., 18 July 2002.
14. Alan Meikle, pers comm., 16 January 2012.
15. Wardall 1953-54.
16. Nottinghamshire Archives: CC/AR/4/1, Undated report of November 1955.
17. Swain 1965.18. 'Practice: The Reorganisation of a County Architect's Department', *Architects' Journal*, vol.126, no.3266, 3 October 1957, p.514.
19. Alan Meikle pers.comm., 29 March 2012.
20. Swain 1974.
21. *Architects' Journal*, vol.138, no.23, 4 December 1963, pp.1199-1204.
22. *CLASP Annual Report*, 1972, p.27; Swain 1974.
23. Maclure 1984, 104-5.
24. 'CLASP', *Architects' Journal*, vol.129, no.3348, 30 April 1959, p.645-50.
25. CLASP Annual Report, 1963, p.1.
26. Maclure 1984, 1054.
27. Sir Donald Gibson, *Architects' Journal*, vol.138, no.25, 23 December 1963, pp1201-4.
28. *Builder*, vol.199, no.6114, 22 July 1960, p.11.
29. 'The Story of CLASP', *Northern Architecture*, no.8, January/February 1963, p.180.
30. Syd Bell pers.comm., 12 March 2012.
31. Maclure 1984, 108-09; MoE 1961 (Building Bulletin 19), 1.
32. Alan Meikle pers.comm. 16 January 2012.
33. David Medd, conference December 2007; pers comm., 3 July 2008.
34. Quoted in *Architects' Journal*, vol.129, no.3348, 30 April 1959, p.645.
35. Alan Meikle pers.comm., 29 March 2012.
36. *Architects' Journal*, vol.140, no.16, 14 October 1964, pp.859-68.
37. *Architects' Journal*, vol.129, no.3348, 30 April 1959, pp.645, 662.
38. See for example Pevsner & Williamson 1978, 346.
39. Goodwin 1964.
40. Syd Bell, pers comm., 12 March 2012.
41. Syd Bell, pers comm., 10 February 2012.
42. *Architecture East Midlands*, no.3, Autumn 1965, pp.18-23 Ministry of Public Building and Works 1963; ED 150/174-176, National Archives.
43. Industrialised Building Systems and Components, vol.3, no.1, January 1966, pp.30-4.
44. *CLASP Annual Report*, 1963, p.12; 1964, pp.12-13.
45. Medd 2009, 38; *CLASP Annual Report*, 1970, p.21.
46. *CLASP Annual Report*, 1972, pp.19-21.
47. *CLASP Annual Report*, 1974, p.21.
48. *Architects' Journal*, vol.176, no.43, 27 October 1982, pp.65-9; no.45, 10 November 1982, pp.85-8; Russell 1984.
49. *CLASP Annual Report*, 1980, pp.6-7.
50. Notts County Council, nd. 2009, Post-War Schools, unpublished report, p.12.
51. Architects' Journal, vol.126, no.3269, 24 October 1957, pp.637-41; Syd Bell, pers.comm., 12 March 2012.
52. *Architects' Journal*, vol.129, no.3348, 30 April 1959, p.645. Family reminiscences: there were a few faded prints at Bramcote Hills Grammar School (1957, demolished), by Albrecht Dürer and Paul Gaugain, but nothing in the other post-war Notts schools my family attended.
53. DES 1970 (Building Bulletin 45) ,1-3.
54. *Architects' Journal*, vol.148, no.50, 11 December 1968, pp.1389-410.
55. *Architecture East Midlands*, no.68, Jan-Feb 1977 p.17-19. In 1977 the job architects were David Quinlan, Peter Johnson-Marshall, Judy Torrington, Nick Borrett, Bob White, Peer Vowels; Alan Meikle pers comm., 16 January 28, 2012.
56. Mary Crowley [Medd] to Henry Swain, 24 May 1956, in CC/AR/4/1, Nottinghamshire Archives. The letter concentrates on planning matters, such as the size of halls and dining areas (she encouraged a larger hall – 2000 square feet

– for free movement) and the value of moveable locker units. She must have then been among the first to question the appropriateness of separate handicraft activities for boys and girls.
57. *Architectural Review*, vol.131, no.779, January 1962, p.36.
58. David Meylan, pers comm., 12 January 2012.
59. *Architects' Journal*, vol.166, no.36, 7 September 1977, pp.457-51.
60. *Architects' Journal*, vol.157, no.14, 4 April 1973, pp.787-8; vol.161, no.11, 12 March 1975, p.544.
61. CLASP *Annual Report*, 1975, p.17.
62. Nottinghamshire County Council, Issues of Using CLASP to Transform Learning, unpublished report, November 2008, (http://www.google.co.uk/search?q=CLASP+nottinghamshire+report+2008&hl=en&gbv=2&prmd=ivnsm&ei=nztwT_vTAsS2hQel0qicBw&sa=N&gs_l=serp.1.0.0l3j0i15l3j0i18j0i8j0i15l2.576131594361016211911111910101010140111272l0jlj0j2jll4l0.frgbld.&oq=CLASP+nottinghamshire+report+2008&aq=f&aqi=&aql=) accessed 31 January 2012.
63. Notts County Council, n.d. 2009, Post-War Schools, unpublished report, *op.cit.*
64. *Architectural Review*, vol.121, no.720, January 1957, pp.44-5; *Architects' Journal*, vol.126, no.3269, 24 October 1957, pp.631-42; vol.133, no.3454, 29 June 1961, p.947; *Architect and Building News*, vol.213, no.8, 19 February 1958, p.263.
65. *Architects' Journal*, vol.129, no.3348, 30 April 1959, pp.656-68.
66. *Architecture and Building*, vol.34, no.11, November 1959, pp.417-19; *Architect and Building News*, vol.219, no.4, 25 January 1961, p.131; *Architects' Journal*, vol.133, no.3454, 29 June 1961, p.955.
67. *Architects' Journal*, vol.140, no.16, 14 October 1964, pp.859-68.
68. Saint 1987, 173.
69. Industrialised Building Systems and Components, vol.3, no.1, January 1966, pp.30-4.
70. *Architects' Journal*, vol.179, no.20, 16 May 1984, p.62.
71. *Architects' Journal*, vol.126, no.3269, 24 October 1957, p.642; vol.129, no.3348, 30 April 1959, pp.652-3; RIBA *Journal*, vol.67, no.2, December 1959, pp.54-5.
72. Ministry of Education 1961 (Building Bulletin 19), pp.40-1; *Library Association Record*, June 1962, pp.200-2.
73. *Architects' Journal*, vol.126, no.3266, 3 October 1957, p.520
74. *Architectural Review*, vol.131, no.779, January 1962, pp.36-7.
75. *Architect and Building News*, vol.214, no.9, 27 August 1958, pp.289-92; *Architects' Journal*, vol.149, no.25, 18 June 1969, pp.1645-53.
76. *Architects' Journal*, vol.153, no.7, 17 February 1971, pp.359-70; no.8, 24 February 1971, pp.421-34.
77. *Architects' Journal*, vol.172, no.47, 19 November 1980, pp.985-95.
78. Fletcher 1984, 36-37.
79. Fletcher 1984. See also *Architects' Journal*, vol.166, no.36, 7 September 1977, pp.437-51.

THE WEST RIDING OF YORKSHIRE

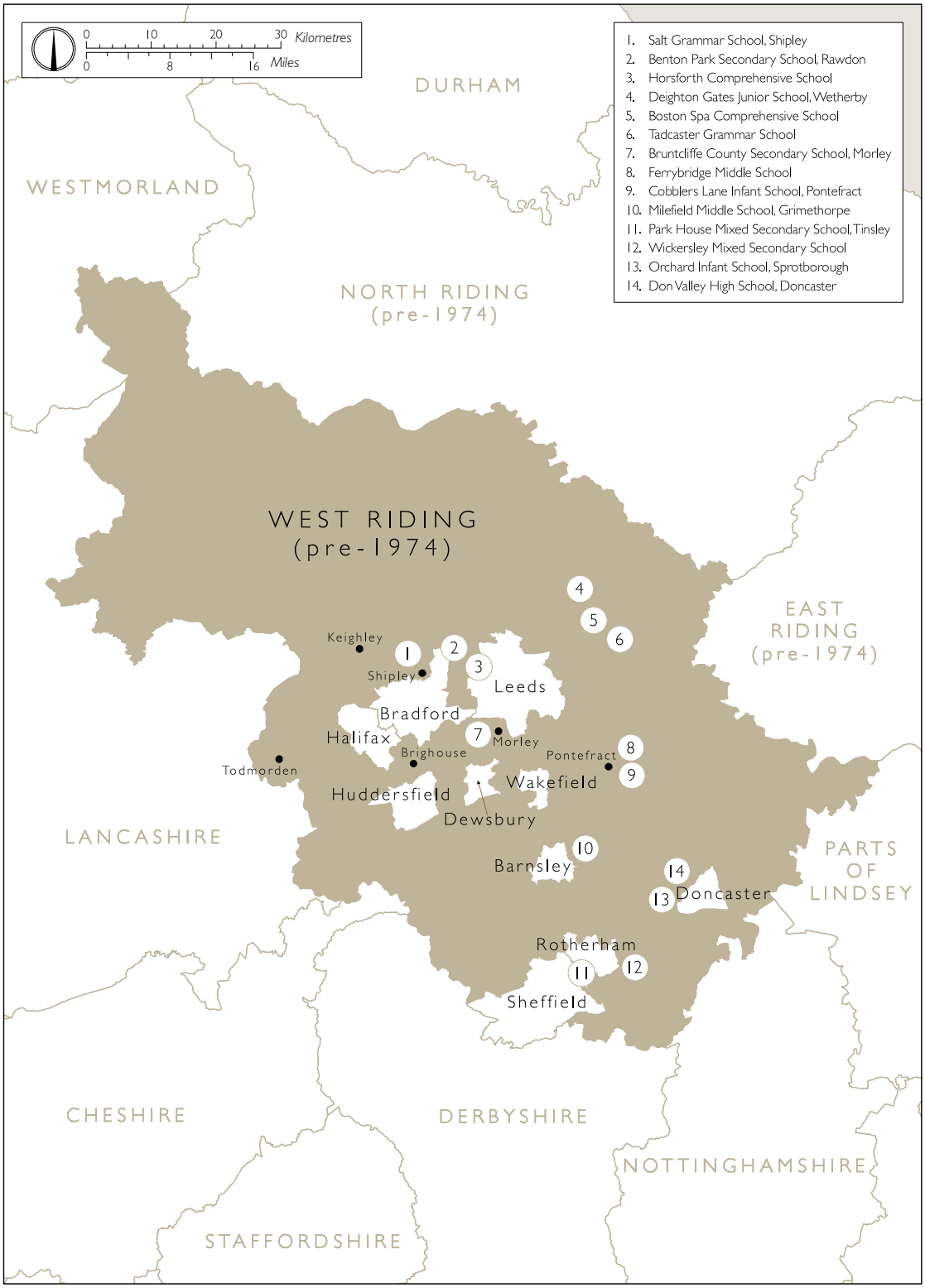


Figure 4.35: West Riding of Yorkshire: location of gazetteer entries.

The West Riding of Yorkshire

The boundaries of the West Riding of Yorkshire, established in 1889 and abolished in 1974, were based on the Anglo-Saxon division of Yorkshire into three ridings which met at the city of York. The West Riding was England's largest county, covering an area of 7,169km^2 (2,767 square miles), and also one of its most varied with landscapes ranging from high fells and moors, to low fens, to sprawling industrial towns and cities.[1] It boasted a diverse economy, with some areas characterised and supported by coal mining, others by the textile industries and related trades and commerce. As its industrialised urban centres expanded in size and ambition, more requested the autonomy of County Borough status: to the initial Bradford, Huddersfield, Halifax, Leeds and Sheffield were added Barnsley, Dewsbury, Doncaster, Rotherham and Wakefield, the last the administrative centre of the West Riding County Council. The fiscal profile of the West Riding County Council altered as urban population and rateable value was lost to the County Boroughs. Political control of the Council, too, became a fine balance between the Labour-controlled urban centres and coalfields and the rural heartlands of the Conservative party. Councillors were 'powerful, active and often abrasive' and on occasions the educational debate became politically charged.[2] Yet the destabilising effect of politics and personalities was tempered by a regional version of 'Butskellism', an unwritten cross-party consensus that extended to the broader objectives of educational policy.[3]

Cultural differentiation and socio- economic inequality presented a challenging set of circumstances for a local education authority, and no single policy or system could possibly be suitable for such a broad social spectrum.

1937-49	Walter Hyman (Lab)	1958-59	Walter Hyman (Lab)
1949-51	W.J. Johns (Lib)	1959-67	C.T. Broughton (Lab)
1951-52	J. Fuller Smith (Con)	1967-72	L. Fitzpatrick (Con)
1952-55	Walter Hyman (Lab)	1972-74	G.N. Bott (Con)
1955-58	J. Fuller Smith (Con)		

Table 4.2: chairmen of West Riding Education Committee, 1937-74

For the two post-war decades, the West Riding of Yorkshire faced the problem of a high and rapidly growing demand for school places. Superimposed onto the national trends of the birth rate 'bulge' and the raising of the school leaving age to 15 in 1947 and to 16 in 1972 were complex regional patterns: migration from the county boroughs, Scotland and the north east of England and high rates of immigration from the Indian sub-continent, the West Indies and eastern Europe. The drivers of population movement, mining and textile manufacture and their allied trades, transformed and contracted in the second half of the twentieth century. The need for extra school buildings was acute, especially in the suburbs and estates of newly built National Coal Board housing, but regionally variable and difficult to predict.[4] Although most of the County Boroughs were comparatively well stocked with solid board schools, primitive accommodation was to be found in the rural village schools for which the County Council was responsible. They would have to wait: post-war priorities were firmly on providing new places, not upgrading existing ones.

Under the charismatic leadership of Alec Clegg, Chief Education Officer from 1945 to 1974, the education system in the West Riding was radically reorganised. Clegg not only drove education policy and practice in the West Riding; he was a key figure nationally, sitting on the Crowther (1956-60) and Newsom committees (1961-63) and submitting evidence to the Plowden committee (1963-67) of the Central Advisory Council for Education. Sir Edward Boyle, the Education Minister who received the Newsom report, recalled: 'we used to say, when something was proposed, "what would Alec Clegg think of this?"'[5] Even today, some four decades after his retirement, his is still a name to conjure with.[6] He is described by his former deputy Peter Newsam as a creative administrator and an inspirer of teachers. What set Clegg apart was the combination of attributes he brought to the role: a strong moral sense, a capacity for self criticism and an awareness of the educational heritage of the West Riding and his own family (he came from a family of school teachers).[7] He is remembered as 'a man of pithy comments, who brought humour to management'.[8] Clegg was a pragmatist, a pluralist, an enemy of dogma: he believed 'what worked was the test'.[9] Behind many of Clegg's policies was a profound concern for the effects of social disadvantage and educational inequality. He championed the less fortunate and the less 'gifted' child in the West Riding, through his involvement in the Newsom Report and, after his retirement, his chairmanship of the Centre for Information and Advice on Educational Disadvantage. Boyle, referring to the MoE's London headquarters, described Clegg as 'the accepted conscience of Curzon Street'.[10]

School building is a central part of the story of education in the West Riding. Hubert Bennett, Architect to the West Riding from 1945-56, built up a strong Department but school building programmes were hampered by his reluctance to prefabricate, even after having bought time with temporary hutted classrooms. After his departure, the West Riding was pressed by central government into membership of the Consortium of Local Authorities Special Programme (CLASP, page 125). CLASP was a pragmatic and economical solution to building on mining subsidence sites; load-bearing construction was generally preferred elsewhere. Another long-standing policy was the allocation of design work to private practices, some of national renown.

By April 1974, when the West Riding was dissolved on local government reorganisation, it had established a national reputation as a local education authority. What is its legacy? In outline, the educational accomplishments of the West Riding are easily stated: it was an early advocate of comprehensives; an instigator of middle schools (and of an Act of Parliament to make them possible) and the celebration of individual expression and exploration in the primary school. The detailed picture is not as clear: policies were implemented in a gradual and piecemeal manner due to changes in political control of the Council. Each educational division was given much latitude to determine its own pattern of education in its own time.[11] Plurality was also demanded by variations in demography and the suitability of buildings for conversion.[12]

'Something like a piece of Gruyère cheese with holes in it' was how the educational administrator Tony Lenney described the West Riding education authority.[13] In addition to the ten county boroughs, which constituted separate education authorities, Keighley was designated an 'excepted district' under the terms of the 1944 Education Act. All authorities were further partitioned into educational divisions, and the West Riding

delegated certain educational decisions to the divisional executives of the eleven rural divisions and five urban divisions. The extent of local autonomy was partly due to Clegg's pragmatic stance: rejecting imposed uniformity, he encouraged the divisions to develop schools which best met the needs of their local communities.[14]

The Selection Debate

Clegg's predecessor Arthur Binns set up a Sub-committee for Post-war Education as early as 1942.[15] Binns, with the support of Alderman W. H. Hyman, the Labour chairman of the West Riding Education Committee, showed an interest in building non-selective 'multilateral schools', planned as separate buildings on a single site so that they could revert to separate schools if required.[16] It was suggested that new secondaries at Tadcaster and Ripon should experimentally be of this type. Alec Clegg, appointed Chief Education Officer in September 1945, strongly opposed the principal of selection and sought expert advice which challenged the reliability of the aptitude tests which formed the basis of allocation.[17] In a memo of July 1946 he wrote 'we must not blindly divide our secondary schools into technical, grammar and modern schools, but must by experiment discover the needs of children of 11+ and differentiate our schools gradually according to our discoveries.'[18] He gave his qualified support to comprehensive education, although he believed that no scheme was universally applicable nor a guarantee of educational reform.[19]

The West Riding Development Plan, first issued in 1948, proposed the construction of 866 new schools and the closure of 421, which would have brought the total to approximately 1,500 schools. Of the new secondary schools, 16 were to be grammar schools and 34 multilateral, thirteen of which would replace existing grammar schools. From 1949, when the Conservatives won overall control of the council (table 4.2), the multilaterals were viewed more sceptically. The Ministry's response to the multilaterals was equally cautious and the revised of 1951 plan dropped multilateral schemes formerly proposed for Keighley, Harrogate, Goole, Pontefract, and Spen Valley; five grammar schools in other areas were allowed to remain unchanged.[20] The first West Riding 'comprehensive', Calder High at Mytholmroyd, opened in January 1950 in a secondary modern building of pre-war design.[21]

In 1952 a newly-elected Labour council authorised new and purpose-built comprehensives at Tadcaster, Colne Valley and Penistone, built between 1955 and 1958. The first of them to open, in 1956, was Colne Valley High School near Huddersfield, a large, eight-form entry school with a four-storey classroom block, constructed in phases between 1951 and 1959. As if in recognition of the school's symbolic value, a bronze cockerel was commissioned from Elizabeth Frink.[22] In addition to taking all children of secondary age from their immediate catchment areas, Penistone and Tadcaster also admitted the brighter children from a much wider area. This type of comprehensive school became common in the West Riding in the 1950s and 1960s.[23] The problem with multilaterals was commonly perceived to be their size—it was feared that large schools would be impersonal and lead to problems of discipline. In preparing the Education Plan the West Riding had aimed for schools of between 800 to 1000 pupils but comprehensivisation inevitably meant larger schools of between 1500 and 2000 pupils.

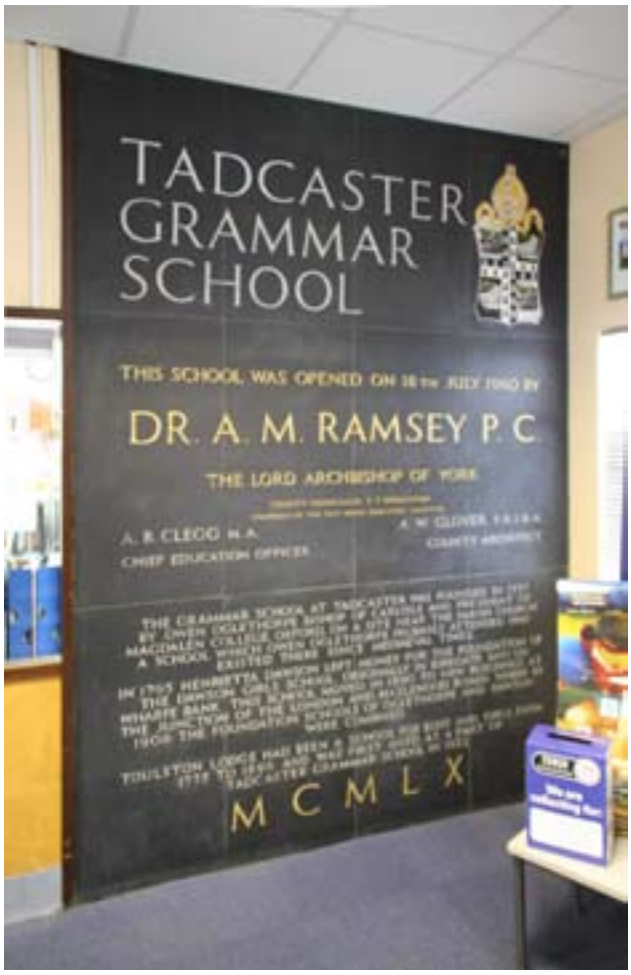


Figure 4.36: Slate plaque commemorating the opening of the Tadcaster Grammar School in July 1960 (P5925003).

A single site was always desirable, and the layout of school buildings was one way to mitigate size.[24]

By 1956 the Council was again under Conservative control; the pace of change slowed and compromises reached. The new comprehensives were retained and given every chance to succeed, but it was agreed that no further proposals should threaten the status of existing grammar schools. Support for grammar schools was not divided across party lines: they were commonly viewed as a source of betterment for those with ability and a means of escape from the mining areas; industrial areas could be slow to embrace the comprehensive system.[25] The selection debate was fudged by introducing other, more flexible methods of selection. This included the 'Thorne scheme' of selection based on teacher appraisal, devised at Clegg's behest by his brother-in-law Gilbert Peaker, HM Staff Inspector for research. By the mid-1960s it was being used for about 70 per cent of children in the county, and was copied by a number of authorities.[26]

In 1965, by the time of the DES circular 10/65 which requested local authorities to submit non-selective educational plans, 14 comprehensive schools had been opened in the West Riding and Colne Valley, Rother Valley and Hemsworth were committed to comprehensive schemes. The other divisions now had to follow suit.[27] Clegg guided the process, making it clear that he would not accept certain patterns of educational organisation such as 11-13 schools, transfer at 14, selection for senior highs based on parental choice and the creation of large schools in split premises.[28] In July 1966 the West Riding submitted a comprehensive reorganisation scheme to the DES based on the responses it had received from its divisions.

The 9-13 Middle School

The West Riding's most significant contribution to education in post-war England is probably the idea of a three-tier education system which comprised 5-9 primary school, 9-13 middle schools and 13-18 secondary schools.[29] Middle schools usually admitted children between the ages of 8-12 or 9-13, and the merits of both were much debated in the 1960s (page 37). Although there is evidence that on purely educational grounds

Clegg, like the Plowden committee, favoured the 8-12 school, his support for the 9-13 grouping was underpinned by pragmatic motives. For one thing, 9-13 middle schools were 'deemed secondary' by the Ministry, qualifying for more generous helpings of money and space. They were a better fit with existing secondary school buildings and plans for non-selective secondary education. But Clegg harboured a concern that the 9-13 schools would push a secondary school ethos down to the youngest children.[30] For the first two year groups he wanted a sheltered environment, where as much time as possible was spent in the care of a single class teacher who knew them intimately. This was essentially a continuation of primary methods. Greater academic specialisation would come in the third and fourth years, undisturbed by exam pressures. Clegg recognised that the planning of school buildings, old or new, was crucial to the success of this arrangement (page 164).[31] His three-tier structure recognised that the layout and size of many secondary school buildings made them unsuitable for adaptation to comprehensive schools, and saved others from enlargement. And an older age of transfer would result in a more mature and liberal atmosphere at the secondaries.

Clegg only reached these conclusions after considering and rejecting another three-tier proposal. The 'Leicestershire Plan', devised by Stewart Mason and approved by the MoE in 1957, was an equally pragmatic and influential response to existing school buildings (pages 223-24). It was presented as the only viable solution for the reorganisation of the Ecclesfield Division of the West Riding in 1958.[32] But Clegg 'did not like his [Mason's] break at 14 and […] did not like the idea of a lower school whose oldest children would for the most part come from educationally unaspiring families'.[33] There was also a concern that the senior highs needed more than two years to prepare pupils for exams and an opposition to the role of parental choice in Leicestershire.[34] When Clegg consulted 15 head teachers on the age of transfer, ten presented convincing arguments for the age of 13.[35] He subsequently steered the West Riding away from the Leicestershire plan, promoting his own scheme regionally and nationally. But granting the divisions greater autonomy had its price. In 1963 the 'excepted district' of Keighley chose to implement the Leicestershire Scheme against Clegg's advice.[36] The policy was not a success, and Keighley switched to 9-13 middle schools in September 1977.[37]

Clegg floated his idea in an informal letter of May 1963 to L.R. Fletcher, Secretary to the Central Advisory Council for Education (England). He subsequently met with Fletcher and Derek Morrell, Assistant Secretary at the Ministry, pleading to allow the system to be introduced in the Castleford Division.[38] In October, he presented a report on the subject to his Policy and Finance Sub-committee, whilst seeking maximum publicity in the press.[39] The following year, after a visit by Boyle to the Don Valley school, the Education Act was passed. It legitimised schemes with ages of transfer other than 11 and thus cautiously ushered in the middle school (page 35).[40] The 1964 Act can be seen as a direct response to Clegg's scheme, and it is perhaps not wholly coincidental that a knighthood was forthcoming the following year. The first three-tier scheme was agreed the following year at Hemsworth; it came into effect from 1968 and an account of the Hemsworth reorganisation was included in the 1970 DES pamphlet *Launching Middle Schools*.[41] The intention was that the three-tier scheme would be selectively implemented, especially in less populous areas where the existing buildings were unsuitable for adaptation into conventional 11-18 comprehensives.[42]

The 'Plan Factory': School Design in the West Riding

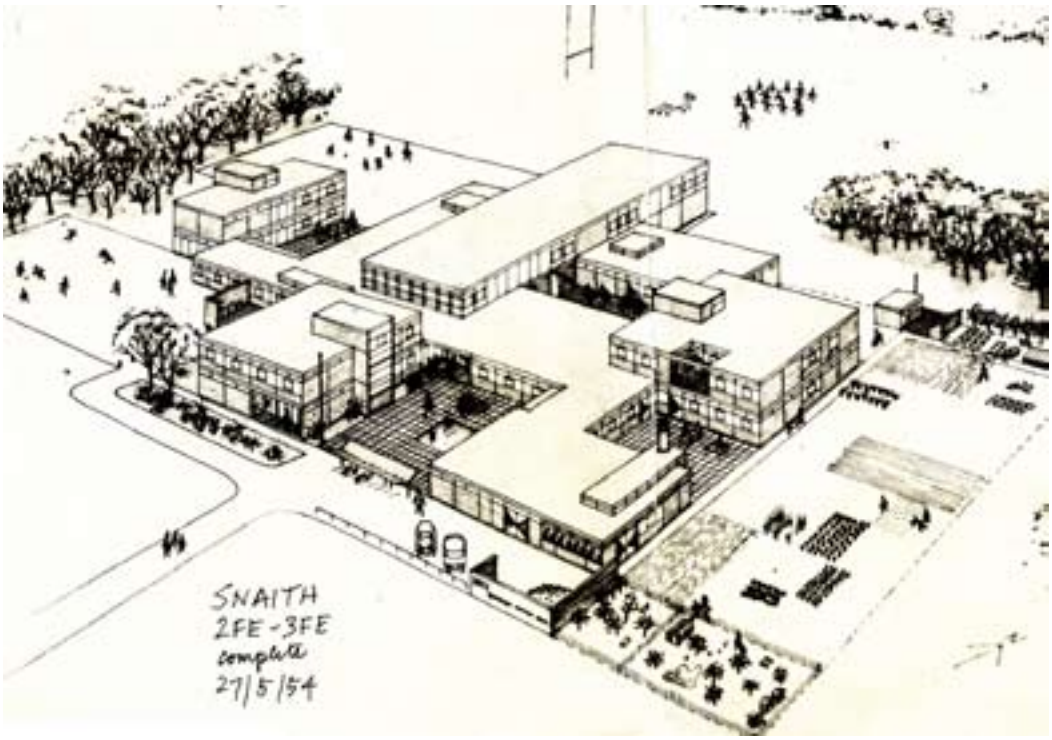
Hubert Bennett, appointed Architect to the West Riding County Council in 1945, was the first County Architect to inherit responsibility for educational building; previously school buildings had been the responsibility of an Education Architect in the Education Department.[43] Unusually, the growing size and importance of Bennett's Department was marked by purpose-built premises of 1949-53 at Bishopgarth, Wakefield, which drew together a department formerly scattered across six different offices.[44] Bennett's design, perhaps influenced by a pre-war visit to the United States, had the senior designers on an open gallery (nicknamed the 'goon box' after prisoner of war slang for a sentry tower). Bennett had the biggest office of all, enclosed by glass walls. The gallery overlooked a 'plan factory' occupied by ranks of drawing boards. It was, in Andrew Derbyshire's words, a 'built hierarchy', very different to the quasi-autonomous groups that Bennett inherited at the LCC Architect's Department (pages 183-84).[45] It was at the plan factory that Bennett posed in a white smock, the garb of the hands-on designer, for the photographer of the *Architect's Journal* (fig.4.37).[46]

Figure 4.37: The West Riding 'plan factory'. Front row, from left: Hubert Bennett, W.T.C. Walker, A.W. Glover, Arthur Robinson, H. Judson, Andrew Derbyshire, J.R. Taylor, E.L. Cathery. Back row: D.G. Howard, C.R. Penny, W. Pepper, G. Pickup. Reproduced by kind permission of the Architects' Journal*, vol.121, no.3144, 2 June 1955, p.732.*

For the first few post-war years much of the Department's time was spent on an exhaustive survey of the county's stock of school buildings, which informed the Development Plan, and the job of adapting and extending a series of country houses which would become Clegg's teacher training colleges.[47] The school-building programme commenced in earnest in 1948-49, but was hamstrung by shortages of materials and labour.[48] So little guidance then existed on educational design that Bennett had to reply on his own pre-war experience. Whilst teaching at Leeds in the mid-1930s he had designed the innovative Swinton and Pendlebury Open-air School in Greater Manchester, with a sophisticated plan and 'diagrid' roof.[49] And two pioneering Yorkshire schools, completed at the beginning of the war, were much consulted by West Riding architects. Denis Clark Hall's Richmond Girls' High School of 1938-39 was based on the architect's winning competition entry in the *News Chronicle* competition of 1937, but benefited from the advice of Frank Barraclough, North Riding's Chief Education Officer.[50] Its elongated plan and the use of random

rubble walling (introducing a vernacular element to Modern Movement architecture) would be echoed at the West Riding. Whitwood Mere Infant School in Castleford, completed in 1941 to designs by Oliver Hill, was also an inspiration. Hill's design boasted a subtle sense of colour and his curved plan incorporated sliding, folding glazed screens opening onto a covered terrace.[51]

Yet as Andrew Saint has observed, West Riding schools of the 1950s were modernising rather than modernist. [52] Their combination of snecked stone facing, square windows, vertical weatherboarding and a mixture of flat and monopitched roofs recall Clarke Hall's Richmond school and the 'New Empiricism' of welfare state architecture in northern Europe.[53] The image was underpinned by a strong local preference for York stone facing, especially in the open rural sites and historic towns of the West Riding.[54] Bennett claimed responsibility for the design of the Ilkley Infant School of 1953, a passable imitation of Frank Lloyd Wright's prairie houses, and Bardsey Primary School of 1954 which steps up a gentle slope with a ramped corridor.[55] He showed little enthusiasm for system building, preferring to use materials and methods familiar to the local building trade.[56] Andrew Derbyshire, on the staff from 1953-55, designed a light steel-framed system with timber infill panels. A prototype was built as Snaith Secondary Modern School (Figs 4.38-39),



Figures 4.38 & 4.39: drawings of 1954 by Andrew Derbyshire for Snaith Secondary Modern School. Photographs kindly supplied by Sir Andrew Derbyshire.

but the idea was taken no further.[57] Economies had to be secured by other means if the Ministry's cost limits were to be met. Techniques of elemental cost analysis, developed at Hertfordshire and the Ministry of Education with prefabricated building in mind, were applied to load-bearing construction.[58] But traditional building could never rival 'light and dry' in speed and the West Riding was obliged to resort to hutted classrooms, an admission of failure in the view of many socially-minded architects.[59] A demountable timber-framed classroom on a 4' module was first produced in 1952 and proudly shown off in the architectural press.[60] By 1960, 25,000 school places had been provided by a design which ran to 15 variations.[61] As it was a counterpart to the government's HORSA huts (an acronym for Hutting Operation for the Raising of the School-Leaving Age), it was inevitably dubbed the Hengist hut, after the brothers of Anglo-Saxon legend.[62]

The biggest drain on school building resources were the technical challenges presented by mining subsidence sites: about half of the county was affected by worked and unworked mine shafts, and cost planning was a crucial tool in the search for a solution. From 1951, schools in subsidence areas were planned as a series of detached buildings with minimal linking sections. The units were small enough to successfully 'ride the subsidence wave' without substantial damage and both frame and load-bearing structures were possible. The foundation was a simple reinforced-concrete raft 'floated' on a sand bed. The resulting campus plan best suited secondary schools such as the Darton Secondary Modern School, near Barnsley of 1954-56 and Don Valley High School near Doncaster, opened in 1957.

When in 1956 Bennett moved on to become Architect to the London County Council, his Deputy A.W. Glover was promoted to the top job. Glover in turn appointed the prefabrication-minded Harry Benson Ansell as his Deputy.[63] These changes resulted in a more favourable climate to the adoption of industrialised building. In 1957 West Riding was encouraged to become one of the founding authorities of CLASP, along with neighbouring Nottinghamshire, Derbyshire and others. The determining factor in this decision seems not to have been the technological advantages of the system but the economic benefits of membership, which included bulk and forward ordering and an additional capital allowance for subsidence sites which, if unclaimed on any particular project, could be transferred to other capital projects in the CLASP programme. Under Glover, CLASP was deployed selectively as part of a mixed construction strategy for school buildings, which also included West Riding's home-grown solution to subsidence, proprietary building systems and traditional construction.[64]

By 1960 the West Riding Architect's Department was firmly established at its central office in Wakefield, with divisional offices in Harrogate, Wakefield, Doncaster and Huddersfield taking care of maintenance and minor works. With 115 architects out of a total staff of 384, the Department was one of the largest in England. It was divided into six design groups, each led by an Assistant County Architect. Under Bennett each group specialised in a particular building type; the structure was later loosened, with the workload shared more equally between groups and a 'friendly rivalry' encouraged.[65] The groups were assisted by other sections comprising quantity surveyors, heating engineers, structural engineers and so on.[66] School building in the West Riding progressed at a considerable rate, and a tally of 72 primary schools, 43 secondary schools, seven

technical colleges and high schools and ten special schools were the result of barely more than a decade's work.[67]

The contracting out of school design to private architectural practices was essential to overcome peaks in the departmental workload, and was already an established part of the operation when Bennett arrived in Wakefield in 1945.[68] By 1963, almost two-thirds of the design work for the Education Committee was distributed amongst 65 different practices, although this included minor works, additions and alterations.[69] In the main regional firms were patronised, notably Abbey, Hanson and Rowe of Pontefract, but occasionally more famous and innovative firms enjoying a national reputation were chosen, such as Lyons, Israel and Ellis, Richard Sheppard, Robson and Partners and Chamberlin, Powell and Bon (fig. 4.40). A Liaison Branch within the Architect's Department offered technical assistance, although the firms were ultimately answerable to the Education Committee.[70] Bennett's personal connections may have come into play in the selection of architects, and he inherited the same policy at the LCC/GLC from 1956-70 (page 184).

Figure 4.40: A courtyard at Salt Grammar School, Shipley; Chamberlin, Powell and Bon, 1960-63, demolished in 2005. © Geoffry Powell.

The appointment of Kenneth Charles Evans as County Architect in 1964 came as 'a bit of a shock' to the Department.[71] Evans had studied under Douglas Jones at the Birmingham School of Architecture after the war and was one of several graduates to go to the Hertfordshire Architect's Department on graduating.[72] After seven years at Hertfordshire, Evans was appointed Architect at the Isle of Ely in 1956 before returning to Herts as Deputy Architect under Geoffrey Fardell from 1960-64.[73] He brought

something of the Hertfordshire ethos to the West Riding: a willingness to collaborate with educationists, an interest in prefabricated construction and a certain developmental rigour. Evans took an interest, for example, in the planning of primary schools and how they might serve the sort of child-centred teaching which Clegg advocated. 'He kept sending them back', former Assistant County Architect John Mawson recalled of the plans vetted by Evans; 'they weren't good enough for him'.[74]

Full use was made of CLASP in mining areas. For unaffected sites, a 'rationalised traditional' building system was devised by a development group lead by Assistant County Architect Laurie Nutter. 3M/RT, as it was dubbed, was based on the 3M (12") module recommended by the Ministry of Public Building and Works. A plywood roof deck rested on load-bearing brick or block walls; junctions and details were standardised to speed up detailed design.[75] The West Riding was also a pioneer in the design of school furniture and from the 1950s became one of a small number of authorities to design its own range. For Clegg, the design quality of school furniture was a measure of an authority's attitude towards the children and teachers who would use it and how much they were valued. Furniture layouts revealed much about how space was used and were a prerequisite of school planning. In 1970, David Medd and John Marshall of the DES Architects and Building Branch collaborated with the West Riding in the furnishing of the **Cobblers Lane Primary School** in Pontefract.

Educational Liaison

Alec Clegg was not personally involved with the design process, except at the most strategic level, and the briefing and liaison was left to his deputies, assistants and the Chief Clerk's department. A working party of teachers also contributed to the shaping of educational briefs. Clegg would not visit any school less than two years old, presumably on the basis that sustained patterns of use were the only way to evaluate a school building.[76] That is not to suggest that he was unconvinced of the influence of school buildings on their occupants. When soon after taking up the post, he ordered that a particularly drab and dirty village school be redecorated, he was surprised by the effect on the morale of children and teachers: 'I then realised how powerful the connection between colourful, clean and well equipped schools and what goes on inside them'.[77] Neither was Clegg ignorant of the processes and frictions of school design. He could be withering about architects, poking fun at Hubert Bennett at the Architectural Association in 1952:

> County Architects are lamentably conservative. They insist on using the most protracted methods of construction, to sacrifice educational efficiency to their own often deplorable aesthetic standards, they are administratively incompetent and show a disregard for estimates, starting dates, and the client's needs which passes belief. Furthermore, if they act on behalf of the Council vis-à-vis private Architects they have no control whatever over these eccentric and unaccountable creatures.[78]

Clegg's strong ideas about the organisation and layout of schools could tip over into intransigence when it came to dealing with architects.[79] Liaison between the fiefdoms of the Education and Architect's Departments seems to have been too limited and punctilious to encourage the sort of informal dialogue between junior members of staff

so effective elsewhere. As a consequence school design in the West Riding was perhaps a less reflexive and exploratory process than it might have been—particularly, perhaps, for Ken Evans, who had learnt the value of first-hand observation and discussion at Hertfordshire—and was probably closer to the traditional architect's role of giving built form to a pro-forma brief, albeit an educationally-progressive one. The briefing process at the West Riding was summarised by A.W. Glover in a 1963 article:

> After the initial briefing by the education department at a round-table conference, all preliminary sketch plans are subject to close scrutiny by the education administrative staff, Her Majesty's Inspectors and specialists of the various teaching sections and, frequently, by the head of the school, if appointed. […] Having completed [revisions to the sketch plan, the architect] brings his scheme before the Education Committee together with a model and rough perspective drawings to convey to the layman an idea of what the school may look like'.[80]

He went on to describe the Education Committee as a 'small body of enthusiastic but trenchant members'.[81] 'I have on the whole found architects aloof and somewhat uncooperative, unwilling to accept […] suggestions', complained Walter Hyman, a longstanding Chairman of the Council and its Education Committee. 'Again and again I ask "What is the hall going to be like?" "I think you will be pleased (satisfied)" is the answer I receive, but we ought to *see* what it is going to look like that the start […] After all, it will cost £5,000-£10,000!!' [82] An outsider's view of the West Riding Education Committee in session is conveyed in this account by Hugh Morris of Robert Matthew Johnson-Marshall and Partners. He was seeking the subsidy of a ceramic mural at Swinton Technical High School near Rotherham, commissioned *c.*1960 from the potter Hans Coper:

> It was a long, serious, classic debate about the role and place of Art in public places, between Labour members (miners, school teachers) and Tory men of muck and brass. It was loud, long and fierce. It frightened and horrified poor Hans into silence. I can still remember bits of it very well. The best question came from a very cross Tory: "ee, well…'tis all very fine, no doubt; but can you tell us, WHAT'S IT FOR?" This was bellowed. […] In the end the £450 was put to a free vote (we were hustled out the chamber before that and left biting our fingernails in the corridor while the debate roared on to the vote). Hans was very miserable. Eventually the County Architect came bursting out, all smiles. "You've won, you've won! 17 votes to 13 and both parties split right down t'middle!" […] If he'd had a hat he'd have been throwing it in the air. [83]

School Planning

Clegg, who submitted evidence to the Plowden committee, championed the informal, explorative and expressive elements of primary education.[84] Traditional whole-class teaching was combined with teacher cooperation and a mixture of ages, activities and working groups. Although seen as an innovation, it was common practice at many Yorkshire village schools. Mrs Scott, the headmistress of Brodsworth Primary School, told Clegg: 'family grouping, mixed age groups, the integrated day, non streaming—these

Figure 4.41: Tiling hanging at the CLASP Orchard Infant School, Sprotbrough, Doncaster; Twist & Whitley, completed 1966. Ken Twist and Ken Evans worked together at the Hertfordshire Architect's Department in the early 1950s (P5925004).

are nothing new in the village school. We have been carrying on with it successfully for years'.[85] Primary schools had been conventional, corridor-planned affairs under Bennett but Evans encouraged more compact plans. These derived from the 'mother hen' principle of providing a secure pastoral base from which children could stray into adjoining communal spaces.[86] It was discovered early on that halls were in virtually continuous use, so they needed to be set apart from entrances and main circulation routes to avoid disruption. Infant and junior schools were grouped on same site if possible, to make schools more intimate and sheltered places.

The West Riding's 1965-67 Building Programme provided an opportunity to amend the standard primary school brief. The teaching area was increased and each classroom was provided with a quiet area and a tiled area for messy practical work, and its own entrance, toilets and coat area. A range of activities were thus integrated into the classroom. The **Orchard Infant School** in Sprotbrough, opened in 1966, was one of the first of 40 new primary schools designed to the new brief (fig. 4.41).[87] By the early 1970s, a heady mixture of education progressivism and inflation contributed to a shift from classrooms with integrated practical and quiet areas to more open and innerconnected with 'social areas' which encouraged great movement and fluidity of class groups.[88] Plans such as **Cobblers Lane Infant School** in Pontefract or **Deighton Gates Junior School** in Wetherby, John Mawson recalled, 'took a little bit of geometry to make them work'.[89]

Educational input was especially crucial in planning new middle schools, and Clegg set out his thoughts on the subject in 1966:

> As for buildings, we would want each class to have its own base where its own work could be displayed, but we would also hope that for each year group there would be a shared space which for each of the two years would be a practical workroom, while the third and fourth year would share one workroom and one quiet book study rooms. In addition, we would have a large room for wood and metalwork, animals and plants, and a large cleaner room for the cleaner crafts and the beginnings of housecraft.[90]

Figure 4.42: Milefield Middle School, Grimethorpe; West Riding County Council Architect's Department, opened 1968.

The first purpose-built middle schools were designed within the West Riding Architect's Department. The test bed was the **Milefield Middle School** in Grimethorpe, the first of several new middle schools required when the Hemsworth division became the first to implement a three-tier reorganisation (fig. 4.42). But overall, many more secondary modern schools were converted than new middle schools were built.

In secondary schools the challenge was to break large school units down into smaller distinct groups. Early comprehensives were initially organised into upper, middle and lower schools. This pattern later gave way to division by house. Curricula varied but were generally broad, reflecting the academic subjects to be found in grammar schools but including practical subjects as well as physical education, drama and dance. Clegg was influenced by the thinking of the Newsom report on secondary teaching and organisation, being particularly enthusiastic about the multi-functional centres intended to facilitate informal group discussion and social gatherings amongst older pupils (pages 46-48).[91] From 1967 West Riding secondary schools included the provision of integrated social areas for 5th form pupils and suitable accommodation for 6th forms. The gradual implementation of non-selective reorganisation plans resulted in a glut of large comprehensive schools in the late 1960s and early 1970s. These combined informal social areas for older pupils with facilities for the use of the wider community such as sports hall and swimming pools, in some instances part-funded by borough councils.

The Demise of the West Riding

The widespread reform of local government in England was considered in 1966-69 by a Royal Commission. But the Labour-commissioned Redcliffe–Maud Report was not adopted, and the incoming Heath Government imposed a universal two-tier structure, with West Yorkshire, South Yorkshire and the Tyneside area becoming metropolitan counties.[92] The West Riding was the biggest English authority required to bring about its own disbandment in accordance with the Local Government Act of 1972. Parts would go to nine successor authorities including Leeds, Sheffield, Bradford, Huddersfield, Wakefield, Doncaster, Rotherham, Barnsley and Halifax (Calderdale). Other districts were transferred to North Yorkshire, Oldham, Lancashire and Humberside.[93]

The Conservative-led West Riding County Council opposed the reforms but were reluctant to openly challenge a scheme proposed by a Conservative national government.[94] Clegg and the DES feared that the metropolitan district authorities with low rateable values would struggle to provide an adequate education service.[95] Clegg expressed his misgivings in a 1971 letter to the educationist Harry Rée:

> 'We are going, with a vengeance, to create two leagues of authorities and the bottom league will be made up of the Metropolitan Districts. These are grey areas and no one cares a damn about them politically— the Socialists cannot lose them and the Tories cannot win them'.[96]

Most vulnerable were the specialised or subsidised services that only a big, centralised LEA could efficiently provide, such as nursery and special education, adult education, teacher training, in-service training courses, a peripatetic music service, a curriculum advisory service and a central resource centre. When the West Riding County Council

ceased to exist in April 1974 some functions were transferred to the Metropolitan County of West Yorkshire, until it too was abolished in 1986.

The break up of the West Riding effected the dispersal of one of the largest and most experienced pools of school designers in the country.[97] 'Astragal' of the *Architects' Journal* reported the dispersal of the records of the Architect's Department in April 1974: 'row after row of files and roll upon roll of drawings were arranged in neat rows waiting to be collected and a trickle of collectors filtered onto this dismal scene, packing material into vans, boots of cars and even briefcases'.[98] Of the new metropolitan district authorities only Wakefield remained a member of CLASP, reducing the bulk buying capability of the consortium considerably. Few new schools were built by the successor authorities, which generally had little money and relied upon their stock of board schools. The group of Bradford primary schools designed by Ron Furniss of Bradford City Council Architect's Department in the 1980s is a notable exception (fig. 4.43).[99]

Figure 4.43: Newby First School, Bowling, Bradford; City Architect's Department (job architect Ron Furniss), 1985. The 'Bradford Schools Programme' involved several new schools of similar design. Institute of Education Archives: ABB/B/1/52/6

Gazetteer

Primary Schools

¶ **Orchard Infant School**, Field House Road, Sprotbrough, Doncaster; Twist & Whitley, completed 1966.

Orchard Infant School at Sprotbrough was one of the first of forty primary schools on the 1965-67 capital programme to be compactly planned on the basis of a revised educational brief. Orchard Infant School is a two-form entry, six-class school which replaced an earlier school a short distance away. The school is constructed in CLASP Mark III with timber and asbestos cladding panels and tile hanging. Some windows have been replaced in uPVC but the school retains its original weatherboarding, tiling and asbestos panels (fig. 4.41).

¶ **Cobblers Lane Infant School**, Cobblers Lane, Pontefract; West Riding County Council Architect's Department (job architect Peter Brown), designed 1970-71, built 1971-72, demolished 2007.

By the early 1970s, West Riding primary schools were being designed with a more compact plan, which met stringent budgets and encouraged teacher cooperation. Three pairs of home bases, each with its own quiet area and covered entrance and sharing a 'wet bay' were clustered around a 'market cross' or forum'

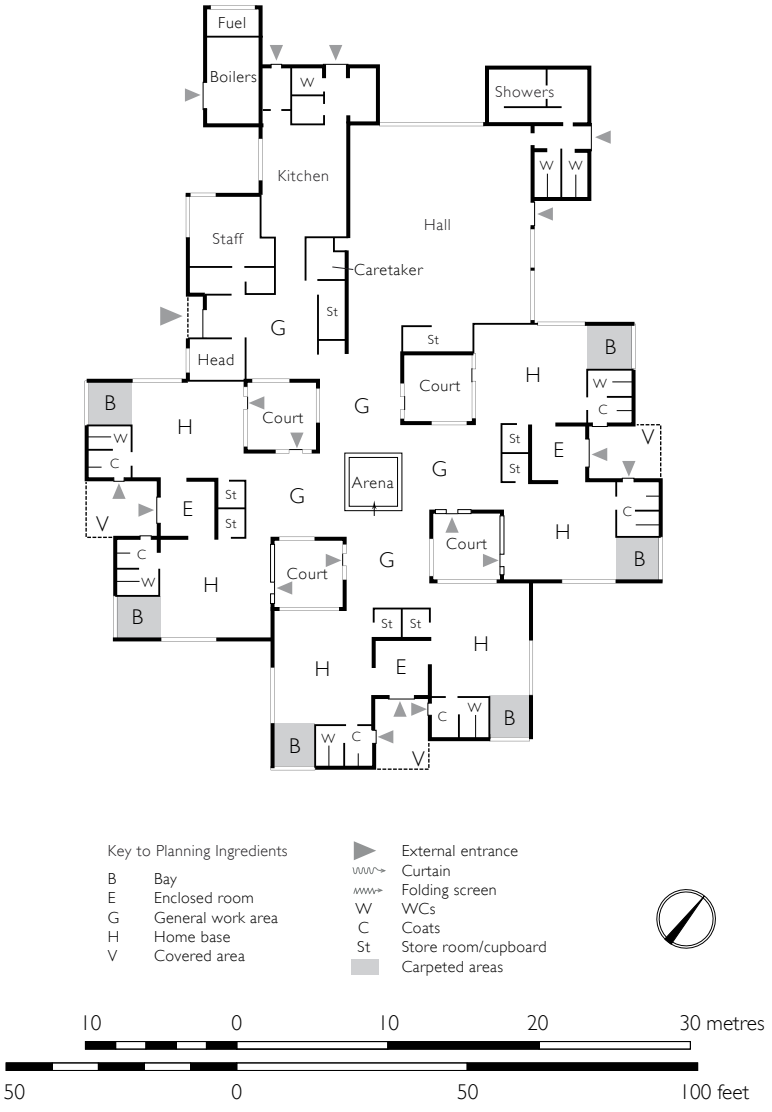


Figure 4.44: Cobblers Lane Infant School, Pontefract.

with a curtained and raised dais for drama. Four courtyards brought light into the centre of the deep plan. A fourth arm led to hall, kitchen and administrative rooms. The school was in a mining subsidence area and so built in CLASP. David Medd and John Marshall of DES Architects and Building Branch acted as 'design consultants' on the furnishing of the school which was the subject of a short film.[100] The school was closed on amalgamation.

¶ **Deighton Gates Junior School, Deighton Road, Wetherby**; West Riding County Council Architect's Department (job architect Alex Roberts), designed 1969, built 1970-71.

A two-form entry junior school arranged as a series of two-teacher 'centres' ranged around open space for communal activities and decentralised dining. Like Cobbers Lane, the plan incorporated rotational symmetry. Construction was in the West Riding's '3MRT' system of rationalised traditional construction. Excess soil excavated from the site used formed into a long barrow and a brick fort.[101]

Middle Schools

¶ **Milefield Middle School**, Engine Lane, Grimethorpe; West Riding County Council Architect's Department, opened 1968, demolished.

Milefield Middle School opened in September 1968, purportedly the first purpose-built middle school in the country, and a model of Alec Clegg's thinking on the needs of the 9-13 age group. This 480-place school, like the contemporary Delf Hill Middle School in Bradford (page 39) was organised into upper and lower pairs of year groups, each ranged around an internal courtyard, with shared facilities at the centre. Each year group comprised four classrooms with a shared practical area

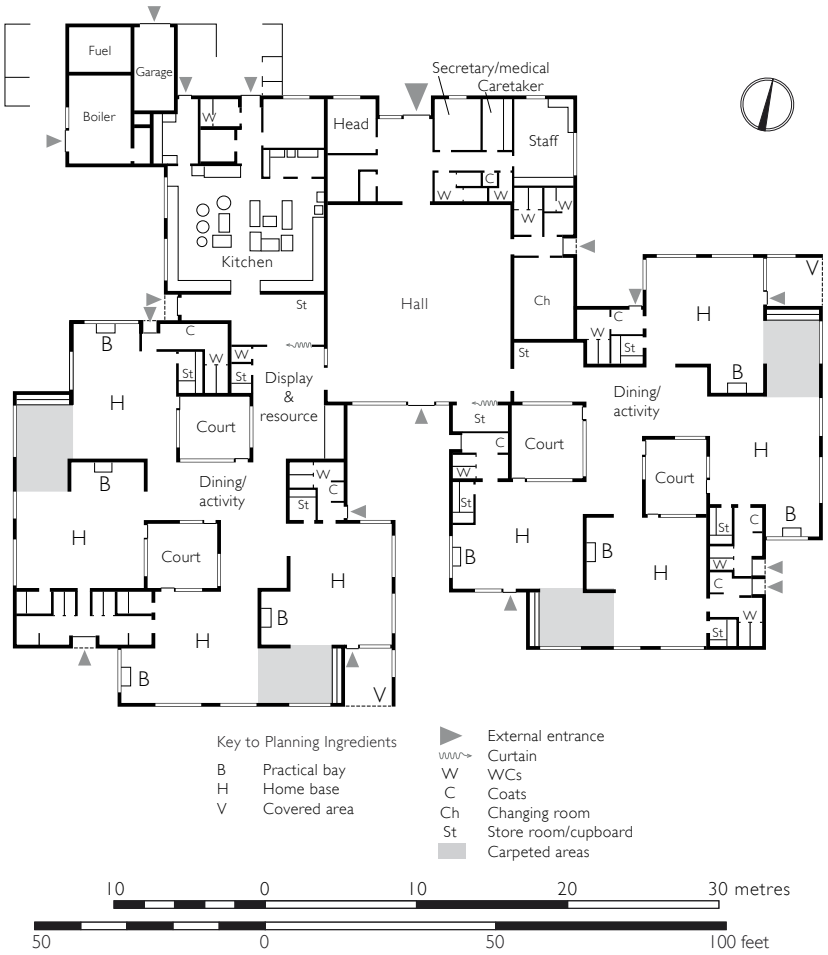


Figure 4.45: Deighton Gates Junior School, Wetherby.

equipped with sink and workshop facilities. The classrooms, each of 600 square feet and for thirty pupils, were intended to be large enough to enable a range of activities such as science, craft, reading, writing, mathematics to be pursued at any one time. The two older year groups had smaller classrooms and more shared areas, a library and a housecraft area. The school, of CLASP construction, closed in 1990.[102]

¶ **Ferrybridge Middle School** (now Ferrybridge Roundhill Primary School), Hampden Close, Ferrybridge; West Riding County Council Architect's Department, opened 1971.

Ferrybridge Middle School was designed as a two form-entry junior school, being converted to a middle school in 1973. Two groups of four classrooms each with their own quiet and practical areas, are ranged around shared areas and courts. In the centre of the plan is a hall, shared study and library, a dining area and changing and shower facilities. The school, of CLASP construction, has now reverted to primary school age group. Replacement of the school is currently proposed.[103]

Secondary Schools

¶ **Tadcaster Grammar School**, Toulston Lane; West Riding County Council Architect's Department, designed 1954-6, built 1957-60, sixth form accommodation added c.1972.

The decision to increase secondary education provision in the Tadcaster area with a comprehensive school was taken as early as 1944,[104] along with Ripon, because it was thought that Tadcaster was too small to warrant the building of a new grammar school, secondary modern and secondary technical school. Tadcaster Grammar School was first designed in 1954 as one of the first comprehensives in the West Riding. The school had occupied the 80-acre grounds of the Victorian Toulston Lodge since 1952. The original school consisted of a linked upper and middle school block and junior school block, both of three storeys, connected by what was originally the library to the large school hall to the west. The practical block and boiler house and chimney were situated to the south west with a detached gymnasium to the south of the library. The buildings are of rationalised traditional construction with yellow brick walls and glazed curtains with lower light concrete panels, the colour of the local stone. The school was formally opened in 1960 and enlarged *c.*1972 with a ROSLA extension. Recent additions include a science block in 2002 and a detached library block (*c.*2007).[105]

Figure 4.47: Tadcaster Grammar School (P5925005).

Figure 4.46: Ferrybridge Middle School; West Riding County Council Architect's Department, opened 1971. Ferrybridge C power station looms behind. Institute of Education Archives: ME/Z/5/3/23

¶ **Benton Park Secondary School**, Harrogate Road, Rawdon, Leeds; Sir John Burnet Tait Durrant & Partners, 1960.

A late work by this celebrated British architectural practice. Two and four storey blocks of reinforced concrete frame with brick and glass infill.

¶ **Salt Grammar School**, Higher Coach Road, Baildon, Shipley; Chamberlin, Powell and Bon (CPB; partner in charge Geoffry Powell, job architects Keith Manners, Max Barham, Ralph Shergold), 1960-63, demolished 2005.

The co-educational Salt Grammar School was established in 1944 when the West Riding County Council amalgamated the Saltaire Boys' High School, founded by Sir Titus Salt in 1868, and a Girls' School of 1876. It was decided that the unique nature of the site, on the Aire Valley overlooking the historic model village and mill complex, demanded a special commission and CPB were appointed in 1959. The school, for 720 boys and girls, took the form of a courtyard plan with a barrel-vaulted hall and gym on one range. Powell created a sense of drama in the courtyard by perching a tile-clad circular hall over a large pond, fed by a diverted stream. The two floors of the building were planned almost as two separate structures, with a steel frame carried above a reinforced concrete ground floor. This allowed some planning flexibility, albeit at considerable extra expense and a protracted construction period. The school was faced with exposed concrete with a pick-hammered finish, and in some areas, internal walls and ceilings were left un-plastered to reveal structural elements. The school latterly suffered incremental alteration and was rebuilt in 2005.

Figure 4.49: Bruntcliffe County Secondary School (P5925006).

¶ **Bruntcliffe County Secondary School** (now Bruntcliffe High School), Bruntcliffe Lane, Morley; Richard Sheppard Robson and Partners, opened 1963, extended 1976.

Designed as a four-form entry mixed secondary school for a total of 600 boys and girls, the original school consisted of a compact rectangular block of two storeys around a central courtyard which originally incorporated a pond and sculptured fountain. Construction is of prestressed concrete beams bearing on load-bearing brick walls. The building was faced with local brick and cedar weatherboarding.

¶ **Park House Secondary School**, Bawtry Road, Tinsley; Lyons, Israel and Ellis (job architects A. Colquhoun, D. Langham and C. Dean), opened 1964.

Parkhouse Mixed Secondary School was a mixed four-form entry secondary school for 680 pupils, planned as four separate house blocks linked by glazed promenades. The main

Figure 4.48: Salt Grammar School, Shipley. © Geoffry Powell.

entrance is sheltered by a detached concrete canopy supported by four concrete posts and opens consists of four separate blocks, a two-storeyed library and administration block, a three-storeyed classroom block, assembly hall and gymnasium and a two-storeyed craft block. The central administration and library block is linked to the other blocks by glazed corridors. There is also a caretaker's house and a bicycle store. loosely ranged around quad.[106] An early use of white concrete, contrasted here with dark Ibstock bricks. The school closed in the 1990s and is now an Islamic centre.

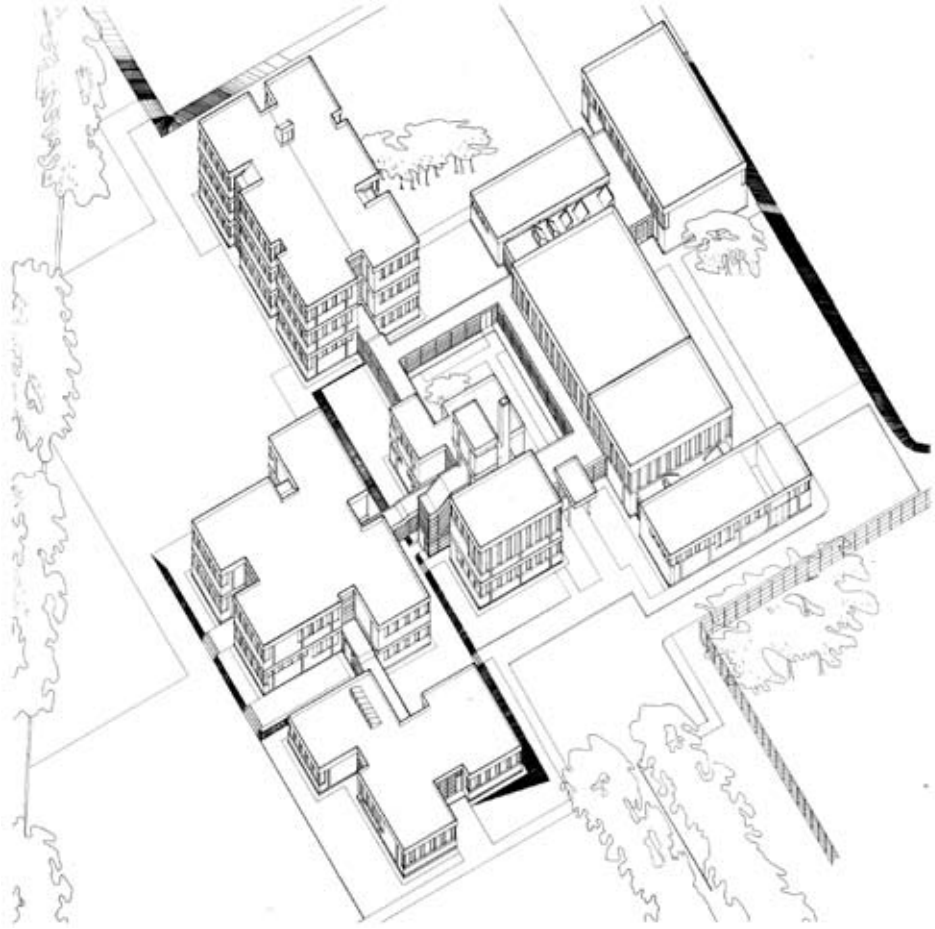


Figure 4.50: Park House Secondary School, Tinsley; Lyons, Israel and Ellis, opened 1964. Reproduced from Lyons Israel Ellis Gray: Buildings and Projects 1932-83 *by kind permission of* AA *Publications.*

Figure 4.51: Park House Secondary School in 2011 (P5925007).

Figure 4.52: Wickersley Mixed Secondary School, completed in 1966 to the designs of Lyons, Israel and Ellis. The elevations bear similarities with ACP*'s Lilian Baylis school in south London (fig. 3.12) (P5925008).*

¶ **Wickersley Mixed Secondary School** (now Wickersley School and Sports College), Bawtry Road, Wickersley, Rotherham; Lyons, Israel and Ellis (job architects for first phase: F. Linden, J. Hodgkins and R. Freeman; job architects for second phase: D Triggs), first phase completed in 1966; second phase completed in 1975.

The first phase of the school, a four-form entry comprehensive school, was completed in 1966 and was designed to withstand mining subsidence. The second phase was completed in 1975 and increased the school to a eight-form entry, intended for 1,500 pupils.

¶ **Horsforth Comprehensive School**, Lee Lane East, Horsforth, Leeds; Abbey Hanson Rowe and Partners (job architects Raymond Berry and Russell D. Earnshaw), designed from 1969 1970-73.

'This looks a gutsy, down-to-earth building with no pretensions', commented the *Yorkshire Architect* of Horsforth Comprehensive School. The brief stipulated an initial six-form entry phase, ultimately to be expanded to a ten-form entry school. The buildings are clad with red brick on a steel frame. At the time the school was designed, a major expansion was planned at Leeds/Bradford airport. An additional allowance from the DES funded in-situ reinforced concrete floors and roofs to better absorb aircraft noise, and determined the school's L-plan, with the sports hall, gym, hall, dining areas, kitchens and workshops arranged as largely-windowless 'sound buffers' to the main teaching areas. Crafts, art and science were co-located, with shared resources, in a block of industrial character whose cranked roof incorporates north light patent glazing. The hall was designed to allow both proscenium and in-the-round dramatic performances. The double-height brick piers and continuous upper storey of the inner elevations recalls Harvey Court, Cambridge of 1960-62 by Leslie Martin and Colin St John Wilson.[107]

¶ Extensions to **Don Valley High School** (now Don Valley Academy and Performing Arts College), Jossey Lane, Scawthorpe, Doncaster; Lyons, Israel and Ellis (LIE; job architects: N. Cedar, B. Davies, A. Neaves and W. Marden), completed 1966.

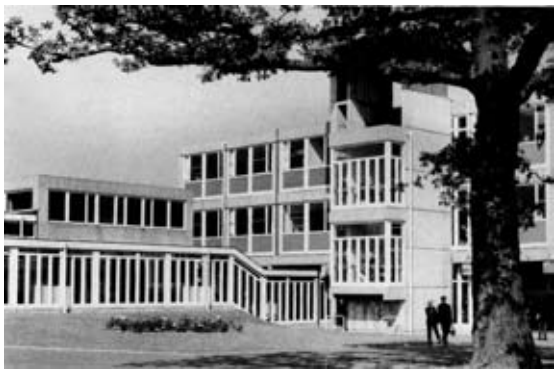


Figure 4.53: Extensions to Don Valley High School. Reproduced from Lyons Israel Ellis Gray: Buildings and Projects 1932-83 *by kind permission of AA Publications.*

The extensive additions to the Don Valley High School were required on comprehensive reorganisation. At first, the extensions functioned as a lower school for pupils aged 11-14, and the 1957 buildings accommodated pupils in the 14-18 age group. The 1966 school was a six-form entry comprehensive intended for 800 pupils. It is concrete-framed and was designed to withstand mining subsidence. It is one, two and three storeys high with a prominent central concrete water tower and heating chimney, something of a LIE trademark, acting as a local landmark.

¶ **Boston Spa Comprehensive School**, Clifford Moor Road, Boston Spa; West Riding County Council Architect's Department (job architects John Mawson, Melvyn Bokas, D. Hall), 1973-74.

A ten-form entry school for the 11-16 age range to serve an extensive rural catchment area. A sixth form building followed as a later phase, bringing the total roll to 1,700. Boston Spa Comprehensive School was planned as a single building of complex outline, mostly on a single storey. As the educational division which Boston Spa served had not introduced middle schools, a sheltered transitional environment was provided for the first two years in the form of a identifiable lower school with common social areas and separate dining facilities. The planning of the upper school reflects Clegg's attempt to dissolve subject boundaries between the sciences and crafts. Construction was of CLASP Mark IVb with precast concrete panels faced with white chippings and, unusually, incorporating some external walls and panels of brick. Boston Spa was opened by Alec Clegg on the final day of the Council's existence.[108]

ENDNOTES

1. Leach and Pevsner 2009, 1.
2. Sir Peter Newsam cited in Crawford 2008, 101.
3. 'Butskellism' was a term used to caricature the economic consensus in post-war Britain: 'Mr Butskell's Dilemma', *The Economist*, 13 February 1954, pp. 439-41. 'Mr Butskell' was a fictitious amalgam of 'Rab' Butler, Conservative Chancellor of the Exchequer 1951–55, and Hugh Gaitskell, Labour Leader of the Opposition 1955–63.
4. Clegg 1952.
5. Kogan 1971, 177.
6. See, for example, the May 2008 edition of the journal *Education 3-13* contained several essays on the subject of Clegg's educational legacy.
7. Newsam 2008, 110.
8. Crawford 2008, 101.
9. Oxford Dictionary of National Biography, Peter Newsam, 'Clegg, Sir Alexander Bradshaw (1909–1986)', first published 2004.
10. Kogan 1971, 271.
11. Gosden and Sharp 1978, 170.
12. Crook 2002, 13.
13. Bush et al 1989, 123.
14. Oxford Dictionary of National Biography, Peter Newsam, 'Clegg, Sir Alexander Bradshaw (1909–1986)', first published 2004.
15. Darvill 2000, 19.
16. Gosden and Sharp 1978, 164-65.
17. Clegg canvassed the opinion of Sir Frederick Clarke of the National Federation for Educational Research, Dr Charlotte Fleming of the Institute of Education and Professor Godfrey Thomson of the Moray House School of Education at the University of Edinburgh. All opposed selection at eleven plus (Gosden and Sharp 1978, 166).
18. Darvill 2000, 53.
19. Darvill 2000, 115.
20. Gosden and Sharp 1978, 167-170.
21. It had been conceived as a secondary modern school, construction of which had begun before the Second World War, but instead the new building became an upper school while the former Hebden Bridge Grammar School buildings were used for the lower school for 11 to 13 year-olds.
22. *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.28). Darvill 2000, 79.
23. Gosden and Sharp 1978, 181.
24. Clegg 1980, 49.
25. Clegg 1980, 50.
26. Under the Thorne scheme, each primary school was allocated a provisional number of places at the local grammar school relative to its previous 11 plus results. Teachers submitted lists of children ranked in order of their considered ability; borderline children were referred for further assessment. The scheme was extended to the Batley area in 1955, and further extended in 1959-60 (Gosden and Sharp 1978, 179.
27. In May 1966, despite Conservative opposition, the Council moved a resolution for non-selective reorganisation.
28. Gosden and Sharp 1978, 191.
29. Gosden and Sharp 1978, 189. Their view is endorsed by Crook 2008.
30. Crawford 2008, 102.
31. Clegg 1966, 1290.
32. Gosden and Sharp 1978, 187.
33. Clegg 1966.
34. Gosden and Sharp 1978,186.
35. Clegg 1966.
36. Gosden and Sharp 1978, 190.
37. Gosden and Sharp 1978, 190.
38. Gosden and Sharp 1978, 187.
39. Gosden and Sharp 1978, 187.
40. Gosden and Sharp 1978, 188-89.
41. Gosden and Sharp 1978, 189.
42. Clegg 1980, 41; Gosden and Sharp 1978, 187.
43. *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.9).
44. *Ibid.*
45. Andrew Derbyshire, pers.comm., 20 July 2012. See also Andrew Saint, obituary of Sir Hubert Bennett in *The Guardian*, 23 December 2000
46. *Architects' Journal*, vol.121, no.3144, 2 June 1955, p.731.
47. Bretton Hall (1949), Woolley Hall (1952), Wells House and Wentworth Woodhouse.
48. *West Yorkshire Society of Architects Journal*, vol. 20, no.1, June 1960, pp. 6-38 (p.9).
49. *RIBA Journal*, vol.45, no.15, 13 June 1938, pp.744-50. For a resume of Bennett's career see Minutes of the Greater London Council, 15 December 1970, pp.680-81.
50. Clark Hall 2007.
51. Holland 2011.
52. Andrew Saint, obituary of Sir Hubert Bennett in *The Guardian*, 23 December 2000
53. 'The New Empiricism: Sweden's Latest Style', *Architectural Review*, vol.101,no.606, June 1947, pp. 199–204.
54. Extensions to the Otley Secondary School became the subject of a written answer in the House of Common in 1959 when Sir M. Stoddart-Scott MP asked the Minister of Education 'why he permitted a building of brick, plaster, and glass in proximity to the ancient stone bridge of Otley,

when all the adjoining buildings and churches are built of stone; and if he has considered the ill effects that a tasteless building will have upon the scholars who work therein' (Hansard, House of Commons debate, 5 March 1959, vol. 601, cc.58-9W).

55. John Mawson pers.comm., 16 May 2012; British Library, *Architects' Lives* interview of 1999 with Sir Hubert Bennett.

56. 'Cost analysis of a secondary modern school', *RIBA Journal*, vol.61,no.11, September 1954, pp.431-46.

57. Andrew Derbyshire, pers.comm., 18 June 2012. Derbyshire recalled 'struggling away at the West Riding, trying to devise a prefabricated system for schools, [which] nobody wanted' (cited in Gold 2007, 64). For the school at Snaith, see *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.6-7).

58. 'Cost analysis of a secondary modern school', *RIBA Journal*, September 1954, pp.431-46. The cost analysis was by Andrew Derbyshire.

59. Andrew Derbyshire, pers.comm., 18 June 2012.

60. *Architects' Journal*, vol.121, no. 3144, 2 June 1955, p.733; *Architect and Building News*, vol. 207, no.22, 2 June 1955, p.666.

61. Linstrum 1982, 266; *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.20).

62. Gosden and Sharp 1978, 197.

63. Benson Ansell would go on to systematise school building at Hampshire (pages 268-71).

64. *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.20). Rossington Tornedale Infant School was completed in 1959 in a proprietary system (*ibid*, p.34).

65. *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.12).

66. *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.3, 12). See also West Riding Education Committee, 1974, pp.98-99.

67. *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.9).

68. *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.9).

69. Glover 1963, 824.

70. Glover 1963, 824.

71. John Mawson pers.comm., 16 May 2012.

72. Saint 1987, 75.

73. Maclure 1984, 93.

74. John Mawson pers.comm., 16 May 2012.

75. John Mawson pers.comm., 16 May 2012; West Riding Education Committee *The Final Ten Years: 1964-74* (1974). 99.

76. John Mawson pers.comm., 16 May 2012.

77. Clegg, A. 'West Riding' in *Education*, vol.143, no.13, 29 March 1974, p.349.

78. A. Clegg, 'The Education Act 1944 and the Post-war Building Programme'. Transcript of speech of 12 November 1952 at an Architectural Symposium on the secondary modern school, in *Journal of the Architectural Association*,vol.68, no.769, December 1952, pp.83-86.

79. David Medd, pers. comm. 3 July 2008; Andrew Derbyshire, pers.comm., 18 June 2012.

80. Glover 1963, 824.

81. Glover 1963, 824; see also Darvill 2000, 23.

82. *West Yorkshire Society of Architects Journal*, vol. 20, no 1, June 1960, pp. 6-38 (p.3).

83. Institute of Education Archives: ME/M/1/20, Letter of 28.7.1983 from Hugh Morris to David Medd. A shorter version of the anecdote is given in Birks 2005, 43.

84. Central Advisory Council for Education (England) 1967.

85. Darvill 2000, 19.

86. *Yorkshire Architect*, no. 34, January/February 1974, p. 18.

87. West Riding of Yorkshire County Council, Educational Buildings Sub-Committee minutes, 17th January 1967.

88. John Mawson pers.comm., 16 May 2012.

89. John Mawson pers.comm., 16 May 2012.

90. Clegg 1966, 1290.

91. Gosden and Sharp 1978. 195.

92. They were proposed in a White Paper of February 1971 (*Local Government in England: Government Proposals for Reorganisation*. Cmnd. 4584. London: HMSO).

93. Gosden and Sharp 1978, 43.

94. Barber and Beresford 1978. 255.

95. The Department of Education and Science, giving evidence to the Redcliffe-Maud Commission, suggested that an education authority, to be viable, should have a population of at least 500,000 and that they would accept a figure of 300,000 in a sparsely populated area (Hansard, House of Lords debate, 19 September 1972, vol. 335, cc.944-1110).

96. Institute of Education Archives:HR/1/28, letter of 9 August 1971 from Sir Alec Clegg to Harry Rée.

97. The point was made by Ken Evans in a letter published in the *Architect's Journal*, vol.159,no.10, 6 March 1974, p.515.

98. *Architects' Journal*, vol.159, no.14, 3 April 1974, p.707.

99. Leach and Pevsner 2009, 78.

100. 'Furnishing a school' by Pel Ltd; Institute of Education Archives: EM/4/1/9; *Architects' Journal*, vol. 156, no. 45, 8 November 1972, pp.1058-60;

Yorkshire Architect, no. 34, January/February 1974, p. 18; Maclure 1984, 182-83.
101. *Yorkshire Architect*, no. 34, January/February 1974, p. 19; DES Broadsheet 3 (copy at Institute of Education Archives:ABB/E/21).
102. Alec Clegg, 'The Conception of the "Middle School" in Secondary Reorganisation in the West Riding', transcript of paper given at the 'joint four' conference on middle schools, University of London, 15 February 1969, p.3 (www.middleschools.org.uk%2Fdocuments%2Fhistory%2FThe%2520Joint%2520Four%2520Conference%2520%25201969.doc, , accessed 15 August 2012).
103. Maclure 1984, 194-5; http://www.ferrybridgeroundhillprimary.ik.org/news/home.ikml
104. Gosden and Sharp 1978, 165.
105. Leach and Pevsner 2009 731.
106. Forsyth and Grey 1988, 102-5
107. *Architects' Journal*, vol.159,no.22, 29 May 1974, pp.1205-22; *Yorkshire Architect*, no. 34, January/February 1974, p.23.
108. John Mawson, pers.comm., 16 May 2012; *Architects' Journal*, vol. 160, no. 45, 6 November 1974, p. 1097-1112; *Yorkshire Architect*, no. 34, January/February 1974, p. 23; *Architect's Journal*,vol.159, no.23, 5 June 1974, pp.1234-38.

INNER LONDON

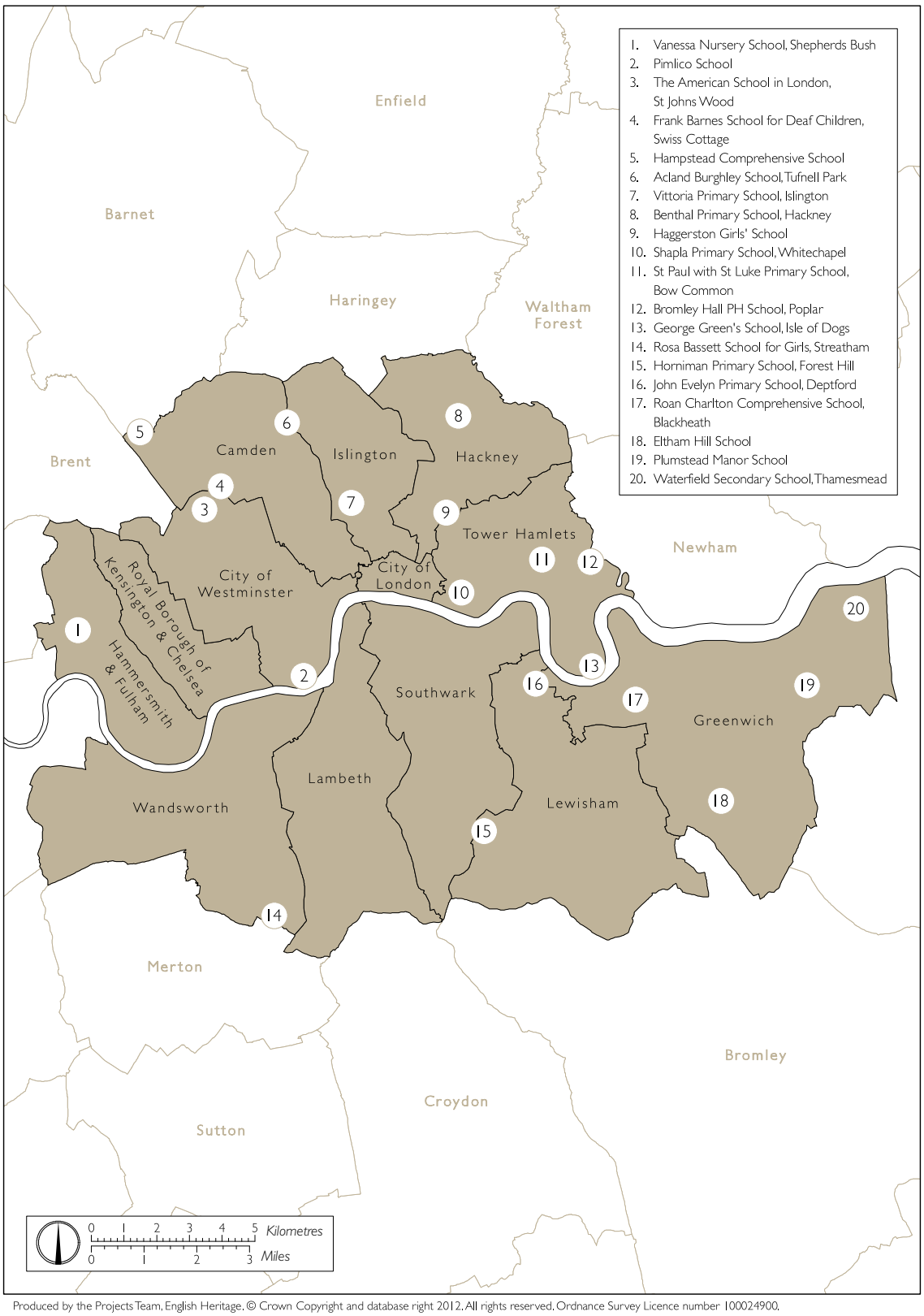


Figure 4.54: Inner London: location of gazetteer entries.

Inner London

Administration

The Greater London Council (GLC) was established in April 1965 under the London Government Act of 1963. It was the first of a raft of legislation to restructure the machinery of local government and led to the formation, in 1974, of metropolitan counties. To the area formerly administered by the London County Council (LCC) were added 20 large outer boroughs, broadly representing those parts of Middlesex, Surrey, Kent and Essex into which the metropolis sprawled. The area administrated by County Hall grew to 600 square miles accommodating over eight million people. The electoral incentive for the Macmillan administration was to moderate the government of inner-London, a left-wing stronghold, through the inclusion of the prosperous outer suburbs. The Herbert Commission, which from 1957-60 examined local government in the Metropolitan area, was set up by Henry Brooke MP, Minister of Housing and Local Government and Conservative opposition leader of the LCC from 1945-52.[1]

But the reform floundered when it came to education. The Herbert Commission had proposed transferring to the GLC the strategic aspects of educational provision for the whole of the new 'Greater London', with the running and maintenance of the schools devolved to the boroughs.[2] This was as unpopular with the nascent outer-London boroughs, aspirant to full LEA status, as it was with the inner-city parent-teacher associations, who pointed to the freedom of choice and economies of scale possible within an integrated education service.[3] Education Minister David Eccles insisted that the LCC area be kept.[4] As a consequence, the 1963 Act contained divergent provisions for education in inner and outer London. Full control over education was handed to the outer boroughs, whereas the former county of London was devolved, initially on a temporary basis, to a 'special committee', the Inner London Education Authority (ILEA). Through this administrative anomaly, education in the dozen inner-London boroughs continued to be administered by a unitary system of education, as it had been since 1870.

This had a number of consequences for school building. Because of its composition, it was possible for ILEA to have a Labour majority when the GLC had a majority of Conservative members (as occurred in 1970-73 and 1977-81). The tendency of GLC control to oscillate between left and right every electoral term brought about an administrative discontinuity in which long-term educational strategy became difficult and political point-scoring easy. It is tempting to attribute the variety of scale and organisation that ILEA schools exhibit to these shifting political affiliations. Yet ILEA was more powerful and progressive than its LCC predecessor and, thanks to a series of capable Education Officers such as William Houghton, Eric Briault, Peter Newsam, William Stubbs and David Mallen, new pedagogical approaches began to influence the design of schools.[5] Despite the 'arm's length' status of ILEA, it would seem that the contact between schools architects and their powerful client body became more frequent and fruitful after 1965, especially during the critical briefing stages.

Relations with Central Government

The longstanding political friction between County Hall and Whitehall had on rare occasions the potential to transform the educational landscape of London and beyond.[6] More mundane was the distance borne of mutual suspicion and aloofness that stifled fruitful dialogue at both political and technical levels.

A representative episode was the attempt by Schools Division to wrest control of the Ministry of Education Development project that became Eveline Lowe Primary School (pages 110-11). When the Ministry's architects did not see eye to eye with their local authority counterparts, a second site was found, resulting in Vittoria Primary School in Islington. The biggest area of conflict between London and central government was the decision to build large, non-selective comprehensive schools, and the planning strategies subsequently adopted for them. This happened to be London's greatest post-war educational innovation, achieved despite scant technical guidance from the centre.

London schools were criticised by central government on several grounds. First, there was height: since the 1890s, London had flouted the preference consistently voiced by central government for single-storey schools, on the grounds of large school rolls and sites smaller than the regulation area. The Ministry of Education opposed the London preference for tight, compact planning, sometimes ranged around courts. Equally unpopular with the Ministry was the model developed for LCC secondaries, in which teaching slabs of anything between four and nine storeys were supplemented by separate blocks for the communal and specialist accommodation—gym, hall, dining and workshops (fig. 4.55).[7] Lastly, the diversity of planning strategies adopted for the London comprehensive schools was seen as a weakness rather than a strength. These were seen by the Ministry of Education in Curzon Street as a muddled and inconsistent lot, attitudes perpetuated in subsequent histories.[8]

Figure 4.55: The teaching block at Haggerston Girls' School, LB Hackney; Ernö Goldfinger, 1964-67. The school was listed at grade II in 2004. Photograph by James O. Davies – English Heritage; DP101195.

London architects could be equally sceptical towards their counterparts at Curzon Street who, it was imputed, were blind to the realities of undersize sites, the restrictive London Building Acts and the high cost of labour and materials in the capital.[9] The informal yet complex secondary schools designed by the Ministry's Development Group in the early 1950s were deemed by one LCC architect to be schools 'for the Garden City, the form was organic and of little application for London'.[10] Few of the prefabricated systems promoted by central government were developed with multi-storey buildings in mind.

Decentralised Design in the LCC/GLC

The scale and density of London, and the significant amount of bomb damage it had suffered in the 1939-45 war, demanded a post-war reconstruction and re-planning programme unparalleled elsewhere in England. The LCC Architect's Department recruited on a grand scale, reaching a peak of *c*.3,000 staff in 1956, when it was said to be the largest such office in the world.[11] In spring 1965 there were 105 architects in Schools Division, bolstered by a further 35 in the Voluntary Schools Section and no less than 267 technical staff in Improvements and Maintenance.[12] To accomplish these tasks required not only a small army of architects, engineers, quantity surveyors and administrators but a unique way of organising them. The civil service model of top-down decision-making, middle management and upwards reporting was unworkable given the unparalleled scale of the annual housing and schools programmes alone.

The LCC found the answer in the form of the group system, where large divisions were broken into groups of architects each headed by a group leader and deputy. Such a structure recalled the influential unit system introduced at the Architectural Association in 1935 by E.A.A. Rowse. Elain Harwood has established that it was John Henry Forshaw, Architect to the LCC 1941-45, who took the first steps of reorganising the LCC Architect's Department into groups of twelve to sixteen staff managed by a senior architect.[13] The LCC group structure was consolidated by Forshaw's successors Robert Matthew (1946-53) and Leslie Martin (1953-56) and retained by subsequent Architects.[14] Many other public offices followed suit.

This allowed a decentralisation and liberalisation of architecture in London government which remained intact, in principle at least, until the dissolution of ILEA in 1990. The reform encompassed all sections of the Architect's Department, and its implications on school design are considered here as a single case in point. By 1965, Schools Division comprised nine groups, each eleven-strong; an additional group had the responsibilities of compiling a library of technical specifications and issuing practice notes.[15] 'The atmosphere was one of creative inefficiency', Andrew Saint has written.[16] Young graduates were immediately assigned their own jobs and enjoyed an unheard-of degree of autonomy.[17] The design opportunities proved especially attractive to an ambitious generation born in the 1920s and impatient to make up experience and training lost to war service. Job architects were increasingly credited when a scheme was published, a small but telling privilege and one not extended to engineers, quantity surveyors and the other allied professions.[18] But collaboration was no less important: Peter Jones, Education Architect 1974-82 and GLC Director of Architecture 1979-86, recalls that 'the whole idea was to make it feel like a small practice'.[19]

Divisional heads and group leaders were afforded the latitude to fashion their own roles. Those in senior posts could facilitate ambitious schemes by shielding them from interference from management level. Michael Powell, schools' architect 1956-71, is recalled for his 'sympathy and unfailing encouragement to his job architects [which] created the atmosphere and gave the freedom in which individual expression became possible'.[20] Powell's tenure straddled the LCC/GLC transition, ensuring that the 'architectural tradition' of London schools continued uninterrupted. The more design-minded of the senior staff found time to pursue their own high-profile projects, supported by a clutch of job assistants.

Such an administrative structure was unusual in local government and could give rise to duplication of effort, conflict and factionalism. Groups and divisions developed distinctive architectural vocabularies in response to building types. By 1960 the LCC had acquired an international reputation both for the diversity and quality of its output and as a clearing house for the brightest British architects. In these years Schools Division became identified with a uncompromising, Corbusian architecture of reinforced concrete, such as the projects designed by the young graduates Ron Herron and Warren Chalk who went on to join the Archigram group.[21] Yet by this time the attraction of the LCC as a finishing school was on the wane, checked by the attractions of private practice (fig. 4.56).

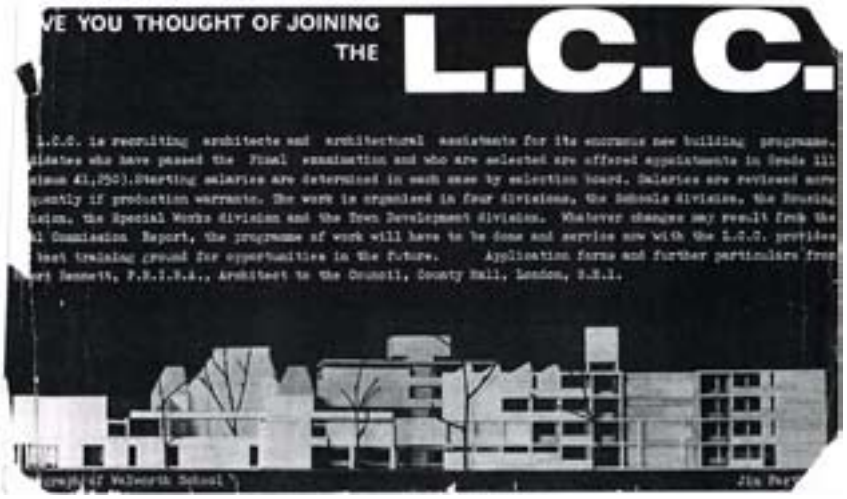


Figure 4.56: 'Have you thought of joining the LCC?' A recruiting ad in the second issue of Archigram *magazine, 1962, illustrated by a model of Walworth Secondary School. Archigram founders Ron Herron and Warren Chalk both worked in the LCC Schools Division in the 1950s. © Archigram Archives.*

The LCC/GLC as Patron

The LCC had employed private architects for a few 'one offs' before 1939, often to seek fresh answers to a particular challenge of design.[22] The design of much housing was contracted out in the late 1940s, and the policy became more widespread with the arrival of Deputy Architect Leslie Martin in 1949. Schools Division drew up a panel of approved private architects so that the proposed building expansion could be managed without fluctuations in the departmental staff or their workload.[23] Many of the approved architects were Michael Powell's contemporaries at the pre-war Architectural Association, now the elite of private practice, and that of his young brother Philip.[24]

Primary and special schools	*Borough*	*Date*	*Architects*
Greenside	H&F	1950-51	Ernö Goldfinger
Brandlehow	Wandsworth	1950-51	Ernö Goldfinger
Cherry Orchard	Greenwich	1950-51	Denis Clarke Hall
Susan Lawrence	Tower Ham.	1950-52	Yorke, Rosenberg & Mardall
Elizabeth Lansbury	Tower Ham.	1950-52	Yorke, Rosenberg & Mardall
Phoenix	Tower Ham.	1951-52	Farquharson & McMorran
Joseph Tritton †	Wandsworth	*c.*1953	Burnet Tait and Partners
Hallfield School	Westminster	1953-55	Drake & Lasdun
Bousfield	K&C	1954-56	Chamberlin, Powell & Bon
Fairlawn	Lewisham	1955-57	Peter Moro & Michael Mellish
Ashmount	Islington	1955-57	H T Cadbury-Brown
Holly Court †	Camden	*c.*1960	Stephen Gardiner
Brunswick Park (hall)	Southwark	1961-62	Stirling & Gowan
Friars Primary School	Southwark	*c.*1961-64	Eric Lyons & Partners
Albion	Southwark	*c.*1964	Eric Lyons & Partners
Johanna	Lambeth	*c.*1966	Renton Howard Wood Associates
Hugh Myddelton	Islington	1967-68	Julian Sofaer
Berger Primary †	Hackney	1965-69	Scherrer & Hicks
Elm Court (Deaf) †	Lambeth	1966-68	Fry, Drew and Partners
Horniman	Lewisham	*c.*1972	Michael Manser Associates
Ashburnham	K&C	*c.*1974	Eric Lyons & Partners
Aspen House (adns)	Lambeth	*c.*1978	Stillman & Eastwick-Field
Secondary Schools			
Kidbrooke	Greenwich	1951-54	Slater, Uren & Pike
Dick Sheppard †	Lambeth	1950-55	Yorke, Rosenberg & Mardall
Mayfield Girls'	Wandsworth	1952-56	Powell & Moya
Sydenham (adns)	Lewisham	1952-56	Basil Spence
Samuel Pepys (extns)	Lewisham	*c.*1956	Gollins, Melvin, Ward & Partners
Hurlingham Girls'	H&F	*c.*1956	Sheppard Robson & Partners
Warwick Park	Southwark	1956-8	Lyons, Israel & Ellis
Risinghill †	Islington	1957-60	Architects' Co-Partnership
Geoffrey Chaucer	Southwark	1958-60	Chamberlin, Powell & Bon
Malory †	Bromley[25]	*c.*1958	Bridgewater & Shepheard
Brooke House	Hackney	*c.*1960	Armstrong & MacManus
Lilian Baylis	Lambeth	1960-64	Architects' Co-Partnership
Rutherford	Westminster	1960-61	Leonard Manasseh & Partners
Islington Green †	Islington	*c.*1964	Scherrer & Hicks
Acland Burghley	Camden	1963-66	Howell, Killick, Partridge and Amis
Haggerston Girls'	Hackney	1964-67	Ernö Goldfinger
Henry Thornton	Lambeth	1964-69	Farmer & Dark
St Paul's Way	Tower Ham.	1964-66	C. H. Elsom
Rosa Bassett Girls' (extns)	Wandsworth	1965-67	Trevor Dannatt & Partners
Battersea Park	Wandsworth	1965-69	Shepheard & Epstein
Hampstead	Camden	*c.*1966	Stillman and Eastwick-Field
Plumstead Manor (adns)	Greenwich	1966-73	Powell & Moya
Norwood	Lambeth	1967-72	James Cubitt & Partners
Highbury Grove	Islington	*c.*1967	James Cubitt & Partners
Stoke Newington	Hackney	1967-70	Stillman & Eastwick-Field
Eltham Hill (adns) †	Greenwich	*c.*1969	Trevor Dannatt & Partners

Table 4.3: A selection of maintained London schools commissioned to private architectural practices. Bold type indicates an entry in the gazetteer below. Demolished schools, where known, are shown with a dagger symbol (†). Post-1965 boroughs are given for consistency. The word 'school' in names is omitted for brevity.

Figure 4.57: Stirling & Gowan's assembly hall at Brunswick Park School. Built in 1961-62; listed at grade II in 2011. © Elain Harwood.

Figure 4.58: North elevation of Pimlico School, City of Westminster; LCC/GLC Architect's Department, 1967-70.Photograph by James O. Davies – English Heritage; DP059395.

Former GLC architects recall a healthy climate of competition, a source of innovation and experiment, along with an envy of their greater budgets and comparative lack of bureaucracy.[26] But what private practices and GLC architects had in common was a preference for a tougher, place-making architecture that addressed its urban environment (fig. 4.57). As the birth rate fell, the practice of 'outsourcing' was scaled down under the GLC, who preferred to keep the flagship comprehensives in-house and derive new ideas from a series of experimental projects such as **Vittoria Primary School**, **Pimlico School** (fig. 4.58) and **Waterfield Secondary School** in Thamesmead. Here, it was reported in *Official Architecture and Planning*, 'all established premises and preconceptions are ignored and the design and philosophy are begun from scratch'.[27]

Primary and Special schools: Alternative Traditions

In the 1940s, in response to the desperate need for school places and a shortage of bricks, the LCC Architect's Department set in train two emergency programmes of primary schools, both based on a prefabricated steel frame. In April 1947 the Council approved a 'transitional' programme for rebuilding eleven war-damaged schools to a common system of construction and 'bay' plan. The group were erected by a single contractor but their hefty steel frame proved slow and costly to build. With the imposition of cost limits in 1949, the Department turned to the Hills 8'3" system,

as adapted by Llewelyn Davies and John Weeks, and further adapted it to go to two storeys.[28] Of the seventeen Hills schools built between 1950 and 1954 the most celebrated is perhaps the Susan Lawrence School, where designers Yorke, Rosenberg and Mardall clad the Hills frame with a mixture of concrete panels, brick and stone. Elsewhere, the staggered plan of the Heathmere School, Roehampton of 1950-53 owes much to the Hertfordshire primaries.[29]

Many subsequent London primaries were based on the 'hen and chicks' model, adopted at Hertfordshire around 1949, in which single or paired classrooms were grouped loosely around a central hall (pages 32-33). This plan formed the basis of innumerable architectural treatments.[30] But the more the classroom unit was isolated and detached, the more expensive it tended to be to build and the most children and teachers tended to remain in a single space. If 'hen and chicks' had an ancestor, it was the open-air schools, in which London was a pioneer.[31] Charlton Park Open-air School, LB Greenwich of 1929 was a representative albeit late example, planned in separate blocks with groups of square classroom pavilions leading from a rest and central dining shed. Its *c.*1966 replacement, a special school for the physically handicapped, tellingly replicated the layout with its clusters of four classrooms linked to a hall via covered walkways (fig. 4.59).[32]

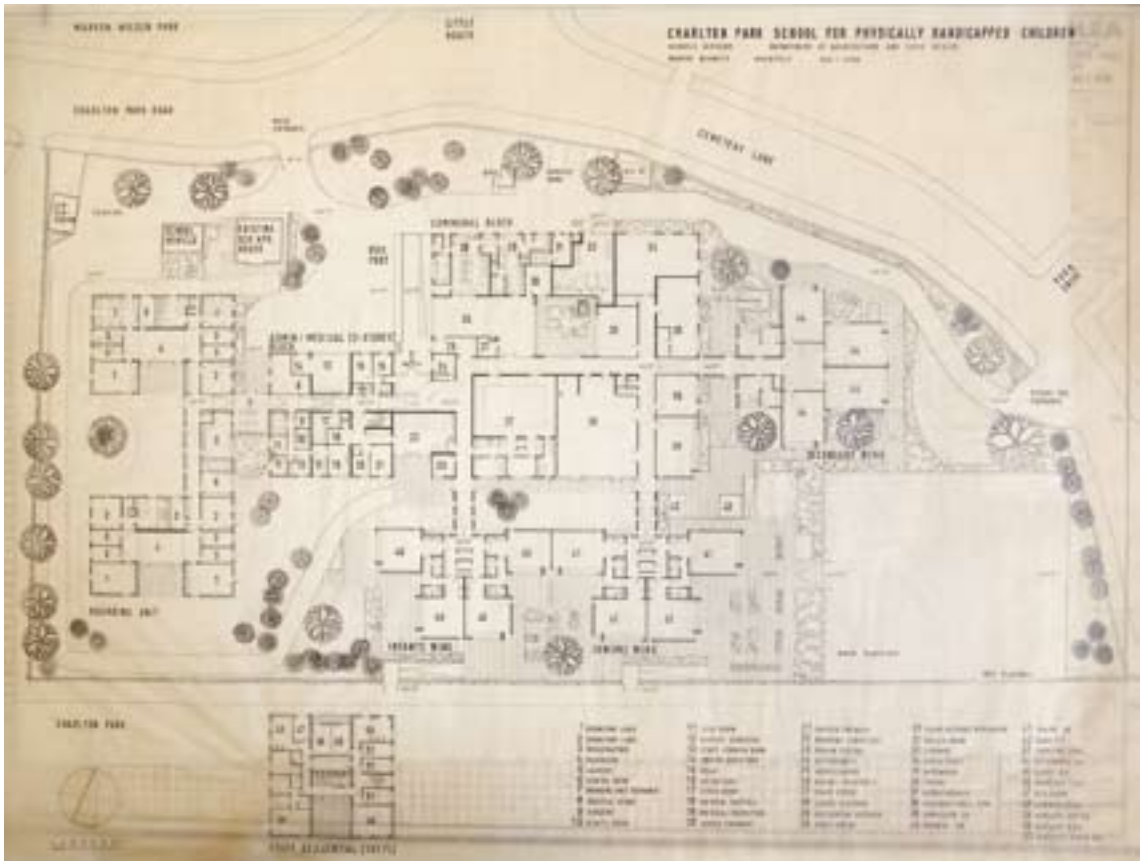


Figure 4.59: Laurie Pestell's design for the Charlton Park School for Physically Handicapped Children is based on the layout of the 1929 open-air school it replaced. City of London, London Metropolitan Archives; LMA:ILEA/DBPS/AR/01/153.

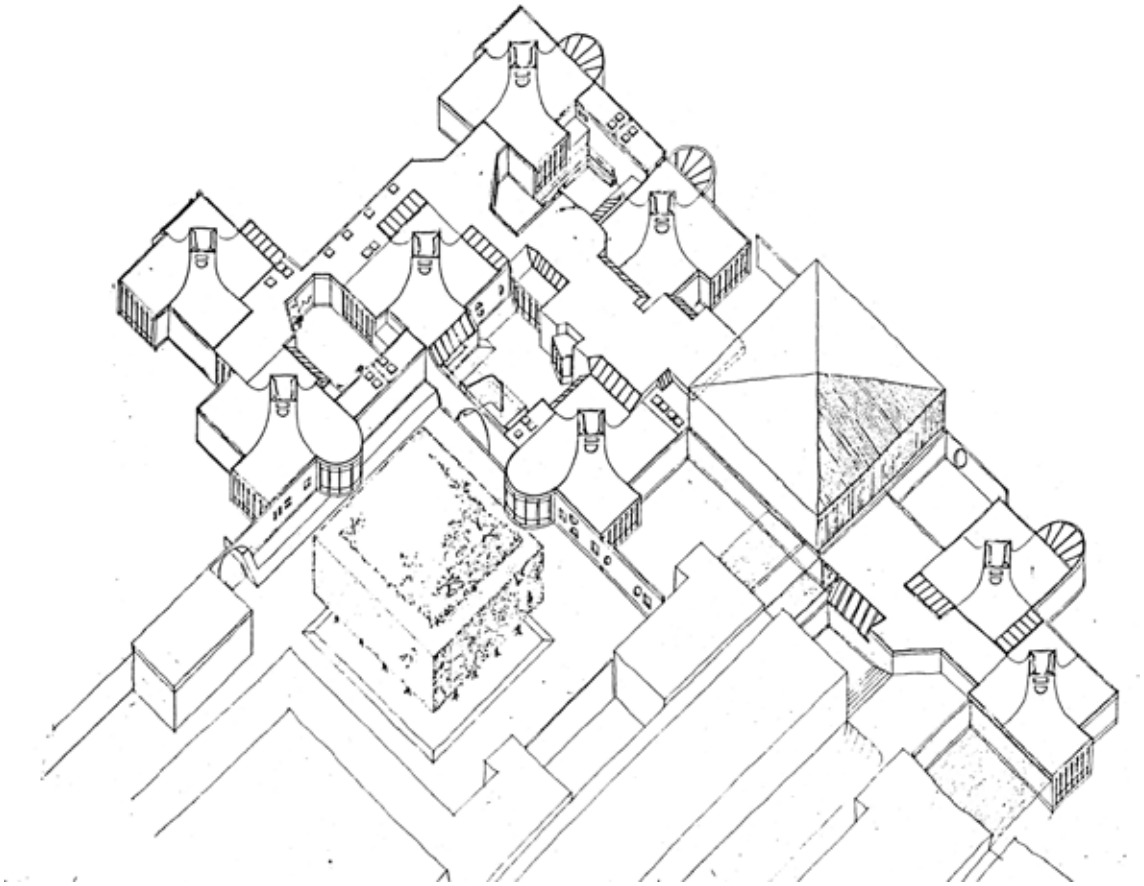


Figure 4.60: Bird's eye view of Benthal Primary School, LB Hackney; GLC Architect's Department, 1966-67. Drawing by Paul Maas, kindly supplied by Liz Robinson.

But in London elevations were at least as important as plans. As the 1960s wore on, alternatives were sought to the spindly, curtain-walled boxes of the previous decade. The Schools Division response to the perceived repetitiveness and homogeneity of much contemporary school building took the form of a small group of individual, humane and expressive primary and special schools (table 4.4). They parallel the contemporary

Figure 4.61: A 1969 photograph of Bromley Hall School: a pair of folding doors open up the library to its adjacent court. The GLC's in-house photographers routinely visited new schools in their first months of occupation. City of London, London Metropolitan Archives; SC/PHL/02/0438-61.

transition in London housing to the intricate, low-rise high-density mode pioneered at the Lillington Gardens estate in Vauxhall Road by Darboume and Darke (1961-71). Reacting to their often noisy and cramped urban sites by turning their back on them, they created their own sense of place through an internal and architectural logic. Load-bearing fair-faced blockwork or brickwork enclosed a series of child-sized spaces. Deep plans were cleverly broken up and toplit by clerestoreys or rooflights which formed an eventful roofline (figs 4.60 and 4.61). Domesticity and seclusion were thus provided without resort to the bland, vaguely Scandinavian appearance of most rationalised traditional construction. Alternative traditions were studied: the freer, organic and expressive work of Alvar Aalto, early Erich Mendelsohn, Hugo Häring, Hans Scharoun and Aldo van Eyck, as well as the English Arts and Crafts movement.[33]

	Borough	*Design*	*Completion*	*Job architect*
Bromley Hall PH	Tower Hamlets	1965	1968	Bob Giles
Berger Primary †	Hackney	1965	1969 (dem)[34]	Scherrer & Hicks
Benthal Primary	Hackney	1966	1967	Paul Maas
Downsview ESN	Hackney	1966	1969	—
Hungerford Primary †	Islington	1968	1971 (dem)	Barry Wilson
Palatine Road ESN	Hackney	1970	1974[35]	Louis Hellman
Frank Barnes Deaf †	Camden	1973	1978	Ivor Plummer
QE II Jubilee ESN	Westminster	1974	1977 (alt)	Brian Goldsmith

Table 4.4: a selection of GLC primary and special schools. Bold type indicates an entry in the gazetteer below, and demolished schools, where known, are shown with a dagger symbol (†). Benthal Primary School was designed in private practice.

Figure 4.62: Perspective of split-level teaching space at Vittoria Primary School. Institute of Education Archives: ABB/B/1/6/5.

But these schools represented more than an alternative brand of formalism. The advent of the new authority in 1965 offered the possibility of more meaningful dialogue with ILEA educationalists and some form of marriage between the London 'one-off' tradition and an informal, diffuse style of teaching. The ILEA committees tolerated variation and even a certain individuality in the schools they commissioned, which allowed curricular specialisms to be developed and the eccentricities of building sites to be exploited. On the basis of the experimental **Vittoria Primary School**, the standard primary brief was restructured around pairs of home bases with a shared quiet room (fig. 4.62).[36] Yet Hellman recalls that his own attempt to design child-scaled, informal spaces 'was strongly disapproved of and discouraged by the establishment'.[37] The essentially romantic architectural approach of this group was arguably more compatible with a child-centred pedagogy ultimately derived from Rousseau and Pestalozzi than the sober enlightenment rationalism of the Development Group.[38] The curved bays and soaring rooflights of **Benthal Primary School** in Hackney, inspired by children's love of tents and caves, anticipate Colin Ward's plea that 'children, most of whom are quite naturally enormously romantic, would like their daily environment to have some devious and unobvious characteristics'.[39]

The LCC's 'emergency' prefabricated programmes of the 1940s were prompted by urgent demand and a daunting building backlog. As Schools Division obtained a sounder footing and materials became more readily available, Hills was eased out of the picture in the mid-1950s.[40] The group structure of the Architect's Department lent itself to a diverse, architect-led sequence of 'one-off' jobs. Michael Powell was reluctant to prefabricate, asserting 'you will never beat loadbearing brickwork for cost in the case of single storey buildings in London; well, not in my lifetime'.[41] Housing Division architect Cleeve Barr had already reached similar conclusions independently.[42] Powell resisted pressure from central government to join the growing band of consortia until the last possible moment.[43]

Instead, a development group led by GLC architect Len White was set up in 1964 to devise a home-grown system; the logic, according to Peter Jones, was 'if we've got to do it, let's do our own'.[44] The Rationalised Building System (RBS) combined bespoke and off-the-shelf components.[45] Despite its name, RBS had little to do with rationalised traditional construction (page 71). It was a typical open system for single-storey buildings, comprising a steel grid with services housed in a plywood roof deck and heating in a plywood box beam under the windows. Over the next five years it was used for some 28 primaries and a few more special schools, a small proportion of the total ILEA programme. But the 12' (3.6m) RBS grid was too coarse to design small buildings. At the first to be completed, Prior Weston Primary School in the City of London of 1968, an elaborate semi-open layout was squeezed into a box (fig. 4.63). This was despite the ambition of the charismatic head teacher Henry Pluckrose (previously deputy at **Eveline Lowe Primary School**) and the fact that its catchment area constituted the architecturally-progressive and middle-class Barbican estate.

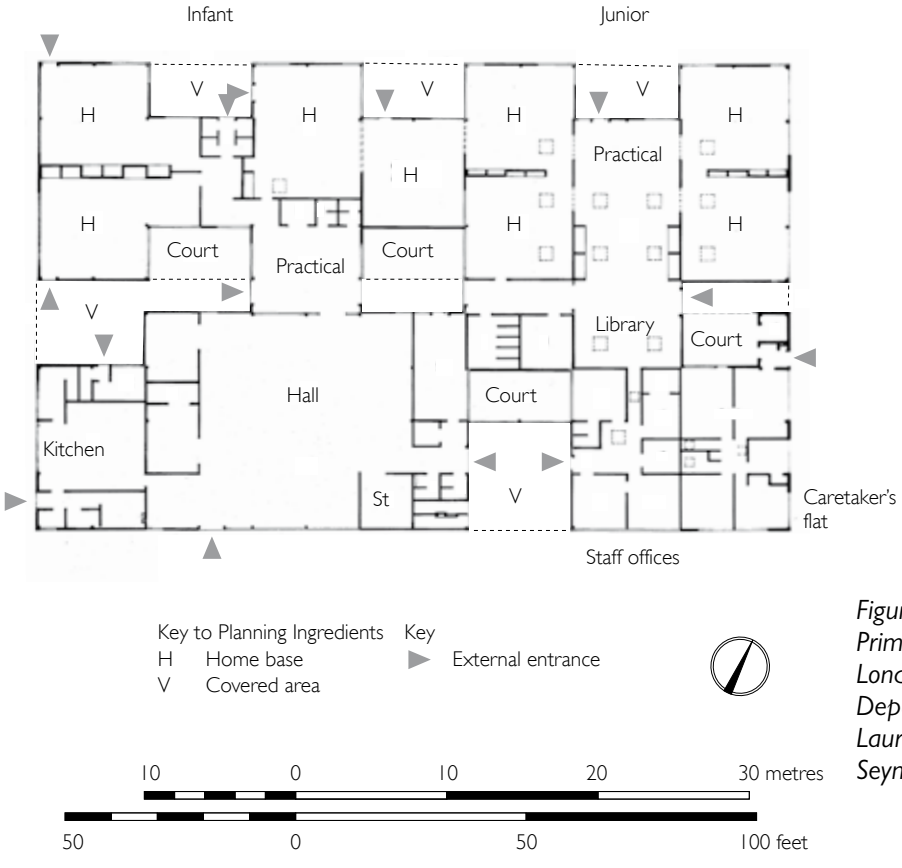


Figure 4.63: Prior Weston Primary School, City of London; LCC Architect's Department (job architects Laurie Pestell & Alan Seymour), 1968.

The clunky plans and detailing of the RBS schools compare poorly with contemporary and ostensibly-similar 'one-offs' achieved under the same cost limits, such as the intricate, highly-tuned Hugh Myddelton Primary School, LB Islington, designed to the Golden Section by Julian Sofaer. The range of RBS cladding materials included brick and concrete panels and was intended to offer designers choice and flexibility in the face of fluctuating prices.[46] But, as so often with systems, the external appearance was the first element to suffer 'cost erosion' and some schools, such as Holmleigh Primary School, LB Hackney of 1967 by Ivor Plummer, were finished in painted plywood panels. The deep plans, in combination with the reduction of ceiling heights to 8' (2.4m) in 1969, meant that the roof deck had to be expensively pierced with roof-lights to bring lighting levels up to the statutory 2% daylight factor.

RBS was the prelude to the formation of the Metropolitan Architectural Consortium for Education (MACE) in April 1966 with the DES, Surrey and East Sussex County Councils the principal partners.[47] The system was devised from 1966-70 by a development group led by John Killeen, an architect seconded from Schools Division.[48] Its conceptual basis was sophisticated and included a hierarchy of planning flexibility derived from the North American School Construction Systems Development (SCSD) programme (fig. 3.7). Its components were structural precast concrete panels which supported a deep, steel space-frame roof which housed the services. A triangular end profile was designed for better junctions and joints. Two pilot schemes were built in 1969-70 to the design of local authority architects: Poyle Infant School at Colnbrook, Surrey and St Nicolas Special School in Croydon.[49] High standards of sound insulation included in the technical brief, as Colnbrook was near Heathrow Airport.

The main charges against MACE were its persistent technical defects, principally relating to the roof deck and heating system, and a crude, non-divisible one-metre tartan grid, the latter strongly opposed by DES architects.[50] One GLC architect wrote that 'a ceiling tile one metre square and 2.4m above floor level assumes a crushing potential and lavatory planning is severely circumscribed'. But above all, the system was found to be extremely expensive, and only boxes could be produced within the cost limits.[51] The construction of the first MACE schools around 1970 coincided with the start of a prolonged period of high inflation, forcing architects to opt for the cheapest possible components. In London, 12 primary schools, a special school and a large secondary school were constructed in MACE from 1971-74.[52] A typical example is Ashmead Primary School, LB Lewisham of 1970, by job architect Anne Webb, a square envelope with a square hall enclosed on three sides by teaching space. The building was located on the only flat area of the site as MACE, like many prefabricated systems, did not cope well with changes in level. Webb's Paxton Primary School, LB Lambeth of 1971-72 was larger, permitting a central hall lit by double courtyards.

The abandonment of MACE by ILEA in 1974 was hastened by two well-publicised events. In March 1973, Louis Hellman resigned from the GLC after refusing to design Grafton Primary school, LB Islington in MACE. He ensured that the episode received much publicity in the *RIBA Journal* and the *Architects' Journal*, and the following year a caucus meeting of GLC architects voted overwhelmingly against MACE. At the opening of the Edith Neville School, LB Camden in August 1973, the headmistress criticised the design

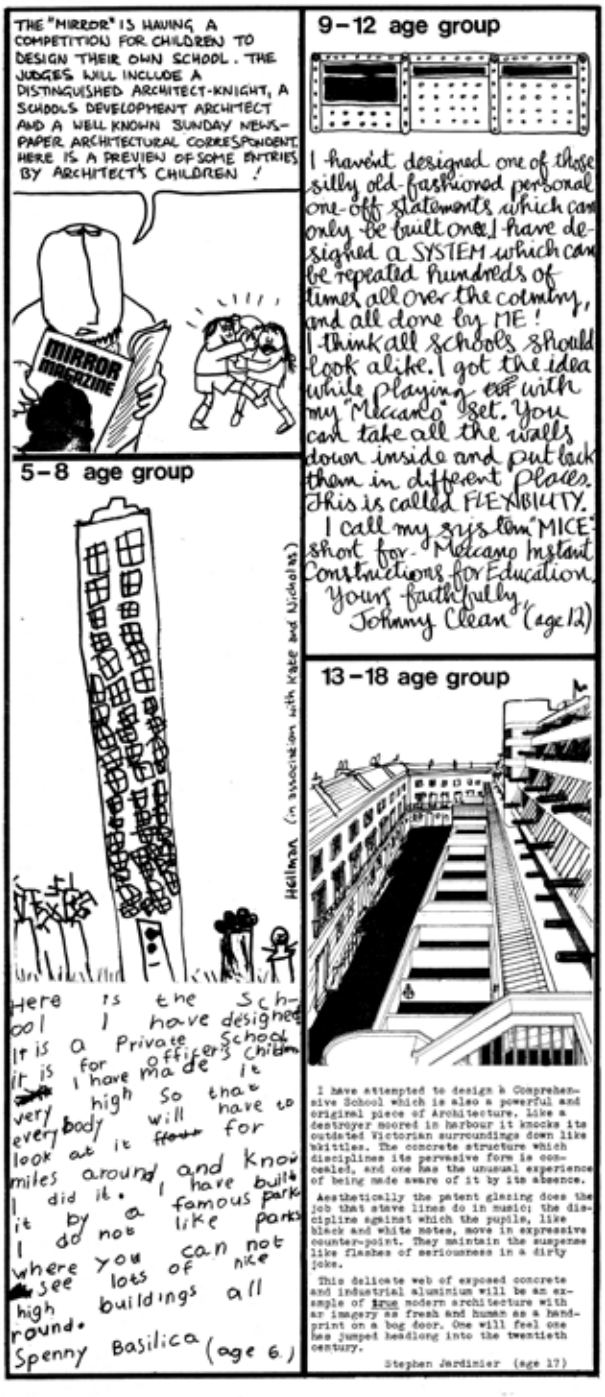


Figure 4.64: Cartoonist and GLC architect Louis Hellman on London schools. He contrasts the MACE system devised by John Killeen (who appears here as Johnny Clean) with the individualistic Pimlico School, then much praised by the architect and critic Stephen Gardiner. Also included is Basil Spence's Cavalry Barracks at Hyde Park, whose residential tower was a subject of controversy. Reproduced from the Architect's Journal, *vol.151, no.13, 1 April 1970, p.800, by the kind permission of the AJ and Louis Hellman.*

and layout of the school and Dick Collins, Mayor of Camden, refused to accept responsibility for the premises.[53] The MACE Development Group attributed the rebellion of the GLC job architects to 'an inability to work within the discipline of a standard idiom […] and a romantic desire for self-expression' (fig. 4.64).[54]

Retrenchment and Rehabilitation

By the time ILEA withdrew from MACE, the schools replacement programme had already dwindled, and with it, the system's purchasing power through economies of scale. Inner-London school rolls fell as a result of a low birth rate and migration to the outer boroughs and expanded towns: the population of inner London was 2.60 million in 1980, compared with 3.16 million in 1965. ILEA resources were diverted to an expansion in higher and further education, and the number of annual primary schools completed fell from 12 to two, with mid-project cancellations such as Elm Lane Primary School, LB Lewisham indicating how decisively change came.[55]

The most common fallback solution was rehabilitation of the solid, eminently adaptable stock of Board Schools. In 1974, the *Architects' Journal* reported 'ILEA officials say that an increasing number of heads tell them: "if Edith Neville is the sort of new building we're likely to get, please can we keep our Victorian 'slum' and have it done up!"'.[56] A 1972 report by Susan Beattie of the GLC Historic Buildings Division did much to bring about a critical re-evaluation of the architecture of the School Board for

London, but ILEA had long recognised how cheaply board schools could be converted to serve new teaching styles and for evening use by adult education institutes.[57] In 1968, ILEA held an open 'Plowden Competition' for re-planning Compton Primary School, LB Islington, a triple-decker board school of 1881.[58] The winning firm of Farrington, Dennys and Fisher inserted a new central staircase, removed non-structural walls to absorb former corridors into larger teaching spaces and replanned the service areas to provide a noise barrier to the busy Compton Street. Mezzanine areas and raised platforms and bays were slotted into the storey heights, creating changes of level and intimate enclosures such a snug, dark story-telling area in the centre of the ground floor. In 1973-77, the practice employed similar techniques on a second board school, Sebright Primary, LB Hackney. GLC architects employed similar techniques at the Montem Primary School, LB Islington of 1895, remodelled in 1971 by David Harvey.[59]

Fig 4.65: Shapla Primary School, LB Tower Hamlets; GLC Architect's Department, 1986-87. One of the last schools designed within the GLC before its abolition in April 1986. This presentation drawing was probably prepared for the ILEA education committee. Reproduced from GLC/ILEA Architecture 1976-1986, *published by Architectural Press.*

In the last quarter of the twentieth century, new primary schools were most common at newly repopulated inner-London boroughs such as the East End and new housing developments such as the Isle of Dogs Enterprise Zone and the new town of Thamesmead. They sought to address their urban surroundings through the traditional idiom of loadbearing stock brick. Deep plans were usually expressed by a big pitched roof of profiled aluminium or tile. With this came the possibility of lofty interiors with exposed laminated timber or light steel trusses, as at **Shapla Primary School** in Tower Hamlets (fig. 4.65) or Bellenden Primary School, in Southwark. Michael Faraday Primary School of 1974 by job architect Irma Stypułkowska; Linton Mead, completed in 1978 by Bob Gordon; Nightingale Primary School of 1978 by Alan Sivell, and Olga of 1979 by Anne Webb were conceived on a domestic scale, with home bays and quiet areas clustered around central practical spaces. By the mid-1980s, a regression from semi-open planning to the classroom and corridor can be seen at Shapla, Eric Classey's junior wing to the Eleanor Palmer Primary school, LB Camden, completed in 1985; and Ivor Plummer's Hermitage Primary School, LB Tower Hamlets of 1985-89.

Gazetteer

Pre-school education

¶ **Vanessa Nursery School**, Cathnor Road, LB Hammersmith & Fulham; Fitch & Co Ltd (job architects Colin Kelly, Peter Crutch and Stewart McColl), built 1972-73.

Vanessa is an unusual example of a purpose-built nursery, funded by a trust set up by the actress Vanessa Redgrave. The administration of the school was handed over to ILEA on completion. The brief, formulated with ILEA and the headmistress Margaret Walsh, stressed the need for a variety of activity spaces, outdoor play and aquatic development. These received exuberant expression in the semi-open plan with its curved bays for art, science and quiet; an outdoor play area accessed by sliding doors and served by a generous equipment store and a heated indoor swimming pool.

The visual vocabulary is directed at pre-school children: a boldly-styled statement of glossy glass-reinforced plastic (GRP) in bright red, yellow and cream. The primary colours and overscaled geometries were inspired by plastic toys such as the Danish Lego blocks, although curves and domes were structurally necessary to give rigidity to the GRP.[60] The half-domed bays rise up beyond the main play area, permitting clerestory lighting and ventilation. They are 'multivalent', to use Charles Jencks's contemporary term, variously recalling the domed towers of Le Corbusier's chapel at Ronchamp, observatories and ships' cowl vents.[61] In contrast, the delicate lattice beams of the interior are redolent of the early Hertfordshire schools. Architecturally, Vanessa is an example of the influence of product design and 'pop architecture': Fitch was one of the leading design firms which encompassed both.[62]

Figure 4.66: A boldly-styled 'pop architecture' was chosen for the Vanessa Nursery School in West London, designed by Fitch & Company. Reproduced with permission from Architectural Review, vol. 154, no. 919, September 1973, p. 179-84.

¶ Play group (now **Cressingham Gardens Tenants' Hall**), Hardel Walk, Tulse Hill, Lambeth; Dry Hastwell Butlin & Partners (job architects Roger Bicknall and Vincent Hastwell), completed *c.*1979.

This circular play group and tenants' hall serves the Cressingham Gardens estate. It is an example of the social and architectural integration of pre-school facilities into a residential scheme and remains in regular use. The scheme, although designed by private architects, is typical of the high-density, low-rise housing in Lambeth latterly favoured by borough architect Edward Hollamby. The whole estate, including the school, was built with direct labour, and was completed shortly before a government moratorium on council housing.

A central playroom gives access to a south-facing veranda, a quiet area and the ancillary accommodation wrapped around it. The playroom is generously lit from a conical rooflight and by south-facing windows sheltered from direct sun by the wide brim of the conical roof. Entrances sprout out from the perimeter and connect with the curved perimeter walls. The building nestles into a bank at the edge of Brockwell Park and traces of the sinuous hard landscaping remain. Centrally-plans schools were developed at Leicestershire in the 1960s, but this building with its conical form and chunky timber detailing anticipates a clutch of centrally-planned primary schools in Hampshire (page 272).

Primary Schools

¶ **Chesterton Primary School**, Dagnall Street, LB Wandsworth; LCC Architect's Department, 1963-64.

14 square classrooms with pyramidal roofs, arranged in a chequerboard formation. The central hall incorporates a hyperbolic paraboloid roof, designed with consulting engineers Hume Tottenham & Bennett.[63]

¶ **Vittoria Primary School**, Half Moon Crescent, LB Islington. LCC/GLC Architect's Department (job architect Ronald W. Robson-Smith), designed from 1963 onwards, built c.1965-67.

Vittoria Primary School has an origin in an unsuccessful collaboration between Architects and Building Branch and the LCC on an experimental primary school that would enable mixed-age groups and informal learning.[64] At an initial project meeting in September 1963 an outline scheme was presented by Ron Robson Smith of Schools Division.[65] When it became clear that differences of architectural approach were irreconcilable, Architects and Building Branch continued on the original Peckham site, resulting in the **Eveline Lowe** school (pages 210-11) and a second site was found for the LCC scheme which became Vittoria.[66] This, like Eveline Lowe, was 'a live exercise in close cooperation between the architect and the education officer'.[67] In particular, the project sought to address the transitions between nursery, infant and junior stages, and the acute need for additional language tuition needed by first-generation immigrant children, who represented 30% of the intake.[68]

Adjacent age groups were accommodated in pairs of classrooms, each provided with their own dining area. Three staggered pavilions, each containing two pairs of classes separated by a folding door, were arranged to form small courtyards, with a multipurpose hall at the centre. The transition from home to school was addressed through the inclusion of a play centre and a parents' room. The sloping site suggested a split section for three of the four pairs of classrooms. The upper part was reserved for quiet study, with toilets, cloakrooms and cupboards stowed away beneath. Practical activity and play was encouraged to spill out

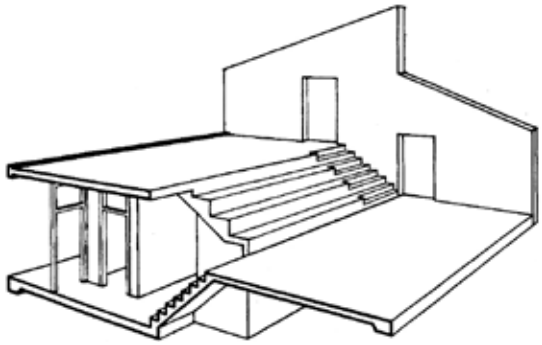


Figure 4.67: Sectional perspective of Vittoria Primary School. Reproduced with permission from Architectural Review*, vol.147, no.875, January 1970, p.24.*

from the lower level to adjoining verandas. The change in level was negotiated by child-size stairs alongside either sliding storage and a balcony, or bigger steps for group storey-telling or singing. The split-level design, although criticised by David Medd for its inflexibility and difficulty of access, was dual-aspect, cross-ventilated and high-ceilinged, all considered beneficial properties for children who lived in cramped conditions in surrounding LCC blacks.[69]

The school, opened by Lady Plowden in October 1968, was widely published and its 'architectural command' compared favourably with Eveline Lowe.[70] The classrooms pavilions are of brick cross-wall construction with wood and glass partitions and split-pitched roofs clad in profiled aluminium. The brickwork was originally painted white, topped with a timber fascia bright purple, 'as if the architects had reacted against the too-permanent finishes of the Victorian school that was demolished.'[71] Recent alterations include the addition of UPVC windows.

¶ **Benthal Primary School**, Benthal Road, LB Hackney; GLC Architect's Department (job architect Paul Maas), 1966-67.

When the Rendlesham Road Board schools of 1876 and 1887 were damaged by bombing in 1944, they were replaced by a steel-framed infant school opened in 1949, the first of eleven 'transitional' primary schools (page 186). By the 1960s Hackney was beginning to experience an influx of young residents. Additional land was acquired in 1965 and an additional 360 places provided by means of a large junior extension

to the north of the 1949 building.[72] The junior school, whose design was approved in January 1966, is a impressive foil to the linear plan of its predecessor.[73] It comprises eight pinwheeling home bays clustered around an L-shaped circulation route (fig. 4.60). The home bays were conceived as self-contained pavilions: and most are equipped with their own exit to the playground or a small court, WCs, washbasins and Belfast sinks for messy activities and a variety of differently-shaped bays for small groups. The central space is vaulted by four concave ribs which spring from the ground. This structure is lit by a patent-glazed top light, from which a tent-like convex roof is 'draped'. A variety of small windows at children's eye level are also provided. From the exterior, soaring roofs articulate the home bases of the deep plan as at **Bromley Hall School for the Physically Handicapped** and Berger Primary school.

Benthal, Maas's first school, was designed in six weeks before the budget year closed. The imminent deadline prohibited formal consultation:

> 'I asked my four children what they liked and disliked about the various schools which they were attending. I also tried to recall the kinds of structures that had excited me when I was a child. The result was a classroom designed on a pinwheel plan that related to the small group style of teaching, with a form that tried to symbolise the archetypical structures of a cave and a tent (standing under the arches it recalls a cave and outside of the arches it recalls a tent). [..] Each classroom had its own protected piece of nature (its courtyard) and each was scaled to the height of 5-7 year olds … I wanted Benthal to feel like a children's world in which adults were invited'.[74]

Construction is of load-bearing blockwork with a rendered outer leaf of hollow brick, and a felt roof. The domes to the home bays were of interlocking precast reinforced concrete ribs, with mortices for the adjoining joists. Windows were steel-framed with some patent glazing; some windows since have been replaced with doubled-glazing in steel-frames.

The landscaping is equally child orientated. A 10ft (3m) fall over the site, partly the result of the basements of demolished terraced houses, was exploited to give a series of terraces linked by ramps and steps and variously separated by battered concrete sections or snaking hollow brick walls. The junior's and infant's schools wrap around a square courtyard planted with trees and wild plants. Elsewhere the plan envelops mature trees, which seem to sprout through the roof. At the entrance, a perimeter wall is reverse-embossed with the school's name in an oversized slab-serif typeface.

Figure 4.68: Vaulted classroom at Benthal (P5925009).

Figure 4.69: Michael Manser's much-altered Horniman Primary School in Lewisham. Photograph by James O. Davies – English Heritage; DP059381.

¶ **John Evelyn Primary School** (now Clyde Early Childhood Centre), Alverton Street, Deptford, LB Lewisham; GLC Architect's Department (job architect Ron Ringshall), designed 1968, completed *c.*1972.

The history of the John Evelyn school nicely illustrates the dynamic relationship between primary schools and catchment areas undergoing demographic change. In 1967, with construction underway for the system-built GLC Evelyn Estate, ILEA anticipated an influx of young residents and a localised 'baby boom' in Deptford. In 1968, the GLC were asked to design a two storey infant school to the north of the three-storey John Evelyn board school of 1875 to provide a total of 560 places. The comprehensive redevelopment of the area allowed roads to be closed and a site extension. The intention to replace the board school with a new junior school did not materialise when numbers fell, and by 1980 the juniors had been decanted into the new building.[75] From 1986, the school became a day nursery; the board school survived as an adult education institute until its demolition in 1994.

Ringshall's pinwheeling design is composed of two two-storey teaching ranges, a canted assembly hall and a wing combining dining, kitchen, office and service functions which acts as a barrier against the noisy Evelyn Street. The linear teaching spaces are divided into a series of linked bays capable of separation by curtains, and both are provided with south-facing verandas. A square lobby at the centre of the plan can be used for practical or noisy activities. Construction is of in-situ reinforced concrete roof slabs and beams bearing onto load-bearing buff brickwork. The modulated elevations of the teaching ranges express both the 12 feet dimensional module and the home bays.[76] The school survives with window replacements and some partitioning of the home bays.

¶ **Horniman Primary School**, Horniman Drive, LB Lewisham; Michael Manser Associates (partner in charge Michael Manser, associates in charge Cedric Kitchin and Frank Dewar), designed by 1968, built 1970-71.

The school is terraced into a steep, north west-facing slope, although all the teaching accommodation occupies a single level, cantilevered over a covered play area on columns. Seven class areas—three for infants and four for juniors—are grouped around a double-height central hall with a sunken floor level. The administrative accommodation and schoolkeeper's flat are placed on an upper storey, providing an entrance from street level.

The architecture is characteristic of Manser's work. It is a crisply detailed iron-frame in the Hunstanton tradition, originally painted in

dark brown and clad in glass and ribbed plastic clapboard (the latter a cost-cutting measure imposed by the DES). The lightweight frame achieved sufficiently long spans to provide the most flexible plan and minimise the number of pile foundations. The school was remodelled in Summer 2010.[77]

¶ **St Paul with St Luke Primary School**, Leopold Street, Bow Common, LB Tower Hamlets; Maguire & Murray (job architect Rajindar Singh), 1970-71.

The trend towards deep and open planning found its ultimate expression at St Paul with St Luke Primary School, a companion for their celebrated church of 1956-60 and a replacement of two Victorian schools in an East End comprehensive redevelopment area. Faced with an inflationary squeeze in building costs, Maguire and Murray adapted a wide-span agricultural shed as they had earlier done at a low-cost stable in Oxford.[78] Their idea recalled the pronouncement of the National Society in 1816 that 'a Barn furnishes no bad model, and a good one may be easily converted into a School'.[79]

Figure 4.70: St Paul with St Luke Primary School (P5925010).

The exterior is dominated by a corrugated, shallow-pitched roof with gable on the long ends. Inside, under exposed steel portal frames, shiny insulating panels and bright yellow air-conditioning vents, was a largely full-height, open-plan teaching area, divided by low breeze-block walls into a series of home bays. The eaves extend over stanchions to form a veranda for outside play and learning. The educational aim of first headmaster T.E. Watt was that the school should become a 'children's and teacher's workshop'. Surprisingly, Maguire and Murray's design was supported by Lady Plowden herself: its built form demonstrated the diversity of architectural response to her 1967 report.[80] The load-bearing external envelope permitted a complete reconfiguration of the interior, with painted breeze blocks defining a series of classrooms. Their 'low-tech' pragmatism was influential at schools in London and beyond (page 81).[81]

¶ **Shapla Primary School**, Wellclose Square, LB Tower Hamlets; GLC Architect's Department (job architect Ann Webb), designed 1983-84, built 1986-87.

Shapla was the first primary school to be completed to a new ILEA brief requiring greater enclosure of teaching spaces. The school shows the influence of the Hampshire primary schools, visited and much admired by the GLC architects, as well as Aalto and Erskine.[82] The devise of a snaking corridor linking two courts relates to Webb's earlier John Roan lower school (qv). Pairs of classrooms are inter-connected with double doors or folding screens. The exterior is dominated by a big, barnlike roof with exposed timber trusses but the deeper space is largely artificially lit. Verandas are set under the deep eaves of the profiled aluminium roof. The elevations are of stock brick and timber panels painted yellow with timber sash windows, now replaced with UPVC.

Secondary schools

¶ **Haggerston Girls' School**, Weymouth Terrace, LB Hackney; Ernö Goldfinger, designed 1962, built 1964-67, listed at grade II in 2004.

Haggerston Girls' School, although designed in private practice, continues the LCC habit of

Figure 4.71: Assembly hall at Acland Burghley School. Photograph by James O. Davies – English Heritage; DP059323.

packing most of the teaching space into a long classroom block with glazed links to separate blocks for the hall, gym, staff and specialist teaching rooms. This mode of planning was more successful for smaller schools such as Haggerston, a seven-form intake for 950 girls, than the 2,000-place comprehensives, where scale justified a sixth form and more specialist accommodation.

Like many of the in-house LCC secondary schools (qv **Pimlico School**), Haggerston is distinguished more by its architectural treatment than any educational impetus. The glass entrance block is the most impressive space. A double-height foyer, overlooked by a mezzanine range of offices, leads to the hall and music rooms. Interior and exterior are unified by the consistent use of full-height mullions, dark brick and the coffered ceiling to the concrete roof slab. The four-storey teaching block, essentially a grid of classrooms, is expressed as such through a bush-hammered reinforced frame which follows golden section proportions. The ordering of floor slab, pilaster and mullion into a visual hierarchy recalls the classicism of Auguste Perret, Goldfinger's mentor. The cantilevered library and art room, rooftop classrooms, and a cubic water tower provide carefully-composed foils to the block. Haggerston is Goldfinger's only secondary school, and the only school that demonstrates his mature style.[83]

¶ **Acland Burghley School**, Burghley Road, Tufnell Park, LB Camden; Howell, Killick, Partridge & Amis (partner in charge Stanley Amis), 1963-67.[84]

Architects HKPA were first briefed on this eight-form entry comprehensive for 1,300 pupils in 1960. Acland Burghley was one of the first London comprehensive schools to be divided into year groups rather than houses. At the eastern end of the site, separate blocks for the junior, middle and upper schools radiate from a central circulation wedge, and on the ground floor of each block is arranged a pair of year rooms, used for teaching, assemblies and dining. Above them are three storeys of squarish classrooms for humanities and commerce. Fan-shaped, top-lit arts and crafts rooms are grouped over the circulation core. A railway cutting runs under the constricted site, necessitating a concrete deck on which was placed the gymnasia, games hall, playground and car park.

The teaching blocks are united by a consistent architectural treatment of bands of boxed-out, double-sliding acoustic windows and canted flint aggregate panels over octagonal columns. The result is comparable with Ernö Goldfinger's mature work such as Alexander Fleming House.[85] Infill and internal partitions are a mixture of grey brick and fair-faced in-situ concrete. The ingenious hexagonal assembly hall is double-ended for different functions, with great attention to acoustics and lighting. It sits amid hard landscaping, including an external

Figure 4.72: Acland Burghley School, Tufnell Park, LB Camden; Howell, Killick, Partridge & Amis, 1963-67. Photograph by James O. Davies – English Heritage; DP059335.

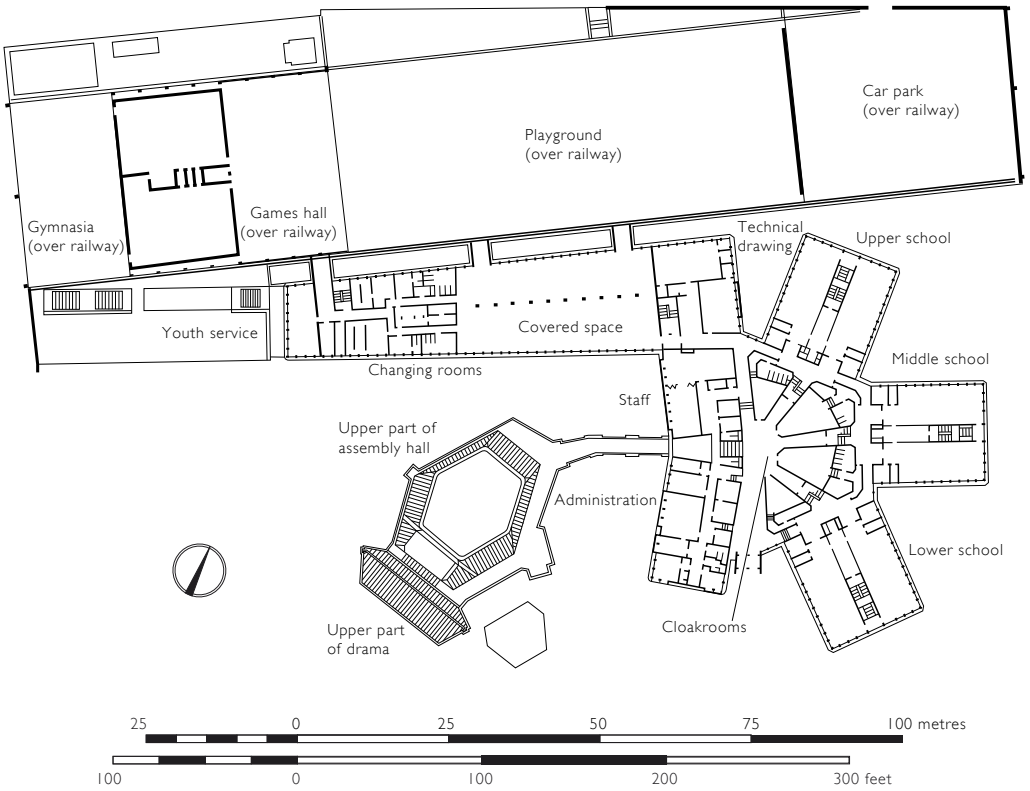


Figure 4.73: Acland Burghley School, LB Camden; Howell, Killick, Partridge & Amis, 1963-67.

amphitheatre and fragments retrieved from the previous Acland Burghley school. The gymnasia and games hall—now rebuilt—were accommodated within a lightweight, large span structure with a folded plate roof.

This is the only school designed by this significant British practice and presents an expressive and assertive face to its dense and run-down urban surroundings. The assembly hall and the finishes (a combination of precast and in-situ concrete and boxed-out windows) recall the firm's contemporary commissions for Oxford and Cambridge universities. A new two-storey music and dance centre designed by Gollifer Langston Architects was added in 2007 and the hall was refurbished.

¶ **Pimlico School**, Lupus Street, Pimlico, City of Westminster; LCC/GLC Architect's Department (job architect John Bancroft), designed 1964-65, built 1967-70; demolished 2008/11.

Although one of London's flagship comprehensives, Pimlico was developed from a standard brief of 1964 which reflected the then-conventional thinking of fixed classrooms, set apart from specialised craft, science and sports facilities.[86] The 4½ acre site—exceptionally tight for a ten-form entry school of 1,725 pupils—was bounded by relatively tall buildings. Bancroft's response to these conditions was a long, low school, tightly packed into a continuous, deep range. Lifts were avoided by restricting heights to four storeys, one of which was sunk beneath street level, exploiting basements formerly occupying the site. The organising principle was the long linear spine which on the second floor takes the form of an internal street or concourse, as seen in sources as diverse as Le Corbusier's Marseilles Unité d'Habitation and shopping malls. Below this were laboratories and housecraft rooms and sports facilities (gyms and a swimming pool) separated by a youth centre and evening institute. Above the street were the classrooms, a library and a square hall. Bancroft housed the engineering and craft workshops in a separate, top-lit, single-storeyed block to the north, emphasising their industrial character.

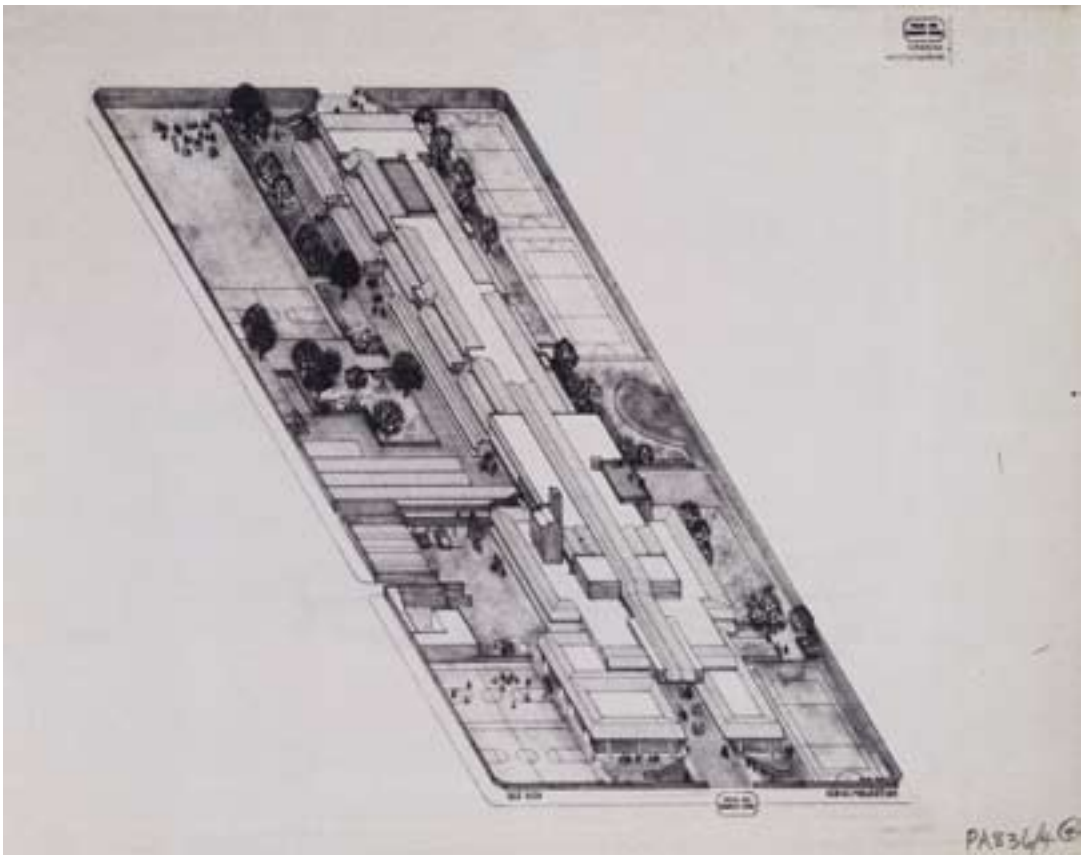


Figure 4.74: A 1965 aerial axonometric projection of Pimlico school, signed by Colin Bex. RIBA *Library Photographs Collection, RIBA32286.*

Figure 7.75: Internal street at Pimlico School in 1970. Institute of Education Archives; ABB/B/1/13/4.

Figure 4.76: A view of Pimlico School from St George's Square. The main entrance is to the right. © Elain Harwood.

The requirement to let natural light penetrate the deep and low interior led to the complex stepped section or *terrassenhaus* and the device of angling each projecting wall and roof upwards and outwards. The dynamic, highly-modelled elevations incorporated much patent glazing, and problems of glare and solar heat gain soon became apparent (an air cooling system was vandalised soon after occupation). The concrete cross walls required to support the cantilevered floor slabs meant that the layout was largely incapable of alteration. By the time of the school's competition, secondary teaching practice had overtaken the assumptions of the brief. David Medd compared the school to the equally tough, compact and image-making Hunstanton School of 1952-54 by Alison & Peter Smithson: both were simultaneously demonised by educationalists and celebrated by architects (Pimlico won the 1972 RIBA award).[87] A certificate for immunity from listing was granted in 2003 and the school was demolished in stages from 2008 to 2011.

¶ Addition to **Hampstead Comprehensive School** (now Hampstead School), Westbere Road, West Hampstead, LB Camden; Stillman and Eastwick-Field, *c.*1965.

The site was formerly occupied by the Haberdashers' Aske's School for Boys and was acquired by the LCC in 1961 when the school moved to Elstree. The ILEA addition of 1966 relates to the newly-formed comprehensive. It occupies the centre of the site, set back from the Westbere Road frontage which is occupied with school buildings of 1902-3, 1910 and 1930. The accommodation is tightly packed into a two-storeyed courtyard arrangement. A change in level allowed the entrance, hall and a covered playground to be accommodated with an additional lower ground floor.

The massive yet refined exteriors are composed of large, pre-cast panels of sparkling white calcined flint aggregate, emphasised by black mastic joints. The cladding panels and Crittal-style glazing wrap around the reinforced-concrete frame to give deep reveals. The indeterminate elevational rhythm of solids and

Figure 4.77: Addition to Hampstead Comprehensive School, LB Camden; Stillman and Eastwick-Field, c.1965 (P5925011).

voids expresses the disposition of teaching accommodation within. The exaggerated articulation of the clip-on panels recalls the Cambridge University Centre of 1964-67 by Howell, Killick, Partridge & Amis. The block survives with few alterations other than the addition of a lift.

¶ Additions to **Plumstead Manor School**, Old Mill Lane, LB Greenwich; Powell & Moya (job architects Eric Lloyd and Peter Cusa), designed from 1966; built 1970-73.

The scheme required an eight-from entry comprehensive school for about 1400 girls with a large sixth form. As at Powell and Moya's Mayfield School, Putney of 1952-56, the brief called for the addition of classroom blocks to earlier buildings, in this case the former Kings Warren Grammar School and an LCC gym. The architects created a series of intimate courtyards, intended as 'incidents' along the route between the entrance on Old Mill Road and the King's Warren School. The colonnaded circulation route combines open covered ways at ground floor and glazed links at first floor; an enclosed footbridge crosses Heavitree Road. The inward-looking layout and lack of external presence was partly determined by the site, shielded from Plumstead Common by the King's Warren buildings and overlooked by surrounding housing. Powell and Moya had considerable experience of courtyard planning from a series of commissions at Oxford and Cambridge universities. At Plumstead, the idea of pavilions linked by a route reflects Jane Jacobs's idea of 'social capital': the social importance of shared spaces and the chance informal encounters that result.[88] The youth club block was afforded a separate entrance and distinctive architectural treatment characterised by boxed-out windows (it is now remodelled as a nursery).

The two and three storey blocks are crisply detailed with white precast concrete cladding and black anodised aluminium window spandrels and frames. This gives a lightness and horizontal emphasis which was the firm's trademark. Panel walls of London stock brick are substituted at ground floor level, circulation areas, for the end walls and gymnasium. Split-pitched roofs with parallel rooflights harmonise with the Wrenaissance Kings Warren school and enliven the roofscape, visible from its taller neighbours. This form was previously employed by Powell and Moya at Slough District General hospital, Wexham Park. A BSF refurbishment from summer 2010 to 2011 involved the demolition of the central games hall and the addition of new blocks to the site.

Figure 4.78 (top): Gymnasium at Plumstead Manor School (P5925012).

Figure 4.79 (bottom): Classroom block at Plumstead Manor School (P5925013).

¶ Gymnasium and science building for **Rosa Bassett School for Girls** (after 1977 expanded as Furzedown Secondary School, today part of Graveney school), Welham Road, Streatham, LB Wandsworth; Trevor Dannatt & Partners, 1962-65.

Figure 4.80: Trevor Dannatt's 1962-65 science building for the Rosa Bassett School for Girls, Streatham, LB Wandsworth (P5925014).

Figure 4.81: Additions to Eltham Hill School, LB Greenwich; Trevor Dannatt & Partners, 1969 (P5925015).

¶ Additions to **Eltham Hill School**, Eltham Hill, LB Greenwich; Trevor Dannatt & Partners, 1969.

Dannatt conceived these south London additions as small pavilions enjoying a figure-ground relationship with older buildings.[89] A shared characteristic is the topographical relationship with sloping sites. The Eltham Hill extension takes the form of a cube with a two-storey link to the 1927 LCC grammar school. Classroom windows are recessed behind horizontal bands of brickwork into which are set services and gutters. The horizontal layering of solid and void, which recalls the mature work of Denys Lasdun, is tempered by slender set-back piers and a taller service core of load-bearing brick with a copper 'hat'. Dannatt's addition was demolished in 2011 as part of the school's BSF programme.

At Rosa Bassett, two extensions are grouped along the embanked terrace at the back of the 1917 Furzedown Secondary School. A strong rhythm of double-height pilasters and bay-width windows is established for the science building, a principle applied, in modified form, to the gymnasium. Their red brick is in deference to the older building, but within heavy timber detailing dominates.

¶ **The American School in London**, Loudoun Road, St Johns Wood, LB Camden; Shaver & Co with Fitzroy Robinson & Partners (job architects L.J. Brockway, K.G.R. Blythe), 1969-71.

The American School is a co-educational, independent day school planned for 1,500 pupils. It is run in accordance with the American educational system and thus divided in elementary, middle and upper schools. The design for the school, by John A. Shaver and Company of Salina, Kansas, was modified by British executive architects Fitzroy Robinson and Partners to satisfy UK regulations.. At the time of its opening in 1971 by Secretary of State for Education Margaret Thatcher, the American School was perhaps the most authentic English example of the American concept of the 'school without walls' (page 50).

A deep-plan, three-storey building was developed on a sunken site due to planning requirements. It was dependent on a high level of air conditioning and artificial lighting and many spaces are without windows. The

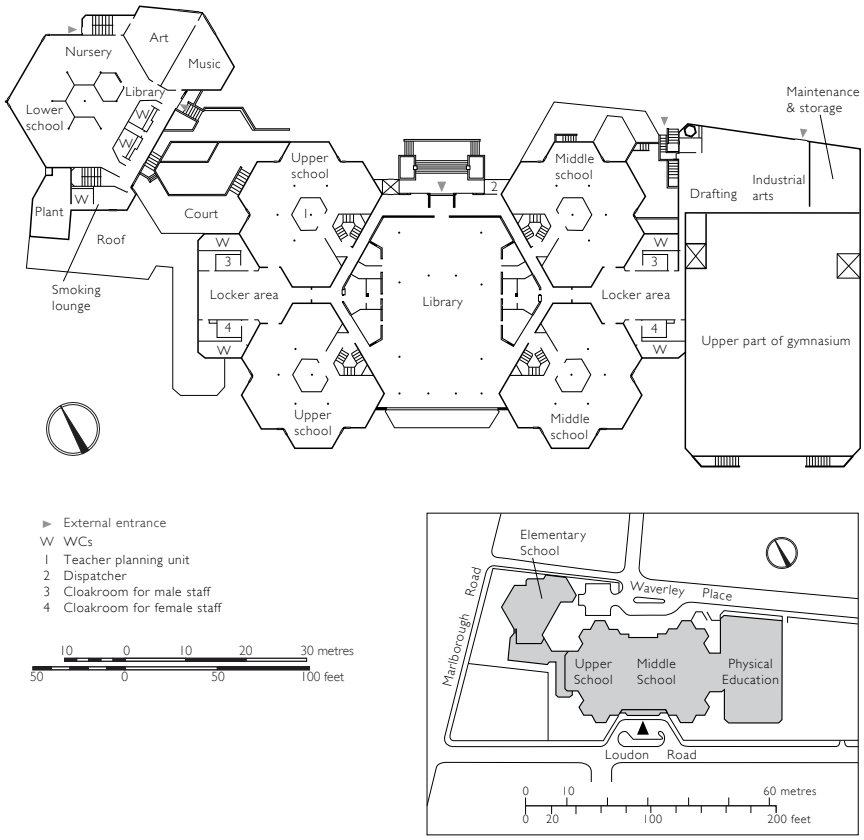


Figure 4.82: The American School in London, St Johns Wood, LB Camden; Shaver & Co with Fitzroy Robinson & Partners, 1969-71.

middle and upper schools alike were based on a honeycomb of five hexagonal classrooms, clustered around a central lesson-planning area for a team of eight teachers. Each floor had four such 'teaching pods', grouped around a central feature: a basement theatre, an open-plan ground-floor library and top-lit arts, crafts and science workshops on the first floor. The plan may have an origin in Shaver's McPherson Senior High School, Kansas, which opened in 1963.[90] The teaching pods were initially subdivided with demountable partitions to accommodate different arrangements of teaching groups. Reversion to more formal teaching methods soon led to permanent divisions between classrooms.

Ironically, the exterior expression of a 'school without walls' was to be large expanses of grey brickwork, capped with a copper roof and broken up with vertical groups of bronze-anodised aluminium windows. Recent alterations 1997-2001 by Claridge Architects are well-designed. They include general refurbishment, a new entrance and a high school wing cantilevered over the gymnasium. The theatre was remodelled in 2006-08 by Tim Foster.

¶ **Waterfield Secondary School** (now the Woolwich Polytechnic School for Boys), Hutchins Road, Thamesmead, LB Greenwich; GLC Architect's Department (job architects Bob Byron, Pat Baker, Linda Suggate), designed from 1969, completed 1976 (phase one); phase two commenced 1985.

In 1969, whilst **Pimlico School** (qv) was still in construction, ILEA updated their standard secondary brief to reflect the new educational priorities of team teaching, individual study, curricular reform, separate upper and lower schools and shared community facilities.[91] The first application of the new brief was a 1450-place secondary school for the GLC's new town of Thamesmead. The architects carried out much

Figure 4.83: A 1977 view of Waterfield Secondary School. Institute of Education Archives: ABB/B/1/3/7

Figure 4.85: Industrial finishes at Waterfield Secondary School. Institute of Education Archives: ABB/B/1/3/7

preliminary research, visiting Countesthorpe Community College in Leicestershire, Newport High School in Gwent (1969-72), touring Nottinghamshire schools with county architect Henry Swain and making contact with the DES architects designing Maiden Erlegh school in Berkshire (pages 116-17).

Assuming that change would be constant, the architects opted for a highly-serviced, flexible building with a deep interior. The plan was a double square pierced by eight light wells. Facilities shared with the wider community were accessible from Thamesmead Central Area but separated from the school by an internal street or 'mall' (influenced by Pimlico School).[92] This 'impermeable membrane' allowed communal facilities such as sports, dining areas and drama and music studios to be segregated from areas exclusively for pupils.

The largely open-plan interior was artificially lit and divided by demountable partitions influenced by the Californian SCSD schools (page 50). Separate floor and ceiling servicing grids allowed mobile equipment to be powered by booms and bollards. The exterior 'Late Modern' skin of exposed steel and glass is comparable with the contemporary work of Foster Associates and the Milton Keynes Development Corporation.[93]

Figure 4.84: Presentation drawing for Waterfield Secondary School, captioned 'view from Year 3 multi-purpose area towards library resource area'. City of London, London Metropolitan Archives; LMA: ILEA/DBPS/AR/1/161/17.

The fair-faced blockwork which prominently features in the interiors reflects the architects' knowledge of Team 4's Creekvean house of 1967 and Evans & Shalev's Newport High School. The exposure and colour-coding of 'off-the-peg' structural and servicing elements reflects the influence of Maguire & Murray's contemporary **St Paul with St Luke Primary School**.[94] A second phase of *c*.1985 substituted block walls for light demountable partitions, reflecting a popular reaction against open planning. A remodelling of 1994 by BHP architects, in advance of the transfer of the site to Woolwich Polytechnic, added a two –storey extension, freestanding *brise soleil* and further enclosed the plan. Two of the lightwells have been enclosed to provide additional teaching spaces.

¶ **George Green's School**, Manchester Road, Isle of Dogs, LB Tower Hamlets; GLC Architect's Department (job architect Bob Dark), designed *c*.1972, completed 1977.

The George Green Community Centre formed part of the GLC's initial strategy for the redevelopment of the docklands. George Green's School shared its site with a day centre for the elderly, youth club, the Lansbury Adult Education Institute, day nursery and social services suite, intended to provide social stability and cohesion for a relatively isolated community in an area undergoing comprehensive redevelopment. The community provision was jointly funded by the London Borough of Tower Hamlets and surpassed that of its contemporaries Scott Lidgett and **Waterfield**.

The school sits to the east of its wide frontage of Manchester Road, taking its cues from the locality—the curve of the road and the neighbouring church—rather than the commanding central axis of the Greenwich Royal Hospital and Queen's House across the Thames. Like **Pimlico School**, George Green school is arranged as a spine block of complex section (in this case split level). This 'terrace' is divided into three wide bays housing science, craft and art, separated by staircases to give a continuous frontage to Manchester Road. The influence of Eldred Evans and David Shalev's Newport Comprehensive School is clear. A projecting wing to the east contains the community facilities, gymnasium, sports hall, small activities hall and theatre in the round. School and community facilities are separated by a communal entrance and foyer (with ticket office). The south side, facing the Thames and Island Gardens, is stepped down into an informal 'crumble' of terraces. Detailing is in an austere but structurally expressive idiom of concrete blockwork and steel windows (qv Riverside School in Thamesmead and the Thomas Tallis School in Greenwich of 1970-73). The Manchester Road frontage has since been heightened with an additional storey of classrooms.

Figure 4.86: Perspective of George Green's School from Manchester Road. Reproduced from a booklet which accompanied a GLC exhibition of school design at the Royal Festival Hall in 1983.

Figure 4.87: Central resource centre at Roan Charlton Comprehensive School (P5925016).

¶ **Roan Charlton Comprehensive School** (now John Roan School), Westcombe Park, Blackheath, LB Greenwich; GLC Architect's Department (job architects Geof Denison and Ann Webb), designed 1977, built 1978-81.

When the voluntary John Roan school was reorganised on comprehensive lines, the Neo-Georgian school on Maze Hill was converted to an upper school and a lower school built on nearby Westcombe Park road. The school incorporated an adult education institute with its own entrance and grouped with communal facilities such as gym and music/drama studios. The brief requested the flexibility to permit both inter-disciplinary and single subject teaching.[95] Craft workshops and carpeted social areas are interspersed with staggered classrooms, the whole linked by a snaking central corridor. The architects visited Oadby Lower School in Leicestershire (page 225) and Maiden Erlegh in Berkshire (page 116-17), and the central, fan-shaped library reflects the influence of the Leicestershire schools.

The deep plan is lit by clerestorey windows set within a northlight roof of complex section.[96] The result is a compact, spreading school of domestic scale and warm materials (purple brick, tile). Much attention was paid to retaining mature trees and deferring to surrounding Victorian villas of the Westcombe Park Conservation Area. The Roan Charlton Comprehensive School was probably the last new ILEA secondary school. The school submitted planning applications for the redevelopment of its Westcombe Park site in August 2011.[97]

Special Schools

¶ **Bromley Hall School for the Physically Handicapped**, Bromley Hall Road, Poplar, LB Tower Hamlets; GLC Architect's Department (job architect Bob Giles), designed c.1965, built 1967-68, listed at Grade II in 2012.

Bromley Hall was a 120-place school for 5-16 year olds with a wide range of disabilities ranging from slight to severe. The 1964 brief reflects the views of LCC educationalists that physically-disabled children were easily distracted and needed a greater degree of seclusion and privacy than able-bodied pupils.[98] The site was an unattractive one, then surrounded by slums, bombsites and light industry, with the thundering Blackwall Tunnel Northern Approach Road in construction only 24m (80ft) away. Giles's response was a sheltering, inward-looking plan, with visual stimulation offered by architectural form. The single-storey building occupies the full width of the narrow 1.25 acre site with a forecourt off Bromley Hall Road for the school buses and a hard play area at the opposite end. Due to the wide age range, primary and secondary classrooms are ranged along opposite sides of the site, served by separate corridors.[99] A central core of communal facilities (hall, dining area, library, medical suite) receive light from inner courts which double as the infants' play area. Each classroom has folding French doors opening onto a paved courtyard (fig. 4.61),

Figure 4.88: Bromley Hall School for the Physically Handicapped, Poplar, LB Tower Hamlets; GLC Architect's Department, 1967-68 (P5925017).

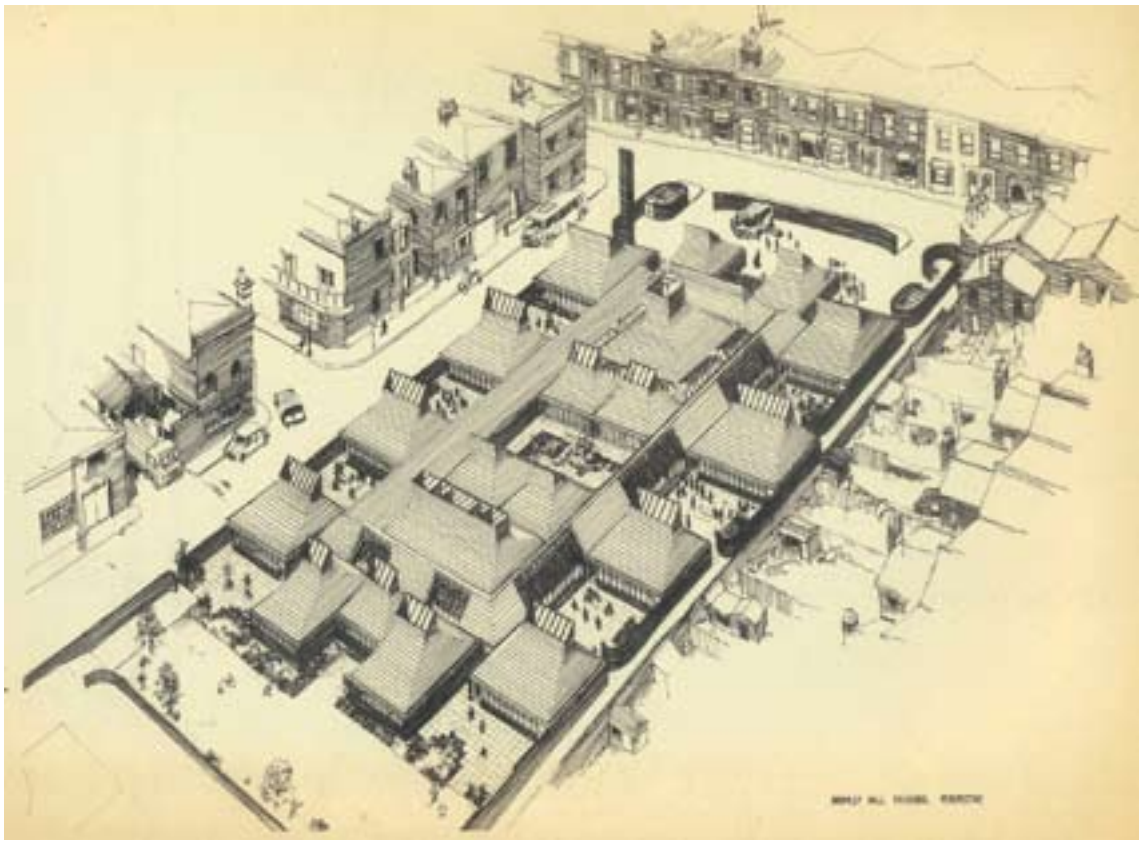


Figure 4.89: Bob Giles's aerial perspective of Bromley Hall School. The terraced housing surrounding the site has long been cleared. Drawing kindly supplied by Bob Giles.

which was provided with planting and external views from narrow slits in the brick perimeter wall. The corridors widen into lobbies outside the classrooms; between these are glazed links providing views across the courts. The alternation of classroom pavilions and courtyards is derived from Arne Jacobsen's Munkegård School of 1948-57 in Dyssegård, Copenhagen and Aldo van Eyck's orphanage at Amsterdam of 1960-61.

The low eaves of the classrooms and the limited amount of side-lighting they receive are mitigated by the reflected top light from monitors in the tall, pyramidal roofs. These soaring forms, entirely clad in artificial slate, provide much of the architectural interest of the school. The distinctive profile of the roof, designed as a 'fifth elevation', anticipates overlooking from neighbouring residential buildings. Whilst comparisons have been made with Kentish oasthouses, the silhouette echoes the industrial heritage of Bromley-by-Bow, and particularly the nearby Clock Mill of 1817, with its three drying kilns with conical slated roofs.[100] The roofs also recall Erich Mendelsohn's Herrmann hat factory, Luckenwalde, Germany of 1919-1920 and a secondary school in Locarno, Switzerland by Dolf Schnebli, published in 1965.[101] The assembly hall is articulated with a different type of rooflight and the modelled boiler chimney provides additional vertical emphasis.

The school was not part of the standard building programme, the estimated cost of £148,200 being met out of a budget for repairing war-damaged schools.[102] A nursery unit and hydrotherapy pool was added in 1978-79. The school was later used as a pupil referral central and has been vacant since its closure in 2002. The school was internationally published where it stood in stark contrast with the system-built schools that had come to characterise mainstream education.[103] LB Tower Hamlets plan the comprehensive development of the surrounding area, which would entail the demolition of the school.[104]

Figure 4.90: A 2010 view of Frank Barnes School for Deaf Children (P5925018).

¶ **Frank Barnes School for Deaf Children**, Adelaide Road, Swiss Cottage; GLC Architect's Department (job architect Ivor Plummer), designed *c*.1973, completed 1978, demolished 2010.

This primary school for 80 profoundly deaf children between the ages of 2 and 12 shared facilities with two neighbouring special schools, the Franklin D. Roosevelt School for physically handicapped and the John Keats School for delicate children. A provisional brief of 1972 was discussed between the architect, ILEA education

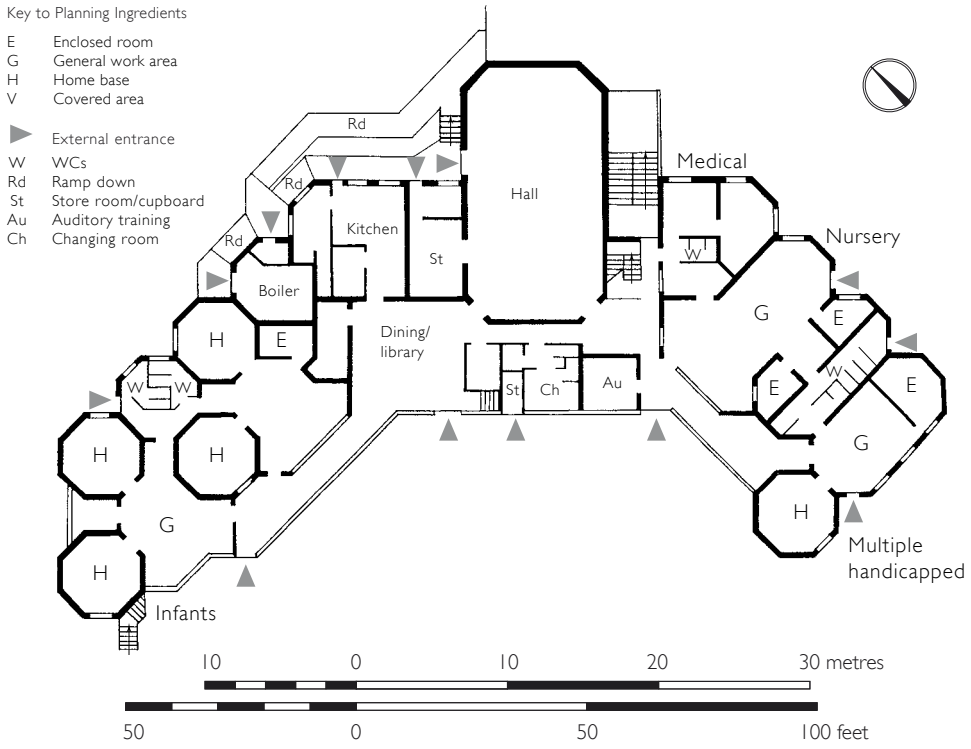


Figure 4.91: Frank Barnes School for Deaf Children.

officers and inspectors and teachers at London deaf schools.[105] From this emerged a dozen home bases grouped around 'break-out' spaces for practical and quiet activities. Their octagonal shape derives from the standard horseshoe layout for teaching using audio induction loops.[106] The overall plan is horseshoe-shaped also, with nursery and multiple handicapped groups placed to one side of the gymnasium/hall and two storeys of infants and juniors on the other.

The cramped site was at a busy crossroads at Swiss Cottage. Noise was mitigated by the heavy construction of cavity-wall blockwork and concrete floor and roof slabs, and the largely blind street elevations. Ground level was sunk 2m below pavement level and this, together with the brick boundary wall, created an 'acoustic barrier' which reduced distracting traffic noise and vibration. Leakage of amplified sound from one class to another was reduced by staggering the home bases and enclosing them by solid walls rather than lightweight partitions. Their polygonal shape produced a more diffuse acoustic, aided by absorbent surfaces such as pinboards, curtains and carpets.

The result was a fortress-like, sheltering building. The expanses of white Forticrete blocks were relieved by black patent glazing and the sculptural cooling tower to the plant room. By contrast the southern elevation was highly fully-glazed. The deep plan of Frank Barnes demanded air conditioning and supplementary artificial lighting, and windows were provided for views only. The building closed in July 2010 with the move of the Frank Barnes School to a new site at the Jubilee Waterside Centre in Camley Street. Planning permission for the redevelopment of the present site was granted on 5 August 2010 and the school demolished shortly after.[107]

ENDNOTES

1. Jackson 1965, 237.
2. Herbert 1960.
3. Radford 2009, 63.
4. Hansard, House of Commons debate, 20 February 1962, vol. 654, cc.224-338.
5. *Building Design*, no. 154, 8 June 1973, p. 6.
6. The Education Act of 1902, which charged the boroughs and county boroughs with responsibility for education, was found necessary after a House of Lords ruling of the previous year, in which it was found that the School Board for London had illegally encroached into the provision of higher education (Harwood 2010, 49). There were also motives of national politics for the formation and abolition of ILEA (Maclure 1990).
7. Eg., Elliott School; Strand School, Tulse Hill and Sarah Siddons School.
8. Saint 1987, 186; Harwood and Saint 1991, 167.
9. The Ministry of Education/Department of Education and Science was based in Curzon Street in London until *c.*1972.
10. Classey 1998, 15.
11. Andrew Saint, obituary of H.J. Whitfield Lewis in *the Guardian*, 27 April 2010.
12. Minutes of the ILEA Education Committee, 15 March 1965, p.58.
13. Harwood forthcoming.
14. Eric Classey (pers.comm. 23 July 2010) and Peter Jones (pers.comm. 25 August 2010) both recall that the group structure were in place when they joined Schools Division in 1954.
15. Minutes of the ILEA Education Committee 15 March 1965, p.58.
16. Andrew Saint, obituary of Sir Hubert Bennett in *The Guardian*, 23 December 2000.
17. Classey 1998, 17.
18. Linda Suggate, pers.comm., 8 July 2010.
19. Peter Jones, pers.comm. 25 August 2010.
20. Bancroft 1973, 192.
21. Starcross School, Camden of 1954-57 (main job architect Ron Herron, demolished in 2008-09) and Islington Green School (1964-65, demolished) combined a pristine white image derived from Corbusier's purist period with the raised external walkways and bridges that would emerge in the LCC's South Bank complex. The board-marked reinforced concrete of Walworth School (opened 1965) by job architect Jim Farthing showed the influences of late Corbusier and the New Brutalism. A fine sequence of further educational buildings, such as the Chelsea College of Art (1958, Warren Chalk, demolished), extension to Woolwich Polytechnic (designed by Ron Herron in 1958-59, built in 1962-64) and London College of Fashion (1962-63, Douglas Stark) belongs to the same architectural lineage, although it lies outside the scope of this report.
22. The best-known project, albeit unbuilt, is the experimental junior mixed school for 900 pupils was commissioned from Oliver Hill in 1935, on the recommendation of Frank Pick's Council for Art and Industry (Holland 2011).
23. Unpublished report of January 2000 by Elain Harwood for the English Heritage Historic Buildings and Areas Advisory Committee, deposited in deposited in the Historians' Files, English Heritage London Region, file reference LAM180.
24. Eric Classey pers.comm. 23 July 2010.
25. For the LCC Downham out-county housing estate.
26. Classey 1998 (Eric Classey was a Schools Division architect 1954-62 and 1964-86); Hellman 2012 (Louis Hellman worked for Schools Division from 1967-73).
27. Honikman 1966, 1311.
28. Harwood forthcoming; Brockley Road Primary School, LB Lewisham, report of November 2009 by Elain Harwood; deposited in the Historians' Files, English Heritage London Region, file reference LEW108.
29. Particularly Templewood School, Welwyn Garden City of 1949-50 and Oakland Infant School, East Barnet of 1950-51.
30. One example is St Francis Drake School, Deptford, Lewisham, opened in 1963. Its plan published in MoE 1964 (Building Bulletin 23), 58-61.
31. Franklin 2009, 27, 70.
32. Brian Goldsmith, pers.comm., 15 November 2010. Goldsmith took over the design, completing the interior detailing in 1965 when Pestell started designing Prior Weston School.
33. Such figures were claimed as part an 'alterative tradition' of modernism, traced by Colin St John Wilson in a 1961 article, and elaborated by Schools Division architect Louis Hellman in a series of articles, but not applied to public architecture, let alone school design, until late in the following decade (Colin St John Wilson 1961 and 1995; Weston 1991). Hellman was in Schools Division in 1967-73 and his articles in *Building Design* include studies of William Morris (no.162, 3 August 1973, pp.12-13), C.F.A. Voysey (no.169, 28 September 1973, pp.18-21), C.R. Mackintosh (no.174, 9 November 1974, pp.28-31), twentieth century Dutch architecture (no.197, 16 April 1974, pp.18-21),

and Alvar Aalto (no.238, 21 February 1975, pp.14-15 *et seq*).
34. Source: http://www.berger.hackney.sch.uk/new_build/, accessed 15 August 2012.
35. 1970 photograph of model at London Metropolitan Archives:SC/PHL/02/0453-53.
36. Eric Classey pers.comm. 23 July 2010; Ann Webb pers.comm., 23 August 2010.
37. Hellman 2012.
38. Hellman 1975.
39. Ward 1975, 20; information on Benthal Primary School *ex* Tim Hunter-Whitehouse (present head), 20 July 2010.
40. Report, 13 July 1949, in London Metropolitan Archives:LCC/EO/GEN/1/138. The Hills 8'3" frame was deployed in London until the mid-1950s; according to Landau (1968, 44) it was in use from 1946-52.
A later example is Ashmount School, LB Islington, built on a Hills frame in 1954-57 to the designs of H.T. Cadbury Brown for the LCC. Alison Smithson worked on Hills schools during her brief time as an Assistant at Schools Division in 1949-50, and the experience gave the Smithsons 'the ability to detail Hunstanton in a very slim way'. Hunstanton was also used standard sections welded on site, as did the LCC schools (Smithson 1997, 36). The LCC had long purchased complete prefabricated buildings for temporary educational use, as opposed to building systems.
41. Quoted in Honikman 1966, 1311. Powell (1916-71) was the brother of Phillip Powell of Powell and Moya.
42. Russell 1981, 367.
43. Peter Jones, pers.comm. 25 August 2010.
44. Peter Jones, pers.comm. 25 August 2010.
45. Ivor Plummer pers.comm., 19 August 2010.
46. The first RBS school to use brick panels was Lauriston School, LB Hackney, which opened in 1971 to the designs of job architect Brian Goldsmith (pers.comm., 23 November 2010).
47. The consortium was approved by the ILEA Education Committee on 15 December 1965 (minutes of 15 December 1965, p.351.
48. Killeen 1968.
49. Killeen 1968, 1304.
50. Russell 1981, 566.
51. Hellman 2012; Eric Classey pers.comm. 23 July 2010.
52. Ringshall 1983, 80.
53. *Architects' Journal*, vol. 160, no. 30, 24 July 1974, p. 203.
54. *Architects' Journal*, vol. 159, no.15, 10 April 1974, p.774.
55. Ringshall 1983, 157.
56. *Architects' Journal*, vol.159, no.3, 16 January 1974, pp.125-27.
57. Beattie 1972. Mina Road (later Walworth) School in Southwark was remodelled by Michael Morris of Schools Division as early as 1957 (Michael Morris, pers.comm., 1 September 2011).
58. Kay 1968; Temple 2008, 324-25.
59. *Architects' Journal*, vol. 158, no. 47, 21 November 1973, p.1236.
60. Stewart McColl pers.comm., 6 June 2010.
61. Jencks 1987, 14.
62. *Architectural Review*, vol. 154, no. 919, September 1973, pp. 179-84.
63. *Wood*, vol. 30, no.2, February 1965, pp.29-31.
64. Minutes of the London County Council, 2 June 1964, p.598.
65. Institute of Education Archives: ME/C/1/6, Notebook 72, p.49.
66. David Medd, pers.comm. to Elain Harwood, 17 October 2004. The two site solution was an idea of Derek Morrell's (Institute of Education Archives: ME/T/7: David Medds' lecture notes for Architects and Buildings Branch meeting on 30 August 1987).
67. Minutes of the ILEA Education Committee, 15 March 1965, p.58.
68. Minutes of the London County Council, 2 June 1964, p.599; *Architects' Journal*, vol.147, no.10, 6 March 1968, pp.524-25.
69. Minutes of the London County Council 2 June 1964, p.599.
70. *Architects' Journal*, vol.147, no.10, 6 March 1968, p.524.
71. *Architects' Journal*, vol.147, no.10, 6 March 1968, p.525.
72. Minutes of the ILEA Education Committee, 26 May 1965, p.152.
73. Minutes of the ILEA Education Committee 26 January 1966, p.391.
74. Robinson 1999, 71, 72.
75. http://edspace.co.uk/evelyn/msgbuilding.php, accessed 15 August 2012.
76. Ringshall 1983, 73-74.
77. *Architects' Journal* vol. 156, no. 45, 8 November 1972, pp.1067-70.
78. *Design*, no.280, 1972, pp.48 – 54 (p.48).
79. National Society 1816, 188.
80. Ward 1976, xi.
81. Ringshall 1983, 139. Bow Common was visited by the architects of Waterfield Secondary School (qv). A proprietary portal frame with plastic-coated, rolled steel sheet cladding was also used at an extension to the Langdon Park Secondary School of 1977-79 by job architects John Weller, Neville Morgan, Keith Leicester and Brian Alexander. The industrial aesthetic was celebrated

with a bold primary colour scheme and parts such as staircases, air-inlets and boiler flue. At Bellenden Primary School of 1980-82, a tiny site suggested a deep plan spanned by a series of industrial portal frames to job architect Linda Suggate. The insulated and cheerfully-painted steel roof incorporates an internal courtyard and its deep overhang shelters external work spaces.

82. Linda Suggate, pers.comm., 8 July 2010; Ivor Plummer pers.comm., 19 August 2010; Ann Webb pers.comm., 23 August 2010.

83. Goldfinger's first involvement with school design was in 1937 when, assisted by Mary Crowley née Medd, he designed a prefabricated timber nursery for the manufacturers Boulton and Paul, which was never went into production (Franklin 2009, 53). In 1950-51 he built two small primary schools in Hammersmith and Wandsworth, both listed.

84. The school was opened in September 1966 and the assembly hall was completed by the end of 1967 (*Architect and Building News*, vol.233, no.5, 5 June 1968, pp.848-56 (p.848).

85. Undated English Heritage report by Elain Harwood; deposited in the Historians' Files, English Heritage London Region, file reference CAM529.

86. Ringshall 1983 113-116; *Pimlico School, Lupus Street, Westminster, London SW1*, report of March 1996 by Elain Harwood entitled; deposited in the Historians' Files, English Heritage London Region, file reference WM918.

87. Medd, cited in Classey 1998, 32.

88. Jacobs 1961.

89. Dannatt 2008 128.

90. EFL 1967b. Granada Elementary School, California by Callister and Rosse, opened 1964, and Harris Hill Elementary School by Parks, Morin, Hall, Brennan & Sattelberg, Rochester of 1970 are also based on fused hexagons (EFL 1965, 22).

91. GLC architects Linda Suggate and Vic Hindley consulted ILEA educationists on the spatial implications (Linda Suggate, pers.comm., 9 July 2010).

92. Linda Suggate, pers.comm., 9 July 2010.

93. Members of the design team were taught by Richard Rogers and Norman Foster at Regent Street Polytechnic and visited buildings designed by their joint practice Team 4 (Linda Suggate, pers. comm., 9 July 2010).

94. The team visited St Paul with St Luke Primary School, Bow Common and Pollards Hill Middle School, an open-plan school in LB Merton (Linda Suggate, pers.comm., 9 July 2010).

95. *Architect's Journal*, vol. 175, no. 4, 27 January 1982, pp.31-48 (p.42).

96. Anne Webb went on employ a similar section at Olga Primary School (Ringshall 1983, 162-163).

97. http://www.greenwich.co.uk/news/05785-plans-for-redeveloped-john-roan-school-revealed/, accessed 15 August 2012.

98. *Architects' Journal*, vol.150, no.35, 27 August 1969, pp.505-522 (p.512).

99. The plan resembles the Volksschule Celle, by O Haesler (Meyer-Bohe 1974, 30).

100. *Architects' Journal*, vol.150, no.35, 27 August 1969, p.510.

101. *Architecture d'Aujourd'hui*, vol.121, June/July 1965, pp. 65-67. The school was also published in Roth 1966.

102. Minutes of the ILEA Education Committee 18 May 1965, p.486.

103. Meyer-Bohe 1974, 167-70; *Interbuild*, vol.13, June 1966, pp.12-15; *L'Architecture Française,* no. 351/352, November/December 1971, pp.22-23; *Deutsche Bauzeitung*, vol. 107, no. 4, April 1973, pp.374-75; *Cuadernos de Arquitetura*, no.89, May/June 1972, p.56; *Architektur Wettbewerbe*, no. 105, 1981, p. 11-12.

104. Ailsa Street Development Brief, prepared by LB Tower Hamlets in 2003. Source: http://www.towerhamlets.gov.uk/idoc.ashx?docid=df513a9d-f5cd-47a0-9d05-0c1bc2cc500f&version=-1, accessed 15 August 2012.

105. Plummer benefitted from the advice of his Group Leader Brian Goldsmith, a specialist in design for the disabled (Brian Goldsmith pers. comm., 23 November 2010).

106. Plummer also employed octagonal geometry at the Hermitage Primary School, Wapping, LB Tower Hamlets of 1985-89.

107. Source: http://www.camden.gov.uk/ccm/navigation/education/education-initiatives-and-consultations/building-schools-for-the-future/, accessed 15 August 2012.

LEICESTERSHIRE

Figure 4.92: Leicestershire: location of gazetteer entries.

Leicestershire

Leicestershire is a modest-sized county of no great extremes save in the unexpectedly rugged intrusion of ancient granite that gave birth to Charnwood Forest, and much of it remains predominantly agricultural. The west side of the county, however, experienced the growth of mining at the end of the nineteenth century and of light engineering trades early in the twentieth, and like the similar areas of western Nottinghamshire `and eastern Derbyshire immediately to its north there developed a skilled working class with strong ambitions for its children to better themselves through education. The school population continued to expand rapidly in the post-war period, rising from 43,900 in 1948 to 72,800 by 1968, despite losses when Leicester expanded its boundaries in 1966. The city of Leicester remained a separate education authority until 1974, when the county subsumed both it and the adjoining county of Rutland. Most schools were new buildings to meet the expanding population, but those at Quorndon and Coalville were rebuildings of old grammar schools, the latter on a new site.

Leicestershire's generally rural makeup was reflected in the county's politics. It had a non-party leadership through most of the twentieth century, dominated by the local gentry, which provided an extraordinarily old-fashioned and stable administration. There were just two chairmen of the county council between 1947 and 1971, spanning the career of its mighty Director of Education, Stewart Carlton Mason (1906-83). Mason had become a teacher despite family opposition, but after ten years working at Berkhamsted and Harrow schools he joined the Ministry of Education as its inspector for Cambridgeshire, where he came under the influence of its charismatic Chief Education Officer, Henry Morris, known for his promotion of village colleges to enable school facilities in rural areas to be used by adults, particularly out of school hours, and of architecture and art. In 1944, after working for the Admiralty, Mason became the Ministry's inspector for Leicestershire, whence his family originated and where the Chief Education Officer, Sir William Brockington, had held the post since 1903 and was now over 75.[1] Seizing his opportunity, there being no Deputy Director, Mason compiled the county's development plan for implementing the 1944 Education Act virtually single-handed and duly succeeded Brockington in 1947.

Mason inherited a backlog of building work, for Brockington had been parsimonious in this regard, and there had been no county architect before the war. His reign as Education Officer can be divided into two halves. In the years until 1957, supported by the paternal Sir Robert Martin, chairman of both the county council and its education committee, he brought in his own educational advisers and developed a programme of village colleges attached to secondary schools, and village centres in the smaller communities based around primary schools. The first college, part of Ivanhoe Secondary Modern School at Ashby de la Zouche, was built in 1953-54 by the County Architect, Thomas A. Collins, a bland design of brick with large areas of glass but which was opened by Henry Morris himself. This unremarkable style was also adopted for the new secondary schools built under Collins's command, beginning with the Sarson Secondary School for Girls in Melton Mowbray of 1948 (demolished), and Mason later lamented their large corridors and inflexibility.

The schools of the 1950s were most striking for the works of art commissioned as part of their design, again reflecting Morris's influence. They included a number of large-scale figures by Peter Peri, including reliefs on the wall at the Humphrey Perkins School at Barrow-upon-Soar (1955). fig.s by him elsewhere appeared to be falling or jumping from the side of the building, notably *Atom Boy* (properly *Man's mastery of the Atom = Self Mastery*) at Longslade Community College, Birstall (1960), and which now all seem to have been removed into storage for safety. Mason believed that 'schools which placed value on the arts and encouraged individual creativity in them were almost invariably schools where you would find interesting and original work going on in … academic subjects'.[2] Such ideas reflected those of Herbert Read, whose *Education through Art* was published in 1943, and Mason was also inspired by Nan Youngman, Morris's art adviser at Cambridgeshire, who instigated a scheme for the purchase of works by living artists which could be loaned out to schools. Mason also supported his music adviser, Eric Pinkett, in the creation of the Leicestershire Schools Symphony Orchestra, which gained international renown.

Primary Schools

Mason was nevertheless personally very interested in architecture, and was described by the Deputy Architect, Jim Smith, as 'the exact opposite of the indifferent client' and adept in reading plans.[3] A good friend from the war was the architectural historian Alec Clifton-Taylor. Mason's interest first appeared in around 1960 in the building of primary schools, which are far less well known than the secondary schools that followed. Leicestershire joined SCOLA after building a number of schools using the Intergrid system, such as the Brockington College at Enderby, opened in 1957, but committed itself to a minimum of commissions, not all of them schools. None are significant.

Leicestershire adopted the 'hen and chicks' approach in 1960-63 at **Rolleston Infant School**, Glen Parva, where three clusters each of three classrooms with their own lavatories and a small work space were set around a six-sided central hall with a concrete shell roof. This was the first Leicestershire primary school with a dedicated library area as part of the design, and was testament to the slow and steady evolution of educational and architectural ideas in the county. For Mason it expressed the new ideas of learning through discovery instead of by rote, and to explore the possibilities of grouping classrooms vertically rather than placing similar age groups together.[4] A timber hyperbolic paraboloid was used at Wigstone Fields Infant School, by the County Architect's Department, in 1960, to create a rectangular hall, with the hypar nowhere rising more than five feet.[5] Still more novel techniques were employed for hexagonal halls in subsequent schools, with the Timber Development Association designing that at Thorpe Acre Infant School, Loughborough, in 1963 with J. N. Pitts the project architect.[6] Timber was also used for **Glenmere School, Wigston**, originally for juniors, by John Barton of Farmer and Dark in 1964, with a circular plan centred on the hall, while the secondary school at Braunstone, on the edge of Leicester, was formed in 1961 of six concrete shells.[7] Glenmere was the start of a very fruitful collaboration for Farmer and Dark with Leicestershire County Council that included six schools, all designed in around 1964.

Figure 4.93: Birstall Primary School; Peter Moro and Partners, 1963-64. Photograph © Elain Harwood.

Some of the later schools remained generally informal in plan, such as Sherard Primary School, Melton Mowbray, where two groups of classrooms were set around activity areas off the central library space, but more noteworthy are the schools made up of formal hexagons or which adopt a circular plan. Examples of the former include **Birstall** of 1963-64 by Peter Moro and Partners, hexagonal classrooms set in two groups still with a large hexagonal hall at its centre (fig. 4.93), and **Holywell, Loughborough**, opened in 1968 but which was largely rebuilt after a fire in 1988.[8] A polygonal plan survives well at **Oadby Launde** (1964), designed as a tessellation of hexagons by the County Architect's Department on a timber frame, forming a compact infant school at the entrance to a campus that includes an older and larger junior school.[9] The use of polygonal spaces, begun by Moro, grew out of the need to reduce circulation spaces and was a natural consequence of the 'hen and chicks' mode, but reflected their development in the United States in the late 1950s.

Mason became increasingly interested in encouraging self-discovery and informal group working rather than whole class teaching, ideas that became increasingly important everywhere in the 1960s. Slowly the library, used as a quiet area as well as for storing books, superseded the hall as the centre of the school, in primaries ahead of secondaries, and by 1970 was being called a 'resource area'. The simplest and most dramatic example of a mature Leicestershire primary school is **Middlefield** (now Richmond), in Hinckley, completed in 1970 by Tom Collins's successor, Thomas Locke (fig. 4.94). The classrooms are set in a circle around a central library with a small meeting room on top (now mainly used for storage), each opening on to a large verandah and with a large hall set apart on one side.[10] The use of a very deep, top-lit plan instead of

Figure 4.94: Middlefield School, Hinckley. Photograph © Elain Harwood.

having large areas of glazing from the sides is a significant development in Leicestershire school planning; easy to take for granted after looking at Hampshire schools, it was radical in the late 1960s. The building was refurbished in 2010-11 with new windows and doors, and the impact of this is unknown.

The sidelining of the hall is a striking feature of Leicestershire planning, seen too in the more complex **Eastfield Primary School at Thurmaston**, the only school in England by Ahrends, Burton and Koralek and built in 1966-68, where the plan revolves around different levels, thanks to the steep site (fig. 4.95). Here there is a central courtyard, with an ambulatory around it that is separated by activity areas from the main classroom spaces, which are grouped in pairs. The library is by the higher and most important of the two entrances and the hall is again on one side, physically separated only by a flight of steps and with the stepped roof incorporating rooflights that features in much of their work from this time, particularly in designs by Paul Koralek such as this, the library at Portsmouth University and the John Lewis store at Kingston.[II]

Figure 4.95: Eastfield Primary School. © Elain Harwood.

Glenfield Frith School, in 1966, was one of the first in the county planned for team teaching, with semi-open plan classrooms grouped in fours. A more fluid plan was offered by the square form of the little infants' block at **Fairfield Primary School, Wigston**, built c.1969 with three classrooms and an activity area around a amoebic-shaped library. It has since been much extended. Mason stressed the advantages of carpeted floors, acoustic treatments and team teaching, but while Asfordby and Market Harborough North, both from c.1971, comprised a single great room set around a central resource centre and quiet areas, most spaces elsewhere remained defined, with classroom, activity and quiet areas, rather than the single space or 'big room' popular in the United States.[12] Two schools by the County Architect's Department under Thomas Locke within Leicester (joined to the County for educational purposes in 1974), Rowlatts Hill (1976-78) and Merrydale (1978-81) had large shared classroom areas for team teaching but have since been heavily sub-divided.

Secondary Schools

William Brockington introduced higher and junior elementary schools when one of his head teachers was called up in the First World War, and he began to stream children into junior and senior elementary levels by means of a general selection examination as early as 1920. He thus introduced senior elementary or secondary schools ahead of the Hadow Report in 1926, to centralise secondary education and to save money.[13] By 1939 75% of children over the age of eleven were accommodated in secondary modern schools. Secondary schools were divided into grammar schools and secondary moderns. Leicester city was one of the few authorities with a strong technical grammar stream, dating back to 1928, but this was not developed in the county despite its engineering industries and Brockington role as an adviser to the Spens Report.[14]

Mason's first secondary modern schools were built of brick and conventional in design, though with an emphasis on art, music and science. The most interesting new secondary school of the 1950s architecturally was arguably the rebuilding of Coalville's **King Edward VII Grammar School** (now King Edward VII Community College) by Denis Clarke Hall in 1958-62, for 570 boys and girls including 120 in the sixth form. Set on a sloping site, its chief features are the shell roofs to the assembly hall and gymnasium, and a central split-level courtyard with a bridge that features a screen by Anthony Hollaway, then working as a consultant for the London County Council.[15]

Brockington's examination and a system of interviews, much updated, remained the basis of selection. But when Mason's second son failed the 'Eleven Plus' he came to share the concerns of the country's aspirational skilled working class that bright children were missing out and that some considered themselves 'failures' at age eleven.[16] He noted that late developers flourished at Leicestershire's one bilateral school, a consequence of boundary problems on the edge of the county at Barrow-on-Soar, opened in 1954 with a two-form entry for local secondary modern children and two grammar school streams serving a wider area. Mason found that there was an increasing demand for qualifications from local employers, particularly in technology, and also that music and arts flourished less well in selective schools.

'One morning', Mason later recalled, 'I was shaving and I thought, "My God, what would happen if instead of having grammar schools and secondary modern schools parallel with each other we put them end on to each other with the break at fourteen?"'[17] Already the theorist Robin Pedley, teaching in Leicester, had suggested building a lower school for children aged 11-14 with its own head and social organisation, followed by an upper school to which all children would move - if only for a year, while Sheldon Heath School, Birmingham, had opened in 1955 with junior, middle and upper schools side by side. Mason's idea thus had parallels elsewhere.[18] What made it special was the speed of its adoption and subsequent rapid extension across the county. The Ministry accepted the proposal as it needed no new buildings. The secondary moderns, with their smaller science provision, became a form of middle school; renamed 'high schools', they took all children from eleven to fourteen, from which those who undertook to stay on until sixteen then moved to a grammar school. Mason made a presentation to the Education Committee in March 1957, and the experiment began that September in two urban areas where grammar schools could be adapted, at Hinckley and in the suburban area south of Leicester at Oadby and Wigston. The experiment was extended from 1959, until in 1969 Leicestershire became the first English county to be entirely comprehensive. After 1970 all pupils transferred to the upper school at fourteen.

Most of the new schools in the 1950s were designed by the County Architect's Department under Tom Collins, but there was a hiatus in building after 1957, partly due to the reorganisation. Donald Jones recorded that 'Mason was convinced that Leicestershire was deliberately starved of funds by civil servants at the ministry who were not sympathetic to his secondary school reorganisation.'[19] There was then a surge of building in the mid- and late-1960s, when much of the work was given to private architects. Chief of these were John Barton of Farmer and Dark and Robert Headley of Gollins, Melvin, Ward and Partners, who had previously worked for local authorities and British Railways (Midland Region). Farmer and Dark produced mainly primary schools, but also the flagship upper school, **Countesthorpe College**. Gollins, Melvin, Ward worked on Loughborough College of Education, **Quorn Rawlins Upper School**, Lutterworth Grammar School, and **Bosworth and Wreake Valley colleges**. Like Collins's team, these private practices became adept in using space and materials as economically as possible, notably by reducing circulation space and combining functions such as dining areas within assembly halls. Very deep single-storey plans around a central resource centre became the defining features of the two new high schools and three upper schools that were built at the end of the decade, in which open planning played an important part.

Mason wrote in 1969 that:

> a middle school, if we could have built one from scratch, would have been almost identical to a secondary modern except that it would have had more specialist laboratories to cater for the "academic" pupils. An upper school would have been very similar to a selective grammar school except that we would have wished to add a few more practical rooms. Our growing experience over the last ten years has shown us that the middle school is not just the lower half of the secondary school, as we used to understand it, but is developing a character and ethos of its own.

Oadby Manor School, opened in 1968, now runs as a middle school for 10-14 year olds, and was followed in 1973-74 by Countesthorpe, now Leysland High School, by Farmer and Dark serving 11-14 year olds. Both were designed with groups of classrooms round an activity area, with a very large library and resource area at the centre of the deep plan. Equally large, deep-plan blocks house a lecture theatre, science laboratory and handicraft rooms, with some more conventional classrooms for the older children. Oadby Manor, now much extended, was described by the *Buildings of England* as having 'an unprepossessing brick exterior', but the two have some interest as developing the plans for middle schools defined by Mary and David Medd at Delf Hill, Bradford (page 39).

A study of Leicestershire schools by Ken and Kate Baynes for the magazine *Design* suggested that it was at the junction where arts and crafts subjects met that the most creative work was being realised.[20] **Rawlins College** at Quorn in 1967 was the first to open a new building that threw together the art, handicraft and housecraft departments under a single head, at Mason's behest, and this became a key tenet in the design of new upper schools. Rawlins College was an upper school evolved out of an older charity school turned girls' grammar school, and its additions by Gollins, Melvin, Ward and Partners, while architecturally unassuming, exemplify Mason's abiding interests in resource centres and the arts.[21]

The Leicestershire building programme was dominated by three wholly new upper schools or college, built in 1967-71. The basic themes of a central resource centre, spaces

Figure 4.96: Bosworth College, Desford; Bernard Schottlander's 3B Series No.2 *of 1968 is the focal point. Photograph of 1997 by Mike Williams – English Heritage; FF003527.*

for art, drama and sports that could be shared with the community, and a separately defined sixth-form centre recurred through each complex, although superficially the three looked very different. **Bosworth College, Desford**, built in 1967-70 to the designs of Gollins, Melvin, Ward and Partners comprises low ranges on a steeply sloping site grouped around courtyards, with large sports facilities to one side. An original proposal to clad the school in fibre glass was rejected by the councillors, who favoured using local brick – an important industry in the county. The change of materials led Mason and his contemporaries to criticise Bosworth College, but the hard red bricks have proved more durable in the long term than has GRP elsewhere.[22] The most novel feature are the deep plans to the arts and science blocks, which are single-storied and top-lit; their stylistic form seems very strongly influenced by the single most important modern building in the county: Leicester University's Engineering Building – red brick, canted plinths and patent glazing (fig. 4.96). The college also has a large and rewarding art collection, including sculptures by Bernard Schottlander, Bryan Kneale and Barbara Hepworth.

Countesthorpe College, designed by John Barton of Farmer and Dark in 1964 and built in 1967-70, is the quintessential Leicestershire school taken to a massive scale, like all the three new upper schools intended for 1,440 pupils aged between fourteen and eighteen. There is a circular plan around a resource area, with large single-storey, open-plan areas for science, art and design, the plan reflected in a sculpture at its heart (fig. 4.97). It is exactly contemporary with Pimlico School, and its understatement and flexibility made a striking contrast at the time. Countesthorpe achieved early controversy for the methods of the first headmaster, Tim McMullen, who formed a schools council with staff and student representatives, and delegated all decisions on the running of the school to the staff. Inspectors in October 1973 considered that the school was 'excessively dirty and damaged', a far cry from the gleaming original image which has now been restored.[23]

Figure 4.97: Philip King's Dunstable Reel *in the circular courtyard of Countesthorpe College. Photograph by James O. Davies – English Heritage; DP138304.*

Figure 4.98: Wreake Valley College, Syston; Gollins Melvin Ward and Partners,1969-71. © Elain Harwood.

The most architecturally striking of the new colleges was **Wreake Valley** at Syston, built in 1967-71 by Gollins Melvin Ward and Partners, a battered cream-tiled battleship of three monumental storeys with a zoomorphic boiler-house funnel (fig. 4.98). A double-height resources centre is set over a fully-raked auditorium, and ringed by classrooms. Around it are spread a single-storey science area, a great open-plan design centre, and a sixth-form block with its own social centre that expresses its separate status by being clad in brick. Unusually, there is little art; the building itself is the sculpture.[24]

What makes these three schools so striking is that they redefined the character of post-war secondary schools were about, into something less formal and more akin to an adult college of further education or sixth-form college. Their flexibility was held against the rigid contemporary Pimlico School, also opened in 1970.[25] The three buildings are all different in style, but share common ingredients in their plan, all with a central resource centre, open-plan design and science area and distinct areas for use by the sixth form and adult evening classes; all have very generous facilities for drama and physical education.

Art in Schools

Leicestershire Education Committee is as important for its programme of art in schools as for its buildings. The programme initiated in its schools by Mason reflected the shift in modern sculpture towards abstraction. Like Henry Morris, Mason was convinced that art in schools encouraged creativity among the pupils. He began incorporating art into new schools in the 1950s, working with Alec Clifton-Taylor and later Bryan Robertson of the Whitechapel Gallery as County Art Advisers. Mason himself became Art Adviser

after retiring as Director in 1971, and the programme lasted until 1984 under his successor Graham Fairbairn. Like John Newsom, Director of Education at Hertfordshire, Mason dedicated a percentage of his building budget to art, here about a quarter of one per cent, supplementing it with a 'director's grant' at his disposal.[26] He also used the profits from publishing two religious service books, and solicited money from the Arts Council, Contemporary Arts Society and private donors. While some of the sculptures were chosen or commissioned for a specific location, others were intended to circulate around the schools.

The early choices were often dramatically representational, like the series of 1950s commissions to Peter Peri, whose work Mason had seen in the Festival of Britain and a sculpture exhibition in the Architectural Association.[27] Subsequently Mason encouraged a younger generation of abstractionists, including Philip King and Bryan Kneale, who in the early 1960s began divesting sculpture from its plinth. This shift was symbolised by the simplistic concrete sculpture, *Declaration*, from 1961 and purchased in 1966 (now at Beaumanor Hall, Woodhouse), but which is evident in more powerful works such as King's *Dunstable Reel* at Countesthorpe and Kneale's *Avila* at Desford.[28]

Was Mason buying pictures for the children, the artists, himself or to satisfy a grander cultural ambition? The answer seems to have been all of these, made possible by his position as sole final arbiter. The local councillors were appeased when they learned how the collection had appreciated in value.[29] Mason became one of the selectors of sculptors for the Peter Stuyvesant Foundation City Sculpture project, which commissioned new works in six provincial cities and solicited commercial sponsorship for public sculpture in the early 1970s. Much of the sculpture survives, not always in good condition, but many of the collection's paintings and prints were sold in March 2011.

The new schools were accompanied by a rapid expansion in higher education, some of it by the County Council. A university college was founded in Leicester in 1926 and was awarded full university status in 1957, while Loughborough Technical College was founded in 1909 to promote engineering. In the 1950s it was expanded by the County Council, becoming England's pre-eminent College of Advanced Technology before being made a full university in 1966. The County Architect's Department designed many buildings there and in the adjoining College of Education, while the County Education Officer brought in sculpture, so that it shares affinities with the schools programme. The Loughborough College of Art and Design and Leicester School of Art also had a hand in the provision of art in schools. All the Loughborough institutions are now part of the university.

Gazetteer

Primary Schools

¶ **Rolleston Infant School,** Hillsborough Road, Glen Parva, Leicester; Leicestershire County Council Architect's Department, (job architect G. C. Thompson), 1960-62.

Now part of a larger primary school and within the city boundaries in 1966. This was the start of the development of informal plans for Leicestershire, with three groups of classrooms set in 'L'-shaped wings around a central hall, and with each group having a small workspace or library area. The playground features a play sculpture by Austin Wright, *Crocodile*, commissioned in 1961.[30]

¶ **Glenmere County Primary School**, Estoril Avenue, Wigston; Farmer and Dark (job architects John Baron and Alistair Tait), 1963-64.

This was one of six schools designed by Farmer and Dark for Leicestershire. John Barton had worked in 1955-57 on the development of the A75 system with the firm A. H. Anderson Ltd, but though of timber, Glenmere did not use that system, which was based on a grid. Glenmere is circular, and has a steel central drum, ring beam and ties to the hall. The plan comprises a pinwheel centred on a twelve-sided hall, with a ring of classrooms set in pairs behind a practical area and separated by an internal corridor overlooking a courtyard and two glazed links from the hall, and a staffroom and offices at one end. There are timber columns and folded plate roofs, reflected in the building's zig-zag profile with steel trusses to the hall and brick end walls. The school is popular and in excellent condition, with its original glazing and most of its original fittings, including sinks and coathooks in the corridors. *Official Architecture and Planning* described it as having 'the look of a much refined stable companion' to the County Architect's own Oadby Launde school nearby.[31]

Figure 4.99: Classroom at Birstall.
© Elain Harwood.

¶.**Birstall Primary School**, Greengate Lane, Birstall; Peter Moro and Partners (partner in charge Michael Mellish, assisted by Colin Hodson), designed 1962, built 1963-64.

This school is made up of octagons, the largest for the hall, the next largest for the kitchen, and with seven small octagons in two groups gathered round as classrooms. Square linking areas house quiet rooms, lavatories and a cloakroom. The hall has a steel frame, and the roof is lined internally; the other elements are all of brick, with large areas of steel-framed glazing and timber roofs lined with painted wood wool panels. Unfortunately, however, the painted screen in the entrance hall has gone, and there is not quite the elegance of the same architects' Fairlawn School, Lewisham.[32]

¶ **Oadby Launde Infant School**, New Street, Oadby; Leicestershire County Council Architect's Department, 1963-64.

This also has a central hall, this time hexagonal, with three pairs of classrooms set off it. Kitchens, the entrance and offices, and a terrace separate the pairs. Again the construction is timber, with portal half-frames that rise over a clerestorey for the hall and pyramidal roofs for each classroom. Here, however, the classrooms are expressed as a series of pods clad in cheap brick, and there has been some window replacement. It is a less appealing design than Glenmere nearby.[33]

¶ **Eastfield Primary School**, Highway Road, Thurmaston; Ahrends, Burton and Koralek (partner in charge Paul Koralek), 1966-68.

This was ABK's only school in the United Kingdom. It was intended as a junior school, but was changed to a primary for 5-11 year olds during construction. The building is set on a slope, with the entrance at the top of the site with a library next to it, and classrooms set in four pairs round a central courtyard, with the two next to the library added slightly after the rest of the school opened in 1968. A further addition has been made since 2002. Each pair of classrooms shares a work area next to the corridor, in a semi-open layout, and an enclosed quiet area behind the lavatories. To the right steps lead down to an assembly hall-cum-dining area adjoining the kitchen and staff room. By being set into the slope the bulk of the building (not large in any case) is reduced, and being set away from the road it can only really be appreciated from the grounds. It is clad in brick with high sloping windows, stepping down over the entrance, a feature that was to be repeated in later buildings by ABK, notably Koralek's library for Portsmouth Polytechnic, now University. The *Architects' Journal* commented that 'the building is exciting and stimulating to look at. In an almost Victorian way, it is full of odd corners, and surprises, changes of level and view that are calculated to stimulate the imagination of the young.' It is also exquisitely detailed. The impact of the recent addition is unclear, and a play sculpture by Norman Dilworth in the courtyard may not survive.[34]

Figure 4.100: Entrance to Eastfield Primary School, Thurmaston. © Elain Harwood.

¶ **Fairfield Primary School**, Cheshire Drive, Wigston; Leicestershire County Council Architect's Department, c.1968.

This was originally a square box with outdoor areas in three of the corners and a central reading area, but has been much extended.

¶ **Holywell School**, Berkeley Road, Loughborough; Leicestershire County Council Architect's Department with F. K. Hicklin of T. H. Thorpe and Partners, 1967-68.

A large school for over 500 pupils originally arranged as a tessellation of hexagons, with a central library between the junior and infant sections, it was mostly rebuilt after a fire in 1988.[35] Hicklin was previously the county architect at Cornwall.

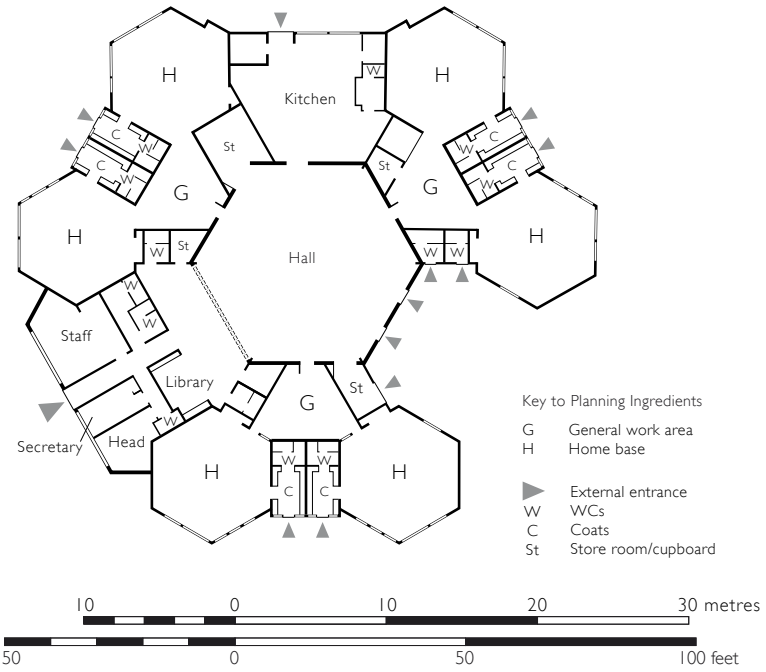


Figure 4.101: Oadby Launde Infant School

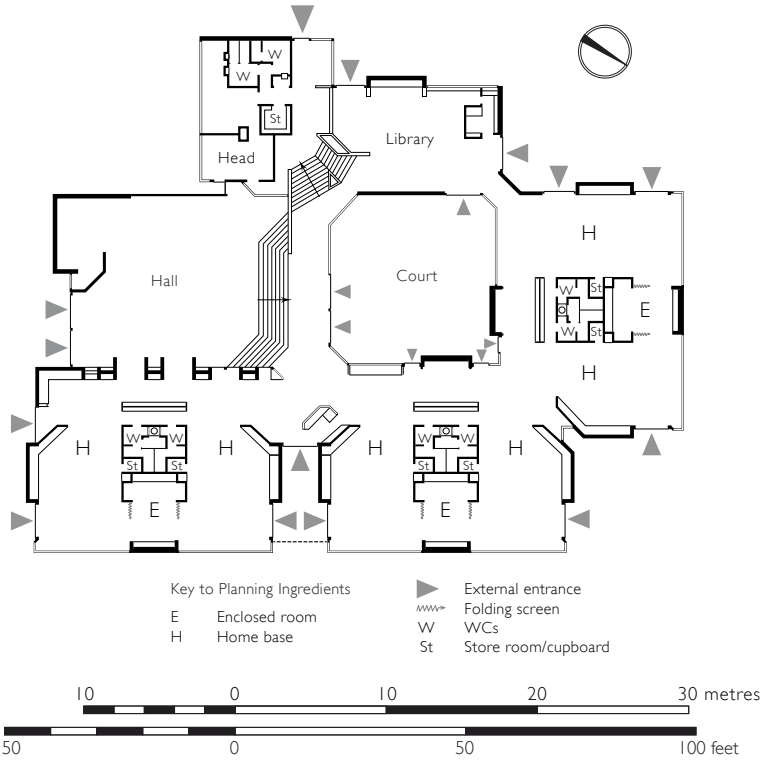


Figure 4.102: Eastfield Primary School, Thurmaston

¶ **Middlefield School** (now Richmond School), Stoke Lane, Hinckley; Leicestershire County Council Architect's Department (job architects E. D. Smith and J.N. Pitts), 1968-70.

This school was designed for juniors between the ages of 8 and 11 on a two-form entry plan. The circular plan form adopted gives a high ratio of internal floor space to external walls and , with the teaching area consisting of eight bases radiating from a central core, the noisy and messy area is concentrated on the perimeter of the building, with verandahs for outdoor work beyond. The quieter zones, the library and studio over, are a focal point in the middle of the school. Sliding, folding partitions between each pair of teaching bases can be drawn back to produce a more open plan when required for group teaching. The building is of steel frame construction with flat roofs of timber joists, wood wool slabs and roofing felt. Fixed walls are of grey sand-lime brick internally, local red bricks without, with timber windows, and carpet for the library, studio and stairs. Some alteration has accompanied the rebuilding of the adjoining infants.[36]

¶ **Rowlatts Hill Primary School**, Balderstone Road, Leicester; Leicestershire County Council Architect's Department, 1976-78.

The open plan is now sub-divided.

¶ **Merrydale Infant School**, Claydon Road, Leicester; Leicestershire County Council Architect's Department, 1978-80.

The open plan is now even more subdivided and extended.

Figure 4.103: Merrydale Infant School, Leicester; Photograph © Elain Harwood.

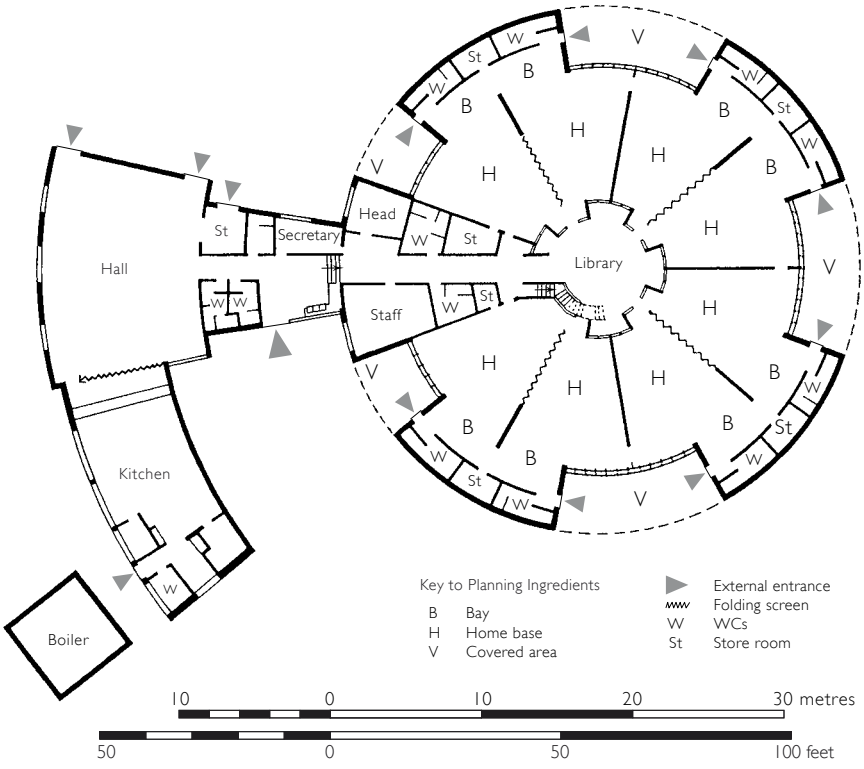


Figure 4.104: Middlefield School, Hinckley.

Upper Schools

¶ **King Edward VII Grammar School** (now King Edward VII College), Warren Hills Road, Coalville; Denis Clarke Hall (assisted by A. Hynes), 1958-62.

This replaced an older building from which a war memorial was retained; it was originally planned as a conventional grammar school for 570 boys and girls. The buildings are set around a split-level courtyard, with an assembly hall and gymnasium on one end. The engineer was the specialist designer of concrete shells, Dr K. Hajnal-Kónyi, an émigré who had worked on the Frankfurt Grossmarkthalle, and the assembly hall has a segmental vault roof, with curtain walling to the classrooms – now renewed to a much heavier section. Extensions and alterations have made the original buildings hard to appreciate; a mural by Anthony Hollaway, commissioned by Mason in 1961, still forms a wall to the walkway across the courtyard, but a stained glass window by Margaret Trehearne in the religious studies room (above the main entrance) has been boarded over and is now only visible from the roof opposite.[37]

¶ Additions to **Rawlins College** (now Rawlins Community College), Loughborough Road, Quorn; Gollins Melvin Ward and Partners, 1967.

This was an adaption of a former girls' school on an ancient foundation. The modest new buildings of concrete block included an open-plan design centre, science area, library and hall.[38]

¶ **Bosworth College,** Leicester Lane, Desford; Gollins Melvin Ward and Partners, 1967-69.

Dixie Grammar School, Market Bosworth, an establishment of medieval origins, was in 1969 the last grammar school in Leicestershire to go comprehensive, when a high school and upper school were built on separate sites, and the old building of 1828 put to new uses. The plan of the upper school, for up to 1,400 pupils aged 14 to 18, was determined by the curriculum, which concentrated on general humanities and scientific courses, requiring large teaching areas, and an exceptionally wide range of design and crafts courses - ranging from metalwork to photography to town planning – occupied one of the first open-plan design centres in the country; drama as well as physical education also formed part of the curriculum. Near the entrance and the humanities block, i.e. at the heart of the plan, is the resources centre, called that rather than a library from the first.

At the centre of the college is a large sculpture by Bernard Schottlander, *3B Series No.2*, of 1968 (purchased in 1969), whose black frame contrasts boldly with the red brickwork of the building. Its sister piece, *3B Series No.1*, painted red, sits in a similar position in the middle of Warwick University. By the entrance, embedded in the asphalt, is Bryan Kneale's *Avila*, created in 1975 and purchased in 1976. There is also a small piece next to reception by Barbara Hepworth, *Coré*, from 1955-56, which was originally loaned by her to Dixie Grammar School, but which was then bought by Leicestershire County Council. Inside, *Four Rings* by Austin Wright of 1966 is set on a pedestal.[39]

Figure 4.105: 1967 library at Rawlins College, Quorn, one of several additions by Gollins Melvin Ward and Partners. Photograph © Elain Harwood.

Figure 4.106: Bosworth College, Desford. Photograph by Mike Williams – English Heritage; FF003532.

¶ **Countesthorpe College**, Winchester Road, Countesthorpe; Farmer and Dark (partner in charge John Barton and assistant architect Donald MacEwan), 1967-70.

Countesthorpe brought the wheel-like plan of some of the primaries to a secondary scale, still at one storey, with a resources centre and courtyard at the centre. One segment of the circle was dedicated to adults, the sixth form and youth work, set next to the large arts and crafts area lit by north-facing rooflights. Maths and science have a deeper section but not as broad a one. There is no assembly hall as such, but halls for drama, music and physical education are grouped close to the entrance so they can be easily reached by the public. The school was built to accompany a high school on an adjoining site with which it shares sports facilities. The building is extremely modest in its construction and elevations, being single-storey, clad in brick and with rooflights providing the only drama.

The interest is the plan, which is the ultimate example of Leicestershire's programme.

The circular courtyard at the centre of the complex is paved in a circular pattern, and right in the middle is Dunstable Reel by Philip King, recently repainted in yellow and pink rather than yellow and purple. The sculpture was purchased in 1970. King described its siting as 'one of the most successful settings of any of my works'. It is one of an edition of three, the others being held by the Tate Gallery, London, and National Gallery of Australia in Canberra. William Pye's *Broken Curve* from 1966 is a small sculpture in the entrance hall, also acquired by Mason in 1970.

The first head, Tim McMullen, ex-director of the Nuffield Resources for Learning project, introduced a radical policy for Countesthorpe on its opening, whereby students were encouraged to learn self discipline and were permitted to call teacher by their Christian names and had a say in the running of the school and its curriculum.[40]

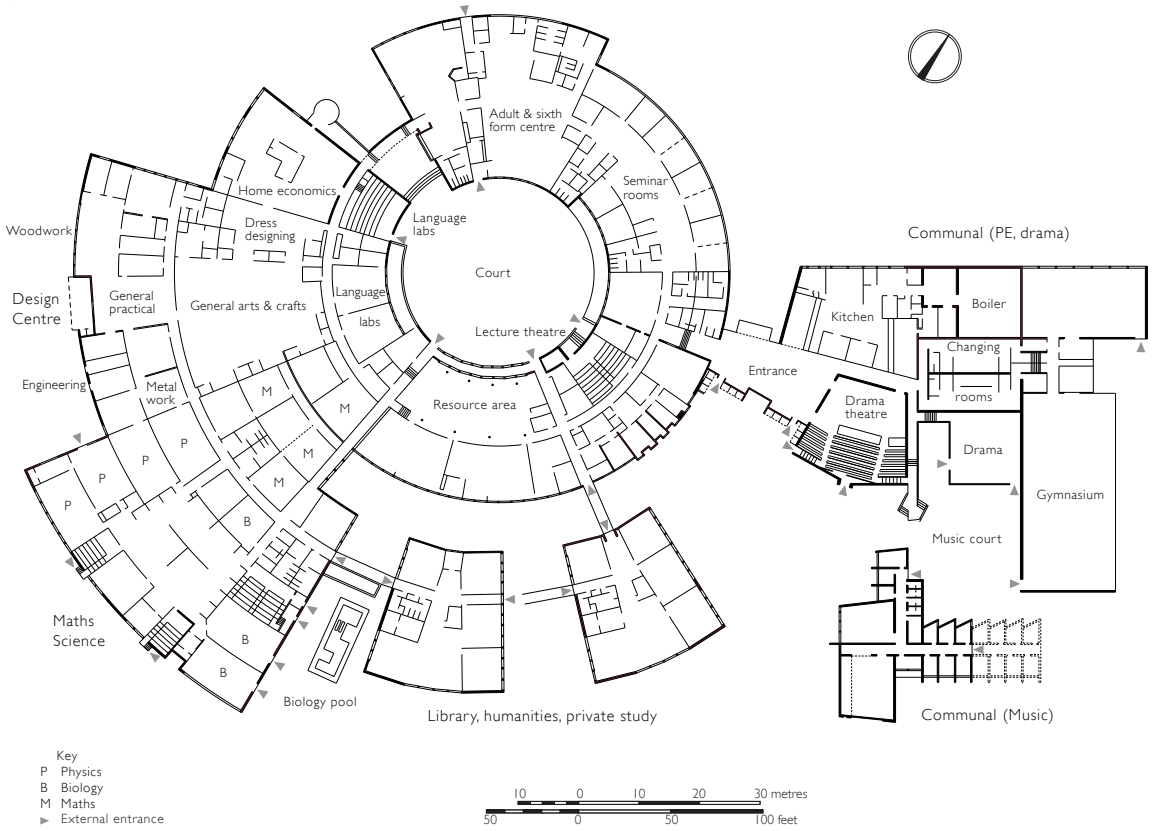


Figure 4.107: Countesthorpe College; Farmer and Dark, 1967-70.

Figure 4.108: Countesthorpe College. OPhotograph by Mike Williams – English Heritage; FF003548.

Figure 4.109: A 1997 view of the Resource Area at Countesthorpe, overlooking the circular courtyard to the right. Photograph by Mike Williams – English Heritage; FF003549.

¶ **Wreake Valley College**, Parkstone Road, Syston; Gollins Melvin Ward and Partners (partners in charge W. R. Headley and R. J. Mayes, assisted by A. E. Trickey, P. E. Hilton and T. G. Brown), designed 1966-67, built 1969-71.

For 1440 children. This is a rather different design from the other two wholly new colleges, in that it is stacked on several layers, with the auditorium at the centre and two-storey library and resource centre on top, surrounded by classrooms, and single-storey areas for science, arts and crafts and the sixth form around it. There is a drama studio next to the larger auditorium. The compact plan is a response to the poor ground conditions, whether through coal or gravel extraction is unclear, and the building was over-engineered in anticipation of being a storey higher. The open-plan single-storey science and crafts area are comparable with those in the other colleges, lit from above and from a central sculpture court.

The appearance is still more striking, unlike the other colleges, a steel-framed structure of elephantine appearance with canted walls clad in white tiles, concrete panels and few windows to the outside, and contrasting grey brick cladding and patent glazing to the sixth-form area. Richard Padovan, writing in the *Architectural Review*, described its appearance in its typical East Midlands suburbia as 'a monumental building amid so much democratic drabness, it gives an immediate feeling of uplift and anticipation: a sense that life is an adventure', and later in the same article as a 'major public building, open to all and owned by all – the socialist cathedral'. The contrast between the dark auditorium, and the bright resource areas is only outclassed in drama by the pyramidal, dark boiler flue that rears behind the main block. Again, in contrast to the other major colleges, there is no major work of sculpture here.[41]

Figure 4.110: The library at Wreake Valley College. Photograph © Elain Harwood.

¶ **Hind Leys College**, Forest Street, Shepshed; Leicestershire County Council Architect's Department, 1974-76.

The adjoining secondary modern school built in 1957 using the Intergrid system became a high school, and this became the upper school. It is a sleek glass box with a copper roof, to a deep plan with clerestories; brick construction is used for the adult's wing and sports centre.[42]

ENDNOTES

1. Jones 1988, 34.
2. Mason 1967, 30; Cavanagh and Yarrington 2000, 9-12.
3. Cited in Jones 1988,129.
4. Mason 1970.
5. *Architects' Journal*. vol.134, no.19, 8 November 1961, p.892.
6. *The Builder*, vol.206, no.6317, 12 June 1964, pp.1229-30.
7. *Builder*, vol.209, no.6387, 15 October 1965, pp.815-16; *Wood*, vol.33, no.5, May 1968, pp.21-4; *Concrete and Constructional Engineering*, vol.57, no.2, February 1962, pp.79-81; *Builder*, vol.206, no.6317, 12 June 1965, pp.1229-30.
8. *Architect and Building News*, vol.226, no.51, 16 December 1964, pp.1163-8.
9. *Builder*, vol.207, no.6326, 14 August 1964, p.325; *Official Architecture and Planning*, vol.28, no.4, April 1965, pp.525-7.
10. *Architecture East Midlands*, no.23, March-April 1969, pp.36-8; *Building*, vol.219, no.6635, 17 July 1970, pp.66-8.
11. *Architecture d'Aujourd'hui*, no.154, February-March 1971, pp.46-7.
12. *Cuadernos de Arquitectura y Urbanismo*, no.89, May/June 1972, pp.50-5; Mason, 1970, 10-12.
13. Seaborne 1968, 209; Jones 1988, 35.
14. Rimmington 1984, 4.
15. *Builder*, vol.204, no.6244, 18 January 1963, pp.113-16.
16. Mason 1964.
17. Cited in Jones 1988, 56.
18. Pedley 1955,23-4, 8.
19. Jones 1988, 137, reporting an interview with Mason.
20. 'Classroom Consumers: the moulding of a design public', *Design*, no.217, pp.12-23.
21. Wix and Keil 1992.
22. Jones, *op.cit*., pp.142-4.
23. Watts 1977, 17, 38.
24. Aldous 1974, 114-19.
25. Pearson 1971,
26. Cavanagh and Yarrington 2000, 189.
27. Cavanagh and Yarrington 2000, 191
28. Cork, R. in Rosenberg 1992, 24; Cavanagh and Yarrington 2000, 35-6.
29. Jones 1988, 80-93.
30. *Architects' Journal*, 2 May 1962, pp.961-68; Mason 1970,.4-6; Cavanagh and Yarrington 2000, 53-4.
31. *Builder*, vol.209, no.6387, 15 October 1965, pp.815-16; *Official Architecture and Planning*, vol.28, no.9, September 1965, pp.521-3; *Wood*, vol.33, no.5, May 1968, pp.21-4.
32. *Architect and Building News*, vol.226, no.51, 16 December 1964, pp.1163-8.
33. *Official Architecture and Planning*, vol.28, no.4, April 1965, pp.521-3.
34. *Architects' Journal*, vol.150, no.44, 29 October 1969, pp.1081-92; Ahrends Burton and Koralek 1991, 52-3; Powell 2012, 39-40.
35. *Architecture East Midlands*, no.23, March-April 1969, pp.36-8.
36. *Building*, vol.219, no.6635, 17 July 1970, pp.66-8.
37. *Builder*, vol.145, no.6023, 5 September 1958, pp.390-1; *Builder*, vol.214, no.6244, 18 January 1963, pp.113-15; *Architects' Journal*, vol.137, no.4, 23 January 1963, p.173; Cavanagh and Yarrington, 2000, 32-4.
38. Wix & Keil 1992.
39. *Building Design*, no.94, 24 March 1972, pp.12-13; *Architecture East Midlands*, no.43, July-August 1972, pp.25-7; Rogers 1980, 65-84; Rosenberg 1992, 42-3; Aldous 1974, 102-3; Cavanagh and Yarrington 2000, 37-40.
40. *Building Design*, no.31, 16 October 1970, p.4; *Architecture East Midlands*, no.34, January/ February 1971, pp.35-7; *Architects' Journal*, vol.154, no.35, 1 September 1971, pp.462-4; Cavanagh and Yarrington 2000, 34-6.
41. 'Syston Pyramid', *Architectural Review*, vol.152, no.905, July 1972, pp.5-15; *Architecture East Midlands*, no.43, July-August 1972, pp.43-5; *Architecture d'Aujourd'hui*, vol.45, no.166, March-April 1973, pp.61-2; *Interior Design*, June 1973, pp.398-9; *Architects' Journal*, vol.161, no.9, 26 February 1975, p.439; *Architect* (London), vol.121, no.4, June 1975, pp.19-27; *Glass Age*, vol.18, no.3, August 1975, pp.26-8.
42. Pevsner & Williamson 1984, 377.

BUCKINGHAMSHIRE

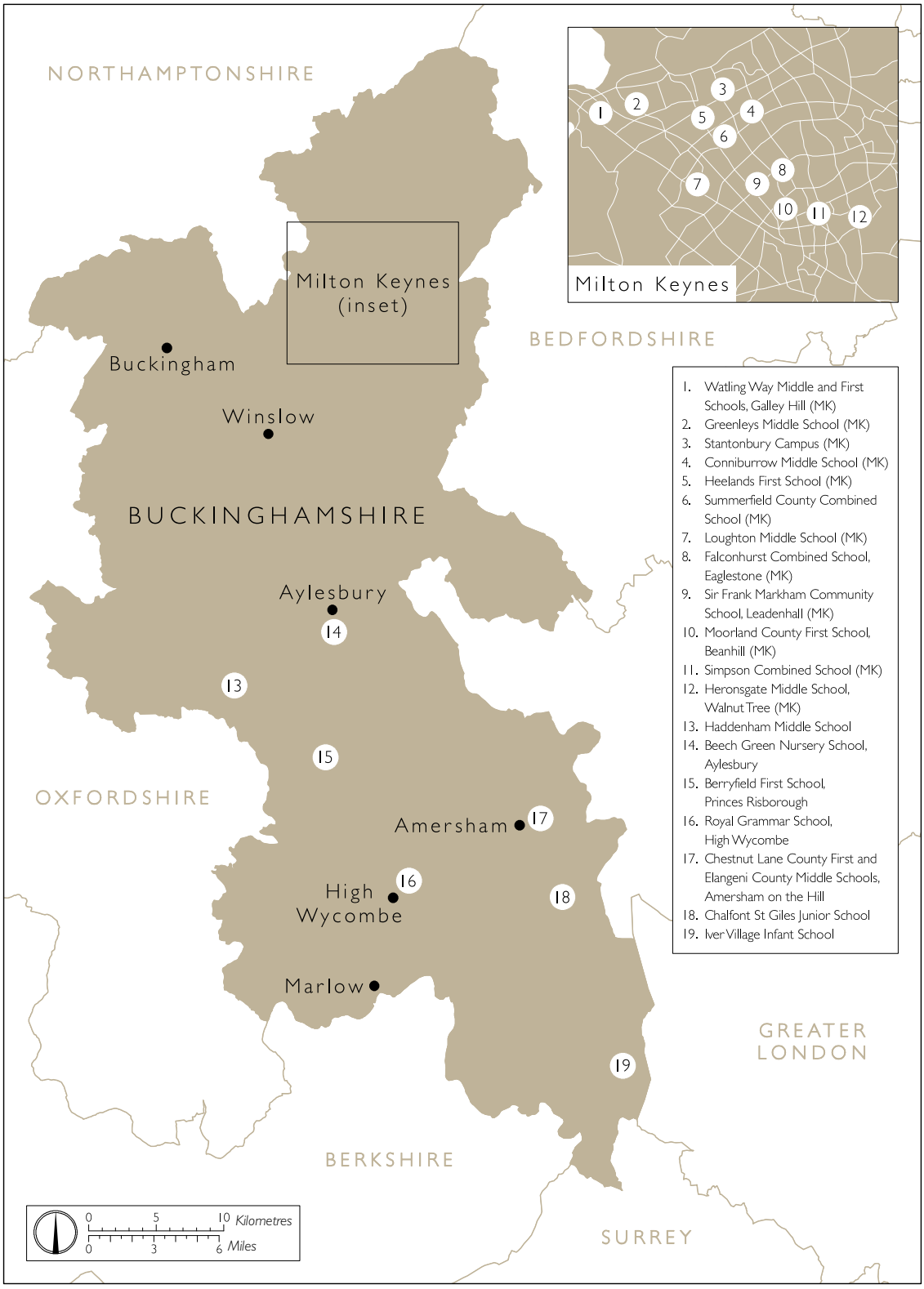


Figure 4.111: Buckinghamshire: location of gazetteer entries.

Buckinghamshire

The figure of Fred Pooley, Buckinghamshire County Architect from 1954 to 1974, looms large as the biggest single influence on the post-war schools of that county. Pooley came from Coventry where, as Donald Gibson's deputy from 1951-54 he gained knowledge of industrialised building techniques and the machinations of local government. Guy Oddie, who worked under Pooley at Coventry averred that he, like Gibson with whom he shared an office, was 'not an architect but a conspirator'.[1] But any hint of calculation was hid beneath an exterior as genial and tactful as the buildings designed under him: Terry Bendixson recalls 'a purring, tweedy, aitch-dropping teddy-bear of a man' (fig. 4.112).[2]

In Bucks, Pooley found a county with, as Andrew Saint put it, 'population growth second only to Herts, an ingrained conservative educational tradition, and thriving brick-making industries. He wanted to see if his school-building programme could reconcile these factors'.[3] Above all else, Pooley is remembered for 'rationalised traditional' construction: in short, calculated load-bearing brick walls with pitched tile roofs, arranged so as to facilitate—not hinder—new ways of learning.[4] Yet Pooley, always the pragmatist, neither introduced loadbearing brick to the schools of Buckinghamshire nor pursued them to the exclusion of frame construction, as a glance at the secondary school and technical colleges of the 1950s and '60s shows.

Pooley restructured the large architect's department into two studios each run by Assistant County Architects and comprising several small practice groups.[5] Group leaders and sometimes job architects were often credited for their schemes.[6] At its peak, the Department was 300 strong and occupied three floors of the monumental County Hall in Aylesbury, nicknamed 'Fred's fort' (fig. 4.114).[7] It is telling that his successor Paul Markcrow (County Architect 1974-90) retained both the administrative structure and friendly yet assured architecture that had become Pooley's trademark. From the late 1970s the Bucks team gradually thinned out, as most public offices did, until in 1998, County Architect John Stewart moved to consultants Babtie with a fixed-term contract and a 50-strong team of designers.[8]

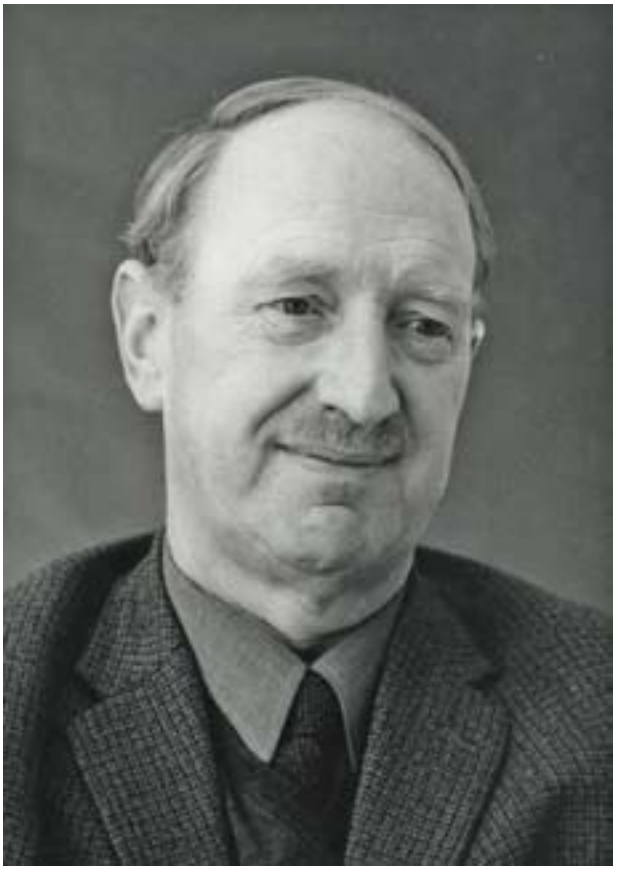


Fig 4.112: A portrait photograph of Fred Pooley (1916-98), kindly supplied by Bill Berrett.

The Department was sustained throughout the lean years of the mid-1970s to the mid-1990s by a project unique in scale and ambition, and exceptional also in the fact that in built form it had little to do with Pooley: Milton Keynes.[9]

Primary Schools

As in many other authorities, the influence of the post-war Hertfordshire primary schools can be divined. Naphill Primary School of 1961, for example, is clearly based on Morgans Walk School, Hertford and Roebuck Primary School, Stevenage, both written up in early Building Bulletins.[10] Edmund Charles Tory had worked first at Hertfordshire then at Coventry, where he was one of the job architects for Limbrick Wood.[11] Pooley, then deputy architect at Coventry, may have had knowledge of this project; in any case he brought Tory with him when he moved to Buckinghamshire. John Barker, who as leader of Coventry's School's Group was instrumental in the formation of CLASP (page

Fig 4.113 (left): (from left) Bill Berrett, Tse-Chiu Ng and Paul Markcrow poring over a plan of North Buckinghamshire New City in the basement of the old County Hall in Aylesbury in 1963. The plan, developed under Pooley, was subsequently abandoned, and the present Milton Keynes masterplan drawn up by planning consultants Llewelyn-Davies, Weeks, Forestier-Walker and Bor. Markcrow became Pooley's successor and Chui Ng led the studio responsible for many of Milton Keynes's key civic buildings. Photograph kindly supplied by Bill Berrett.

Figure 4.114 (right) : County Hall, Aylesbury, built in 1963-66 to the designs of Malcolm Dean with Malcolm Last and Martin Jones. A suprisingly assertive design in the genteel surroundings of Aylesbury, and one which contrasts with the homely, vernacular idiom often associated with the Department (P5925019).

125), served as Pooley's Deputy from 1957 to 1960.[12] His successor Dick Paul was another Herts man.[13] Such links may go some way to explaining how school design was shaken up in Buckinghamshire.

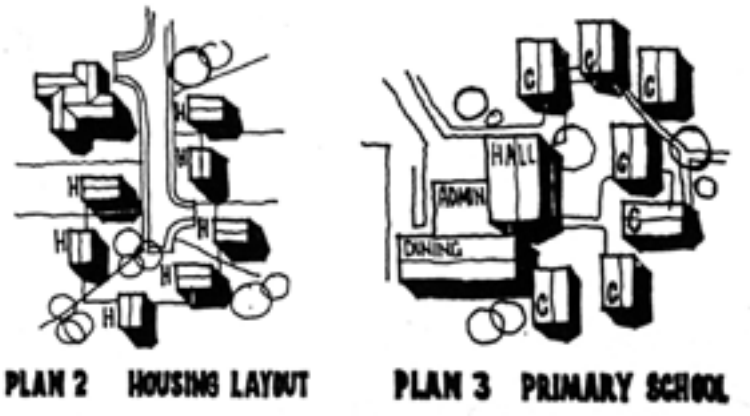


Figure 4.115: The influence of housing plans on schools. An early 1960s illustration prepared as part of the North Bucks New Town *study, kindly supplied by Bill Berrett.*

Bucks went one step further and virtually eliminated internal circulation at Gravel Hill Primary School, Chalfont St Peter of 1962-63 and **Chalfont St Giles Junior School** of 1964-66.[14] Here a series of square pavilion classrooms with pyramidal roofs recall the open-air schools.[15] Pooley compared the cost of such a layout to a small housing estate of bungalows: 'I never understood why we paid so much more for our school buildings than for housing' (fig. 4.115).[16] He observed of its outdoor circulation 'we tend to molly-coddle our children and the open-air does them no harm'.[17] 'Bungalow planning' was next applied to the High Wycombe Secondary Modern School of 1963-64.[18] Later, the pavilions were linked by covered ways and flat-roofed corridors: a legible example is the Lakes First and Middle Schools, Water Eaton, designed in 1967 for a GLC overspill estate.[19] Even when layouts were further compressed under inflationary pressure, teaching spaces were still separately roofed (qv **Conniburrow Middle School** in Milton Keynes). The plan was thus articulated, in contrast to the continuous flat or pitched roofs widely adopted elsewhere to keep costs down.

But it was another MoE development project—Woodside School, Amersham of 1956-57—which shook up primary school design in Bucks (page 71). Andrew Saint suggests that the collaboration was initiated by Pooley, who knew Stirrat Johnson-Marshall, the Ministry's chief architect.[20] So impressed was Buckinghamshire with the Amersham school that they built at least two copies, and elements of the design were plundered for many years to come, much to the bemusement of its architects.[21] More significantly, it was the stimulus for Buckinghamshire to rethink primary school planning as a sequence of specialised spaces, varying according to group age, size and activity. Areas were set aside for messy practical work, crafts, art and basic science. Pooley's team boiled down these ideas to a basic planning unit of paired classrooms sharing small practical and quiet areas with attached cloakrooms and WCs. Buildings could be planned from different configurations of these elements, speeding up the process of design without resort to predetermined models. Early iterations are **Berryfield First School** in Princes Risborough and **Chestnut Lane County First** and **Elangeni County Middle Schools** in Amersham, but the pairing of classrooms survived into the 1980s (qv **Heronsgate Middle School** in Milton Keynes).

In 1973, in line with the recommendations of the Plowden report, Buckinghamshire implemented a reorganisation plan based on first schools for the 5-8 age range and middle schools for pupils aged 8-12.[22] The middle schools resembled junior schools with the addition of specialist teaching areas such as science, music, craft and food technology.[23] Often first and middle schools would share the same site, so that transfer would be less disruptive and facilities could be shared. Combined schools for ages 5-12 were found useful in areas of low population density and later when the effects of a low birth rate were felt. The flexibility was found useful at Milton Keynes, where a building designed as a middle school would spend its first few years as a combined school. As catchment areas were built up, one or two feeder first schools could be built, allowing the designation of the middle school.[24]

The Bucks architects provided a variety of spaces to suit different teaching styles.[25] The most frequent compromise took the form of small classrooms clustered around shared group areas. In the 1970s plans became deeper and the shared practical areas increased in size and were eventually linked up. Progressive planning was encouraged above all at the new Milton Keynes schools which, as the Senior Education Officer recognised, attracted a crop of young, dynamic teachers 'more than willing to cooperate with each other.[…] There was certainly this ethos in education during the 1970s and '80s - a tremendous feeling of collaboration between the schools.'[26] Some of this new breed of child-centred teachers had been educated at Newland Park Training College in the south of the county. Primary heads were usually appointed a term or two before the new school opened (and secondary heads a year in advance), and could be consulted on last-minute details and teething troubles.[27]

The architects settled on a spine plan based on a wide, top-lit internal street, often facetted or angled to break up lines of sight and to disperse noise. The curved forms could enclose grassy play areas. The first attempt seems to **Falconhurst Combined School** in Milton Keynes, designed *c.*1975, and followed by **Iver Village Infant School**, **Summerfield County Combined School**, **Loughton Middle School** and **Heronsgate Middle School**, the latter three in Milton Keynes. The shared area could be given over to cooperative teaching or practical work with small groups. A split-pitched section was often contrived to provide top lighting and cross ventilation. The street worked in combination with a row of small, enclosed home bases, much valued by traditionally-minded teachers. Enclosed and sound-proof rooms were provided for noisy and messy activities.

Infant school and areas were provided with smaller home bases and larger shared areas to permit more flexible combinations of pupil groups.[28] The architectural possibilities were exploited above all by John Stewart, who commented on his Glastonbury Thorn First School, Milton Keynes of 1992-93 (fig. 4.116):

> 'The home bases are deliberately undersized so that they cannot be used as conventional classrooms. In that sense it is quite deterministic. The idea was that the children would have a secure space to arrive at in the morning, make their first contact with the teacher, and from there, venture out into the open area, where most of their time would be spent'.[29]

Figure 4.116: Glastonbury Thorn First School, Milton Keynes; Buckinghamshire County Council Architect's Department, 1992-93. Photograph kindly supplied by John Stewart.

Such a move bucked national trends such as the more formal, subject-based emphasis codified by the National Curriculum. Yet James Parke, then Senior Education Officer, confirms that these aspects of the school-building programme were never challenged by councillors.[30]

Secondary Schools

The reform of secondary education was never going to be straightforward in Buckinghamshire, a conservative county with a tradition of grammar school education. In response to Circular 10/65 (pages 44-45), the Council submitted a half-hearted reorganisation plan that pledged to built comprehensive schools provided that they 'not prejudice the continuance of any existing selective secondary school'.[31] In essence, a two-tier system comprising grammar and secondary modern schools (the latter termed upper schools as secondary modern was felt to be pejorative) was retained.[32] Buckinghamshire County Council defied the government by voting against comprehensives in 1975. By then political favour was already swinging back in their favour. The exception was the Milton Keynes educational division, where a comprehensive education system was implemented alongside the two-tier structure operating in the rest of the county.[33]

The secondary schools built in the late 1950s and early 1960s were influenced by the loose, low planning pioneered by the MoE development projects and at Coventry's comprehensives, which Pooley would have been aware of. Leon Secondary School, Bletchley, designed in 1967, sprawls in a similar way. Extensive additions were made to existing grammar schools at **Royal Grammar School**, High Wycombe in 1959-63, the Radcliffe School, Wolverton in 1960 and the Royal Latin School in 1963. From the early 1960s, secondary schools were planned as a campus of freestanding buildings, an open-ended approach which anticipated later additions and reorganisations (fig. 4.117). This can be seen at Cressex School (*c.*1965), Amersham School, **Stantonbury Campus** in Milton Keynes (first phase 1973-75), St Paul's Catholic School (part of the Woughton Campus

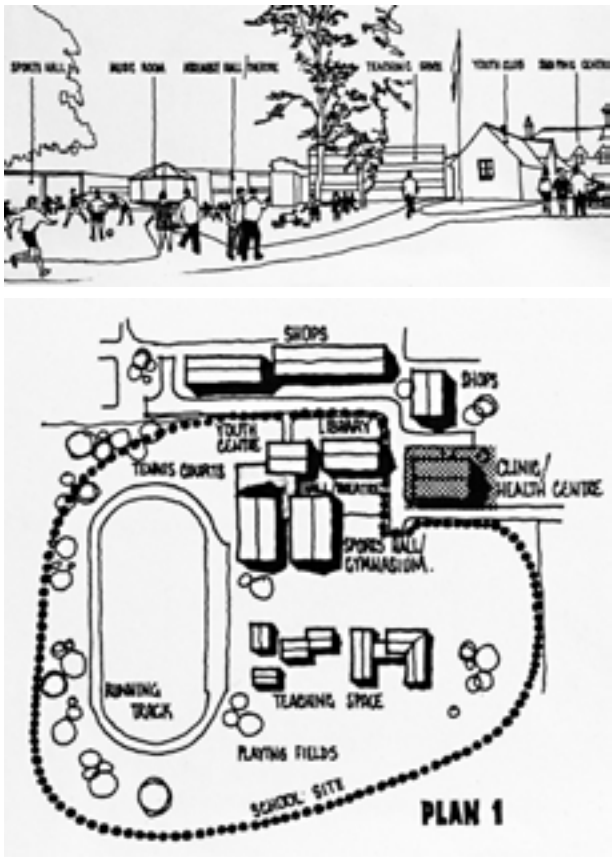


Figure 4.117: Another early 1960s presentation drawing for the North Bucks New Town *study, showing a secondary school with shared community facilities, located near shops and clinics. This influenced the Milton Keynes educational campuses of the following decades. Image kindly supplied by Bill Berrett.*

at Milton Keynes) and Derek Walker's *c.*1985 masterplan for the Gyosei International School at Willan Park.

Under Chief Education Officer Roy Harding, Buckinghamshire cooperated with the urban districts and local boroughs to enhance school provision for wider use, providing community annexes or youth clubs at rural primary and secondary schools from the late 1950s.[34] An unusual arrangement was developed at **Iver Village Infant School**, where councillors had the idea of combining the school, a village hall, public library and Baptist chapel within a single range.[35] Milton Keynes Development Corporation (MKDC) sometimes provided supplementary funding for community facilities, from stores for evening classes using primary schools to the joint provision of recreational centres at the Stantonbury and Woughton educational campuses, which supplemented the community facilities provided by the local centres.[36]

Schools in Milton Keynes

Falling rolls and the loss of Slough to Berkshire with local government reorganisation in 1974 necessitated a programme of rationalisation, and by the end of the decade a rolling programme of closures and amalgamations operated in the south of the county, as it did at most other Authorities.[37] This trend was countered by a significant capital building programme in Milton Keynes which gathered pace from the mid-1970s. Around 40 primary schools, five secondary schools and five special schools had been completed by 1995, which almost exactly matched the number of closures during the same period.[38]

The Milton Keynes Development Corporation was charged with implementing the 1970 masterplan, housing, local centres, industrial units and office accommodation. But the bulk of the public building programme, including schools, remained in the hands of Buckinghamshire and a constant dialogue was necessary between the Senior Education Officers and MKDC as 'developers' to allocate sufficient school places for the forthcoming housing developments. Their demographic forecasts were complicated

by the diverse backgrounds of incoming children and considerable 'intra' movement of upwardly mobile families within a buoyant local economy.[39]

The size of the schools and the location of their sites was determined in consultation with the Development Corporation. [40] With the release of each grid square typically came a brief for a first school (for ages 5-8) and a middle school (8-12), preferably on a single site, and sometimes serving two adjacent grid squares. At Neath Hill and Gifford Park the schools were conceived as an integral part of the village-like 'local centre' of community facilities provided for each grid square. The urban conception, advanced in the 1969 masterplan, of outward-facing centres forming a frontage to the grid squares was essentially overturned by fundamental revisions to the road system and principally the decision to increase the speed limit from 20 to 70mph. The planning implications of this were drastic and pushed the local centres into the middle of the development parcels, a location which incidentally suited the low key, vernacular idiom of the Bucks schools.[41] Secondary schools, of course, served a much larger catchment area. Pooley's 1962-64 plan for North Buckinghamshire New City envisaged two or three educational campuses, each combining as many secondary schools with community facilities. The strategy was realised at the Stantonbury and Woughton Campuses, but as birth rates fell the campus approach was substituted by smaller, isolated secondaries of 1,000-1,200 places.[42]

Construction and 'Rat. Trad.'

The use of load-bearing brick had been pursued by Pooley's predecessor F.A.C. Maunder (Architect to the Council 1946-53) at a number of mildly Scandinavian primary schools reminiscent of C.G. Stillman's work at West Sussex and Middlesex.[43] Although Pooley's name is now synonymous with traditional construction in local brick, his initial years at Buckinghamshire were spent 'dabbling with proprietary systems', as one of his architects later put it.[44] The pre-stressed concrete Inter-grid system designed by the Ministry of Education Development Group was employed at a number of secondary schools, the first of them Langley Grammar School, Slough, completed 1956.[45]

The need to build quickly led to a degree of structural experiment and eclecticism, usually in the form of a 'mix and match' approach, with steel or timber curtain walling, load-bearing brick and reinforced concrete construction combined in a series of secondary schools of the late 1950s. These adopted a vaguely Miesian mixture of flat roofs, brick end walls and spandrel panels below glazing. An early example is Misbourne County Secondary, Great Missenden, built in only six months in 1955, using load-bearing brick with a steel-framed assembly hall. Pooley also farmed out Wycombe High School for Girls to Denis Clarke Hall, built in 1955-56 on a steel frame with coloured spandrel panels. Job architect Malcolm Dean chose an exposed reinforced concrete frame system for **Royal Grammar School**, High Wycombe of 1961-63, and David Aylett's Leon Secondary School, Bletchley of 1967 sported pre-cast concrete panels.[46]

Pooley came to regret the blandness and poor weathering qualities of light and dry construction (or 'slick-click', as he liked to call it) and felt his way towards a hard-wearing, brick-based approach.[47] Pooley realised that he could build durably and economically by

exploiting Buckinghamshire's traditional crafts and industries: the brick works, tileries, joiners and small but skilled firms of builders. It was claimed that using handmade bricks added a mere one percent to the cost of a building, whilst adding a richness and durability to exteriors.[48] The MoE's Woodside School in Amersham (page 71) provided a local example of the technique. Planning modules were based on brick dimensions.[49] His department developed considerable expertise in building with bricks and relationships built up with regional and national suppliers. Some companies would fire special batches; others would prepare sample panels with different colours, pointing, joint widths and so on. The foreman would be instructed to mix up bricks from different pallets to the minimise variations in colour caused by kiln firing. Dozens of square metres of brickwork that did not meet their high standards were pulled down.[50]

By widening the field of contractors to include small local builders and suppliers, Pooley benefited from competitive prices, especially welcome in periods of high inflation. And 'costs-in-use'—the running and maintenance costs often overlooked in cost planning—were far lower than the light and dry schools, a fact appreciated by Bucks caretakers to this day. By refining the process as well as the product, Pooley won the confidence of the Buckinghamshire Education Department, and schemes would be signed off by the education officer rather than being put before the education committee.[51] By keeping well within the cost limits and being able to point to the Ministry's own examples, Pooley could boast with some pride that he had escaped being rounded up into a system-building consortium.[52] Bucks was not the only white space in the consortia map, as it was sometimes claimed, but it became the infamous one.

Styles and Influences

Bucks 'rat trad' was well placed to respond to the realignment of architectural values towards contextual and latterly populist approaches that took place from the mid-1960s.[53] Pooley called for more attention to be paid to exterior design: 'the outsides of our buildings are less liable to change than the insides […] so to my mind it is important to get them right'.[54] The watchword was low-key, traditional buildings within a rural setting: Pooley presciently observed 'brick walls and pitched roofs produce an indigenous architecture in Britain which most people will appreciate'.[55] **Chestnut Lane First School** and **Elangeni Middle School** show a sensitively to the woody suburbia of Amersham. The idiom suited additions to historical sites, such as Brian Andrew's Wendover House School of 1967 which adjoined a manor house of the 1870s. All this anticipated the vernacular revival of the 1970s but without resorting to mannered or arbitrary historicism.

The 'unwritten rule' of brick and tile, at least for primary schools, proved a surprisingly flexible framework within which a wide range of idioms could be freely expressed.[56] The departmental house style of the 1950s usually involved low-pitched or flat roofs with generous eaves and white fascia boards.[57] In the early 1960s, Dick Paul, Pooley's Deputy and a Hertfordshire schools veteran, introduced a more homely look for primary schools, subsequently developed by Ron Walker, Paul Markcrow, Brian Andrew and John Sexton.[58] It was based on steeper-pitched roofs, clipped eaves, stained softwood frames (first black, later red and green) and shiplap weatherboarding, often over brick plinths

(fig. 4.118). Many of these motifs were derived from Bucks vernacular buildings, as was a project in itself influential: David Dry and Katharina Halasz's farm buildings of *c*.1962 at Fulmer in the south of the county.[59] Inside were internal fair-faced bricks (sometimes

Figure 4.118: Additions of 1967 to the Wendover House Special School. Job architect Brian Andrew. © Mehdi Ali Abidi.

Fig.4.119: Priory Common First School, Bradwell, Milton Keynes; Buckinghamshire County Council Architect's Department, 1983. © Mehdi Ali Abidi.

painted), exposed trussed rafters or a boarded ceiling, and carpets, elements later seen at Hampshire under Colin Stansfield Smith (pages 280-81).

The Bucks vernacular freely mingled with the influence of Scandinavian humanism, particularly long-lived and pervasive in Bucks. Aalto, Jacobsen and the intimate, enclosed brick housing of Utzon were most admired.[60] A coach-load of Buckinghamshire architects even made a pilgrimage to Denmark in the 1970s; the timber cladding, quarry tiles and slender vertical glazing of Jørgen Bo and Wilhelm Wohlert's Louisiana Museum of Modern Art at Humlebaek had long provided a rich sourcebook of details. Later Scandinavian design came in modified form to Milton Keynes, thanks to the free hand enjoyed by MKDC in commissioning private architects such as Ralph Erskine to design the Eaglestone grid, built in 1972-75, and Henning-Larsen's housing of 1976-81 at Heelands.

The best examples of this Bucks style were those one-off jobs which enjoyed both a rural setting and a generous budget, such as Ron Walker's Green Park Training Centre, Aston Clinton of 1962-64, John Sexton's Newland Park College of Further Education, Chalfont St Giles, of 1967-73, and a series of branch libraries designed by Ron Walker with Derek Turner.[61] These projects themselves became sources of influence on the work of the Department in the 1970s, as was the architecture of Aldington Craig & Collinge, based at nearby Haddenham where many members of the Department lived. The output of this practice, along with Robert Maguire, Edward Cullinan and Richard MacCormac, was labelled by the *Architectural Review* in 1983 as 'romantic pragmatism', a tag that could equally apply to the Buckinghamshire approach.[62] To some degree this was anticipated by Pooley himself, who in 1968 speculated, 'I sometimes think that we have taken functionalism too far and that we might in the future see a mild romantic revival.'[63]

The division of labour between the architects of Buckinghamshire and MKDC initially resulted in an uneasy mix of aesthetics and ideologies. The early housing commissioned by MKDC chief architect Derek Walker comprised rows of system-built, flat-roofed terraces whose formal severity was in stark contrast with their informally-composed brick and tile schools, designed by the Buckinghamshire Architect's Department. But as the pace of building slowed in the second half of the 1970s, the offices converged into a more relaxed, pluralist approach. Under Wayland Tunley and Trevor Denton the MKDC evolved richer, more picturesque and diverse idioms, often realised in warm facing brick: Housing at Neath Hill of 1974 is perhaps the earliest example. And the studio responsible for the MK schools, led by Tse-Chiu Ng, developed greater formal ambition, including a penchant for axial planning, perhaps in response to MK's grid plan. There was both compromise and cooperation with MKDC planners over matters of detailing and colour, and by the mid-1980s the design of schools such as Giffard Park and Willan was closely co-ordinated with the housing and local centres.[64]

The biggest influence on the character of the MK schools of the 1980s was John Stewart, a young architect in Chiu Ng's team. Stewart set about exploring the architectural potential of a linear, open-plan teaching area, whilst injecting colour, boldness and a degree of knowing playfulness into the brick and tile formula. His **Summerfield School**, to take a single example, is aligned with one of the field boundaries that were obliterated by the MK grid, referencing the history of the site in a manner more redolent of Kenneth

Fig.4.120: John Stewart's layout for Summerfield County Combined School. The secondary axis is based on a retained hedgerow. Photograph kindly supplied by John Stewart.

Frampton's 'critical regionalism' than its more superficial contemporary, the postmodern movement.[65] Although Stewart's play with axes may reflect the neo-classicism of James Stirling's later work, the MKDC encouraged the retention of hedges and trees and in early MK housing schemes such as Coffee Hall and Netherfield; these relicts of a rural landscape are juxtaposed against an orthogonal layout (fig. 4.120).[66]

The Milton Keynes schools bear comparison with the contemporary work of another 'design-led' authority: Hampshire. John Collins, a member of Chiu Ng's studio, recalls that a 'serious rivalry' developed with the Hampshire architects, leading to reciprocal school visits and two-way influence.[67] A more monumental architecture, rarely seen in post-war schools, was occasionally thought appropriate for the more venerable grammar schools, such as Malcolm Dean's early 1960s additions to **Royal Grammar School** and John Stewart's rationalist Computer Centre of 1985 at Aylesbury Grammar School.

Gazetteer

Pre-school Education

¶ **Beech Green Nursery School**, Southcourt, Aylesbury; Buckinghamshire County Council Architect's Department (job architect D.H. Hooper); designed 1967, built 1968-69.

This nursery for 50 children including a ten-place unit for physically disabled children, replaced a hutted wartime nursery established by the Save the Children Fund in 1942.[68] The H plan comprises two playrooms of 20 places each with adjoining kitchen and special unit. Storey-height bay windows and a raised 'play deck' lend themselves to exploration and imaginative play. The special unit has its own playroom, WCs and medical inspection room, although it can be integrated with the adjoining playroom with the use of a sliding partition. The wings are separated by the staff rooms and a generous entrance lobby with coat hooks and display area. A generous covered play area with toy store, grassed mound with slide and sand pit, invites outdoor activity. An H plan was also adopted for Chalvey Nursery School in Slough of 1970-71.[69]

Figure 4.121: A 1974 photograph of Beech Green Nursery School, Aylesbury; Buckinghamshire County Council Architect's Department, 1968-69. Institute of Education Archives: ME/Z/5/1/8.

Figure 4.122: Chalfont St Giles Junior School; Buckinghamshire County Council Architect's Department, 1964-66 (P5925020).

Primary and Middle Schools

¶ **Chalfont St Giles Junior School**, Parsonage Road, Chalfont St. Giles; Buckinghamshire County Council Architect's Department (job architect Brian H. Andrews), designed 1964, built 1964-66.

Eight square pavilion classrooms scattered across a gently sloping Chilterns site, or as Pooley called it, 'an exercise in providing more space for less money'.[70] The classrooms pavilions have pyramidal slate roofs with clipped eaves, and planes of load-bearing sand-lime brickwork are punctuated by storey-height glazed frames. Each classroom has a vestibule with cloakrooms and WCs, a quarry tiled-practical area with hand basins and worktop and its own corner veranda. The administration block contains an assembly hall, dining hall, kitchen and staff rooms. The architects found that the expense of such high amounts of external walling and the separate dining and assembly halls was offset by the fact that load-bearing construction 'opens the field of contractor wide enough to give very competitive tendering'.[71] When, in 1972, Chalfont St Giles was converted to a middle school three of the classrooms were infilled to provided a library and additional practical space.

¶ **Berryfield First School**, Berryfield Road, Princes Risborough; Buckinghamshire County Council Architect's Department, designed 1967, completed 1969, demolished *c.*2005.

This 240-place infant school served the young families of a nearby 1960s estate. The plan was

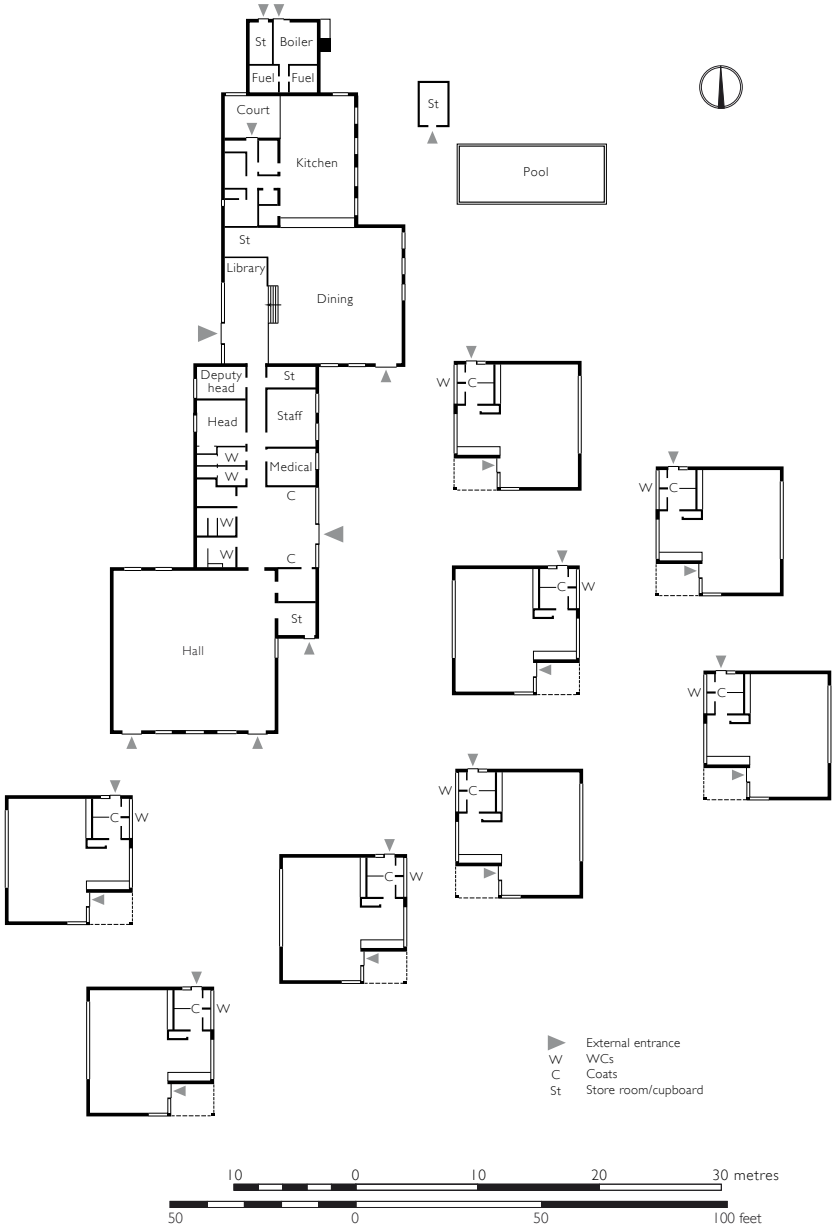


Figure 4.123: Chalfont St Giles Junior School; Buckinghamshire County Council Architect's Department, 1964-66.

built up from paired square classrooms which shared a practical area and adjacent cloakrooms/wcs. This planning unit was mirrored at Berryfield to give two H-plan blocks, their cross wings at right angles to the street. The courtyards were further enclosed by screen walls. Administrative and dining/assembly hall blocks lay to the west, linked by an entrance hall.

Reclaimed London stock bricks were alternated with storey-height, double-hung aluminium windows. Over this was set stained weather boarding and low pitched roofs. The sash window proportions and domestic appearance of the classrooms contrasted with the squarish picture windows and flat roofs of the linking sections. Two years after completion two of the eight classrooms were converted to workshops.[72] Berryfield Infant and Icknield Junior Schools were combined into a single primary school in 2001 in response to falling rolls and the site has since been redeveloped for a care home.

¶ **Chestnut Lane County First** and **Elangeni County Middle Schools**, Chestnut Lane, Amersham on the Hill; Buckinghamshire County Council Architect's Department (job architect Tony Kirby), Chestnut Lane designed 1966-67, completed 1969; Elangeni designed 1970, completed 1973.

This informal but distinctive pair of schools sit in the wooded grounds of a former Victorian villa to serve the expanding suburb of Amersham on the Hill.[73] Chestnut Lane comprises three wings of classrooms and a hall, library and administration block planned around a courtyard. Each classroom is square and has an adjoining practical area and individual entrance via an outshot lobby containing cloakroom and WCs. The classrooms are identified by peaked rooflights of patent glazing (similar examples can be seen in the work of Peter Aldington and Jack Digby's Hartest Primary School), matched in distinctiveness by the opposed monopitches of the dining and assembly halls.[74]

Elangeni is a further development of the paired classrooms seen at Berryfield and Chestnut Lane (qv) with the addition of a shared quiet room. Three teaching wings are wrapped around grassed playgrounds and connecting with a central library, hall and dining area (the halls again opposed monopitches). Craft and science/maths/music areas occupying the awkwardly shaped leftover spaces. The result is a complex plan with much external walling at unusual angles. A pupil referral centre was later added in the same idiom. Schools of similar appearance can be found at Highworth Combined School, High Wycombe and Ashmead County Combined School, Aylesbury. The schools have been little altered.

Figure 4.124: Elangeni County Middle School, Amersham on the Hill; Buckinghamshire County Council Architect's Department, 1972-73 (P5925043).

¶ **Haddenham Middle School** (now Haddenham Community Junior School), Woodways, Haddenham; Buckinghamshire County Council Architect's Department (job architect Roger Heyne), designed 1972, completed *c*.1974.

This large junior school was built in phases and exhibits a tendency towards deep, axial and courtyard plans (qv Pepper Hill First School, MK, of 1970-73, **Watling Way First School**, MK of 1974-76).[75] The long, low building has a cruciform plan around a central courtyard. In place of transepts are monopitched classrooms ranged around two central practical areas for crafts, home economics, science and maths. A strip of patent-glazed rooflights runs around the hipped tiled. Along the main axis is a pyramidal-roofed youth club to the east, and dining hall and administration buildings grouped around a second courtyard to the west.

The school, along with the contemporary library, health centre and fire station, was part of the expansion of the historic village of Haddenham, notable for its wychert walls of earth and straw. The community buildings were completed in accordance with a design code which specified white-rendered walls and a plain tiled roof similar in pitch and colour to those in the village.[76] The unbroken, symmetrical ranges of the school contrast with the picturesque massing of the contemporary Library and Health Centre.[77]

¶ **Watling Way Middle** and **First Schools** (now Queen Eleanor Combined School), Galley Hill, Milton Keynes; Buckinghamshire County Council Architect's Department (job architect Brian H. Andrews), Middle School 1970-73, First School 1974-76.

Watling Way Middle School, the first school to be completed at Milton Keynes. forms part of Galley Hill, the first major housing scheme and an extension to the existing town of Stony Stratford. Working closely with the MKDC planners, Andrews attempted to develop an urban, 'back of pavement' architecture. The L plan of the Middle School hugs the perimeter

of the site, fronting a footway to the nearby Activity Centre.[78] The 480-place Middle School was divided into junior and senior sections. The design combines two large, open-planned areas with a practical bay and three home bases of varying size; pairs of square workrooms with shared cloakrooms and quiet areas; and conventional classrooms for science and crafts with a wide circulation space serving as a library. The exterior is of warm red brick with dark-stained softwood joinery and tiled roofs. There are some pleasingly tactile details, such as the zig-zag sill to the dining-room windows, the storey-height horizontal glazing to the library and ceramic tile mural (*Climbing frame* of 1978 by John Watson). The H plan of the later first school sits in the middle of the site.[79] Four learning areas, each adjoined by three semi-open home bases, are laid out about a central hall. Beyond are two administrative wings.

Figure 4.125: Elangeni County Middle School, Amersham on the Hill; Buckinghamshire County Council Architect's Department, 1972-73.

¶ **Conniburrow Middle School** (now Southwood Middle School), Bryony Place, Conniburrow, Milton Keynes; Buckinghamshire County Council architect's Department (job architect Barry Green); designed 1974, opened *c.*1978.

A fairly deep L plan, with home bases clustered around a central shared area and a hall at the angle. An ingenious arrangement of opposed monopitched roofs bring light to deeper teaching spaces. The picturesque roofscape is balanced by storey-height glazing to the triangular sides of the monopitched blocks, recalling the work of Aldington, Craig and Collinge, with whom Green worked as a year out student.[80] A similar section was attempted at Cold Harbour CE School at Bletchley: here the monopitches are ranged around a central hall. Wood End First School, the infant school for Stantonbury which opened in 1977, is as intricate but deeper still.

¶ **Moorland County First School** (now Moorland Infant School), Maslin Drive, Beanhill, Milton Keynes; Buckinghamshire County Council Architect's Department (job architect Peter D. Millward); designed 1975.

At Moorland a cluster plan similar to and contemporary with **Conniburrow First School** (qv) is tidied up under a more formal exterior, planned around a central hall. Two teaching areas are each made up of three home bases, a store and cloakroom, grouped around a central shared area. Each teaching area has three hipped ranges wrapped around a flat roof, which is depressed to afford the home bases clerestorey lighting. The staff accommodation is arranged in two monopitched ranges flanking an entrance court.

¶ **Simpson Combined School**, Simpson, Milton Keynes; Buckinghamshire County Council Architect's Department (job architects Paul Markcrow, Trevor Harvey, Graham Thornhill), designed 1971, built 1973-74.

¶ **Falconhurst Combined School**, High Trees, Eaglestone, Milton Keynes; Buckinghamshire County Council Architect's Department (job architect Roger Heyne), designed *c.*1975, opened 1977.

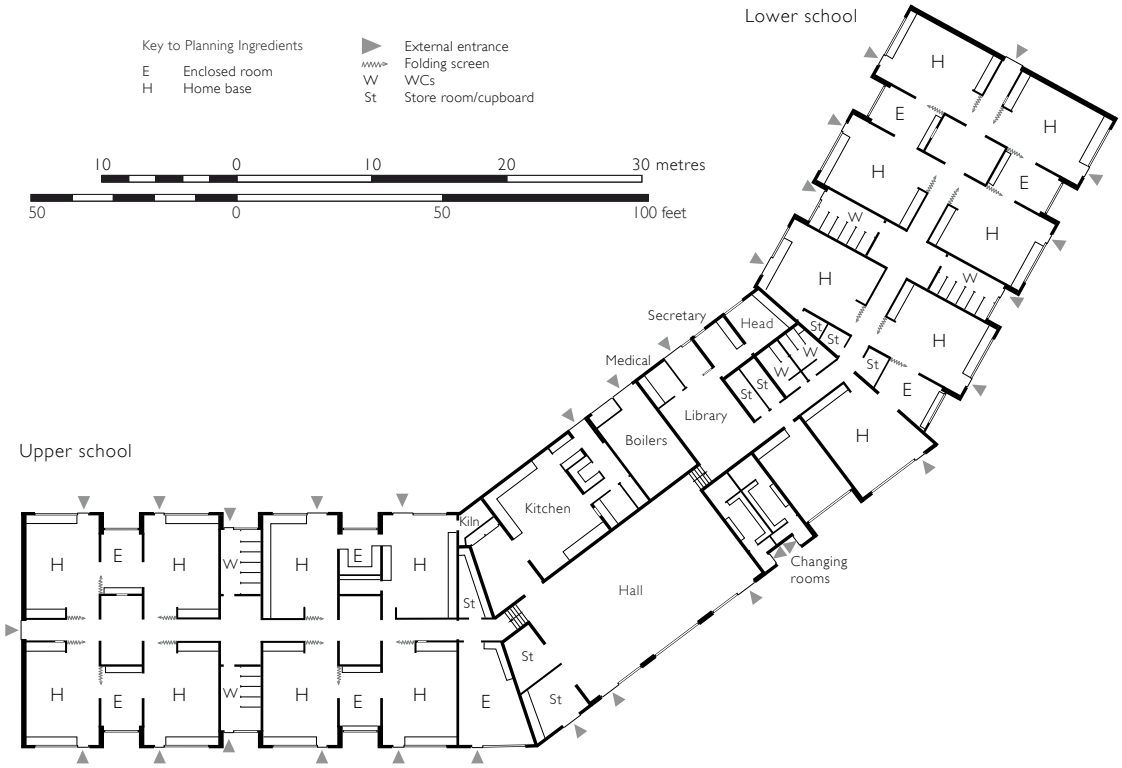


Fig 4.126: Simpson Combined School, Milton Keynes; Buckinghamshire County Council Architect's Department, 1973-74.

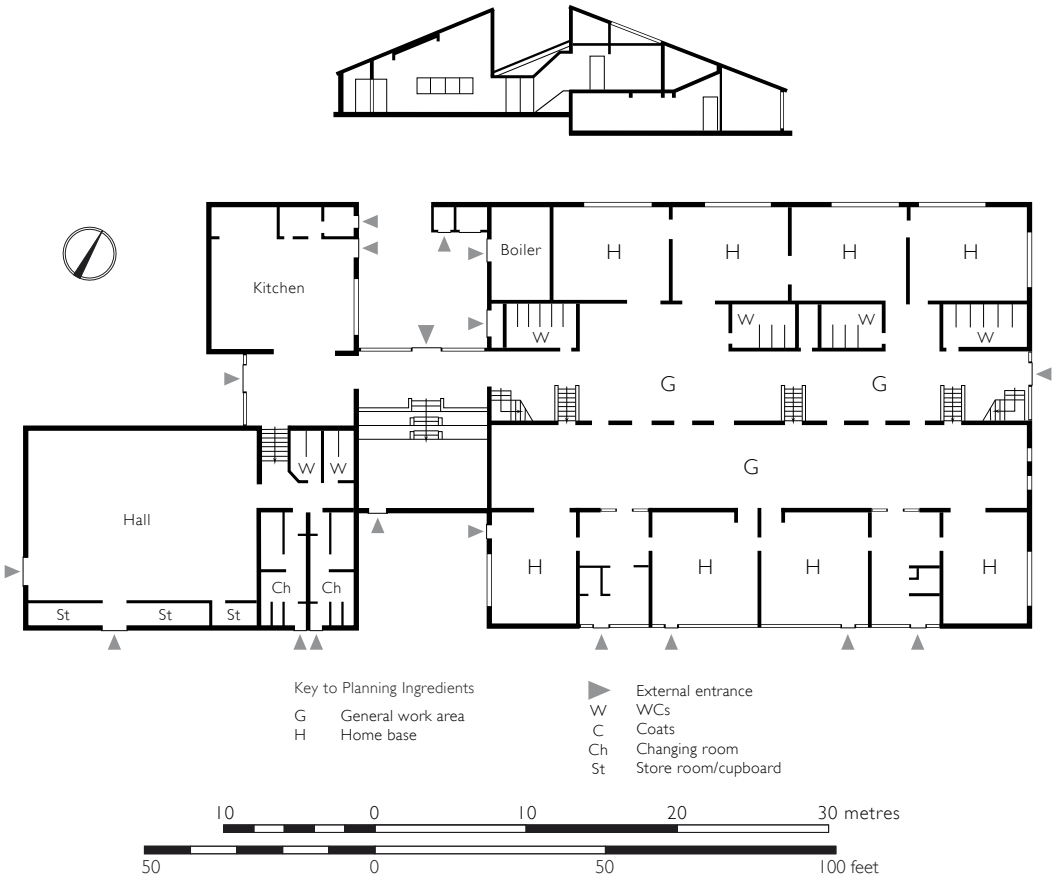


Figure 4.127: Falconhurst Combined School, High Trees, Eaglestone, Milton Keynes; Buckinghamshire County Council Architect's Department, 1976-77.

¶ **Greenleys Middle School** (now Greenleys Junior School), Off Marron Lane, Greenleys, Milton Keynes; Buckinghamshire County Council Architect's Department (job architect Terry Ford), designed 1976, completed *c.*1978.

These schools demonstrate the recurrence of linear plans in the 1970s. At Simpson, a series of paired workrooms sharing a group room (qv **Berryfield** and **Elangeni**) are mirrored about a spinal corridor. The three sections—lower and upper schools and a hall and kitchen area—are angled in the manner of a butterfly plan. The plan of Greenleys is also articulated, but here the pairs of home bases share a central area, albeit one neither continuous nor generously lit. Circulation is confused and the organising potential of the spine plan is not exploited. These things were rectified in the contemporary Falconhurst, a middle school built in 1976-77 to serve the Eaglestone and Peatree Bridge grid squares. Its internal street is continuous, wide and top lit through clerestorey windows in a 'split gable' section. The internal street later became associated with Hampshire schools, but in the mid-1970s there were few English precedents.[81]

¶ **Iver Village Infant School**, West Square, Iver; Buckinghamshire County Council Architect's Department (job architects Tony Parker and Roger Heyne), designed 1977-79, built *c.*1980.

¶ **Heelands First School**, Glovers Lane, Heelands, MK; Buckinghamshire County Council Architect's Department (job architect John Stewart), 1981-83.

The Iver Village School was an unusual infill development where councillors had pushed through an infant school, village hall, Baptist chapel and public library in the same complex.[82] The school is bookended with the hall and

Figure 4.128: Heelands First School, Milton Keynes; Buckinghamshire County Council Architect's Department, 1981-83. Photograph kindly supplied by John Stewart.

Fig.4.129: Summerfield County Combined School, Milton Keynes; Buckinghamshire County Council Architect's Department, 1984-85. Photograph kindly supplied by John Stewart.

church so that they front the High Street, whereas the school wraps around a 'village green'. The street simultaneously separates and connects the community functions and is sufficiently wide for group and practical work (overlooked by the headmaster's office). Although it is buried within the plan, the street is generously toplit by double-glazed north lights and clerestoreys in the classrooms borrow this even light. The exterior has low eaves and vast expanses of low-pitched pantile, given visual interest by the giant wedge-shaped roof lights to the hall and meeting rooms. Heelands, like Stewart's subsequent **Summerfield** and the contemporary Priory Common First School, Bradwell, MK of 1983 by Susan Stewart shows the influence of Iver's enclosing plan.

¶ **Summerfield County Combined School**, Bradwell Common, Milton Keynes; Buckinghamshire County Council Architect's Department (job architect John Stewart), designed 1983, built 1984-85.

'The boldest school of its date in MK', according to the *Buildings of England*.[83] Like the earlier **Iver** and **Heelands** Schools (qv), the plan of Summerfield is based on two angled wings. Here the organising device is two axes at 45° which relate the building to its setting. The hall and western teaching wing aligns with the formal approach to the school and the MK grid. The axis is playfully acknowledged by a boiler house—perhaps the most architectural boiler house in England—which combines a Venturi split gable

with a Stirling flue stack.[84] The axis of the main entrance and eastern teaching wing follows the former field boundary, preserved as a hedgeline which bisects the site.

Groups of three northfacing home bases receive additional light from the split-pitched roof. They are broken up by round angle towers (WCs and cloakrooms) which peek out from under the eaves. Both teaching wings have shared areas which look out onto the enclosed court. The exterior is detailed in blue engineering brick and yellow brick, separated by a moulded red brick stringcourse and sills and black cross windows.

¶ **Loughton Middle School**, Bradwell Road, Loughton, Milton Keynes; Buckinghamshire County Council Architect's Department (job architect Roger Heyne), designed 1985, opened 1987.

At Loughton the internal street snakes back on itself enclosing two courtyards. Between them, at the heart of the school, is a resource centre. It was planned as a 480-place with sixteen outward-facing home bases. Between each pair the street changes course; in the resultant wedge are twin entrances to the home bases, WCs and cloakrooms. The two entrances are poorly articulated on the exterior, a defect which was remedied at **Heronsgate** (qv). The teaching areas receive additional natural lighting from patent-glazed rooflights in the valley of the double gable roof.

¶ **Heronsgate Middle School**, Lichfield Down, Walnut Tree, Milton Keynes; Buckinghamshire County Council Architect's Department (job architect Mehdi Ali Abidi), designed 1987, built 1988-89.

Heronsgate refines the organisation of the earlier Milton Keynes Schools. The plan describes a D, with the hall and kitchen at one of the angles.[85] On the inside of the curve is a continuous shared area, divided into bays. The split-pitch allows the outward-looking home bases to receive additional lighting and cross ventilation from a clerestorey. This is sheltered by overhanging eaves and is equipped by a maintenance walkway. As at Loughton, pairs of home bases share an entrance lobby with coathooks, articulated from the outside by nodding gables. The individual entrances enable

Fig 4.130: Heronsgate Middle School. © Mehdi Ali Abidi.

Fig 4.131: Courtyard at Heronsgate Middle School in 2011 (P5925021).

the street to function as a teaching area and prevent circulation from becoming a distraction. The bright colour scheme includes yellow and red brickwork, orange paviours, dark stained facia boards and scarlet metal windows, the latter sympathetic replacements for the original softwood frames. The siting of buildings and their landscaping is, as at Summerfield, boldly axial: the entrance aligns with Wadesmill Lane to the south. Additions of 2004, including an extension to the west (referencing Le Corbusier's monastery at Tourette) and the infilling of part of the courtyard, detract somewhat from the geometrical purity of the plan.

Secondary Schools

¶ Additions to **Royal Grammar School**, High Wycombe; Buckinghamshire County Council Architect's Department (job architects J. Malcolm Dean and J.N. Davis), built 1961-63.

The Royal Grammar School at High Wycombe is one of a number of Buckinghamshire grammar schools of sixteenth-century foundation. A new site a mile outside High Wycombe was planned for 200 boys only. By 1963 the roll was over a thousand. The buildings of 1961-63 are centred on the same axis as the imposing 1915 neo-Georgian school and end wings wrap around to form a quadrangle, with circulation in the form of open-air 'cloisters'. The complex, opened by the Queen, includes a large hall, a junior school, music department, sixth-form rooms and administrative and staff rooms.

The first-floor Queen's Hall is raised over an undercroft which affords views of the quad and old building beyond. The hall is reached via a

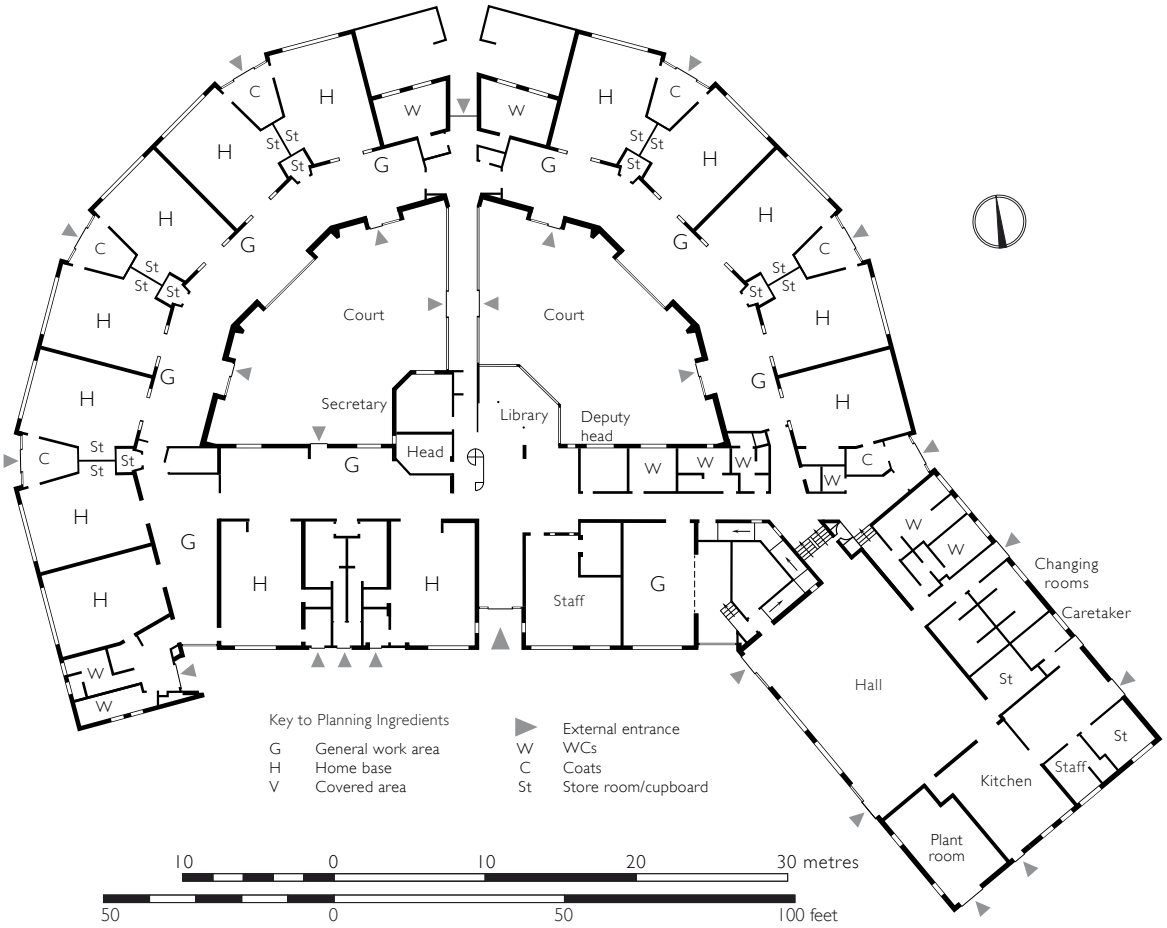


Fig 4.132: Heronsgate Middle School, Walnut Tree, Milton Keynes; Buckinghamshire County Council Architect's Department, 1988-89..

ceremonial T-plan stair, one of the Department's set pieces. The double-height stair hall is finished in white terrazzo, decorated by an eighteenth-century royal coat of arms in plaster (salvaged from a demolished local church) and top-lit from an octagonal lantern. Its architectural impact is heightened by the subdued lighting and low-ceilings of the adjoining lobbies. The hall is lined with timber panelling set between columns faced with terrazzo, and a suspended ceiling of facetted tiles lends a Festival of Britain air.[86]

The exterior is tough but refined, with the Bison precast concrete frame exposed as slender, aggregate-finished columns sitting on broad brick bases. Large, blind panels of red-brown brick front the Amersham Road elevations but the hall is fully glazed to the north, giving views towards the old school. The Junior School is distinguished by its boxed out windows. The result is as close to Brutalism as Bucks ever came and anticipates Dean's County Hall at Aylesbury of 1963-66 and Slough Central Library of 1974.[87]

¶ **Stantonbury Campus**, Stantonbury, Milton Keynes; Buckinghamshire County Council Architect's Department (job architect for the schools Jack Speight, the resource centre Haydn Gowman with David Aylett), initial phase 1973-75.

At the time of its construction Stantonbury Campus was the largest school in the UK. It occupies a third of the grid square of Stantonbury which was laid out from 1972. It is an example of the strategy of concentrating secondary school provision, along with community facilities, onto a few large campuses enjoying a wide catchment area. The result had something of the appearance and many of the facilities of a university campus, and indeed Jack Speight had earlier worked on York University as a member of Robert Matthew Johnson-Marshall & Partners. The first head of Stantonbury, Geoff Cooksey, was in place three years before the first pupils were admitted and was consulted in the planning of the complex.[88]

Three ten-form entry comprehensive schools each of around 1,500 pupils were conceived, each contributing to a shared resource and leisure centre including a well-equipped theatre. Bridgewater Hall to the north of the leisure

Figure 4.133: A courtyard at Stantonbury Campus, the flagship secondary at Milton Keynes (P5925022).

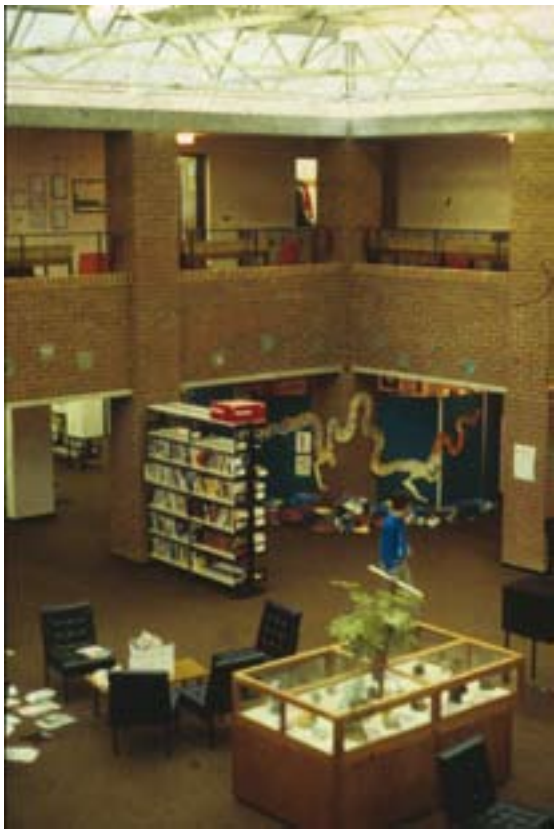


Figure 4.134: A galleried resource area at Stantonbury Campus, Milton Keynes in 1978. Institute of Education Archives: ABB/1/81/4.

centre was the first school to open, in 1974. By the completion of Brindley Hall *c.*1982, a third comprehensive, to be named Telford and planned to the east of the present site boundary, had been abandoned.[89] The community facilities

supplant the local centre normally provided for each grid square and include a youth club, an interdenominational church, health clinic, leisure centre and shops. At Lloyds the chemists can be found *Bicycle Wall*, a ceramic tile mural by John Watson of 1977-8, made and fired in one of the art departments.

Separate buildings, mostly of one or two storeys are linked by planted courtyards, covered ways and changes in level. Later additions have maintained the familiar Buckinghamshire schools vernacular of red brick, tiles and dark-stained windows. The interior planning combines rows of single-aspect classrooms with open spaces for individual study and discussion. The layout was sufficiently open-ended to allow a 1980s reorganisation of the Campus into five large 'halls' of around 500 pupils each, to better offer pastoral care and a sense of belonging to pupils.

¶ **Sir Frank Markham Community School**, Woughton Campus, Leadenhall, Milton Keynes; Buckinghamshire County Council Architect's Department (job architect Mehdi Ali Abidi), designed 1977, built 1978-79, demolished 2010.

Woughton was the second of the giant educational campuses serving Milton Keynes and occupying the northern edge of the Coffee Hall grid square. The 1977 masterplan, developed by MKDC planner Jim Muldrew with Abidi, applied the lessons learnt at **Stantonbury** (qv), namely the need for each school to have its own identity and a greater awareness of security. The campus was to be an open site occupied by four 840-place schools, built in phases, along with community leisure and recreational facilities. Sir Frank Markham was the first school to open, in 1979. A second phase followed *c.*1983, designed by Tony Parker around an angled internal street (qv his earlier infant school at **Iver**). Subsequent additions—the L plan Milton Keynes College Sixth Form Centre completed in 1985 to the designs of Chiu Ng and St Pauls RC School, which follows the dispersed plan of Stantonbury–deviated from the masterplan.

A compact layout was devised for Sir Frank Markham School so that housing could be developed on the fringes of the campus, maximising revenue from the grid, keeping the community facilities in use and providing a continuous security presence on the site. Abidi's choice of a multi-courtyard plan reflects Arne Jacobsen's Munkegård School of 1948-57 in Dyssegård, Copenhagen and Evans & Shalev's Newport High School, Gwent of 1967-72—but also an absorption of Oscar Newman's notion of 'defensible space'.[90] Pitched roofs were unavoidable at Bucks and Abidi recalls 'friendly but persistent pressure [from MKDC] to go for something a bit more space age'. [91] The upper floors and their pitched roofs were both jettied out by more than a metre. The school was adjoined by a jointly-funded leisure centre with large sports hall and swimming pool, and a music and drama wing. Sir Frank Markham Community School closed in 2009 and has been redeveloped as Milton Keynes Academy.

Fig 4.135: Sir Frank Markham Community School, Woughton Campus, Milton Keynes; Buckinghamshire County Council Architect's Department, 1978-79. © Mehdi Ali Abidi.

ENDNOTES

1. Guy Oddie, pers.comm., 4 October 2010.
2. Bendixson 1992, 21.
3. Saint 1987, 156.
4. Gregory, G., *Some Uses of Calculated Brickwork in Buckinghamshire*, Clay Products Technical Bureau (London) Technical Note, vol. 1, no. 3, 1963; *Brick Bulletin*, vol.5, no.2, January 1963, pp.1-12.
5. *Architects' Journal*,vol.142, no.25, 22 December 1965, p.1509; John Collins pers.comm., 27 October 2010.
6. *Building Design*,nos.182/183, 4/11 January 1974, p.16; Bill Berrett, pers.comm., 6 December 2010.
7. John Collins pers.comm., 27 October 2010; *Architects' Journal*, vol.144, no.14, 5 October 1966, pp.851-66.
8. Since incorporated within the Jacobs group, where Stewart remains as vice president of UK buildings.
9. Pooley's architects devised a plan for a North Buckinghamshire New City of 250,000 in 1962-64, but this was subsequently abandoned for a plan by the planning consultants Llewelyn-Davies, Weeks, Forestier-Walker and Bor.
10. The plan and section of Naphill was published in the *Architects' Journal*, vol.180, no.49, 5 December 1984, p.58.
11. Saint 1987, 138.
12. Institute of Education Archives: ME/V/1: letter of 17 May 1987 from Jack Speight to Andrew Saint; Saint 1987, 174. Barker became County Architect of Bedfordshire County Council in 1960 (Chalk 2006, 7 & 11).
13. Institute of Education Archives: ME/V/1: letter of 17 May 1987 from Jack Speight to Andrew Saint; Saint 1987, 174.
14. Pooley 1963a, 608.
15. Saint 2003, Franklin 2009.
16. Pooley 1968, 107.
17. Pooley 1968, 108.
18. Pooley 1963.
19. Now combined as Drayton Park School.
20. Saint 1987, 156; Institute of Education Archives: ME/V/1:letter of 17 May 1987 from Jack Speight to Andrew Saint.
21. William Durrant School, Chesham (now renamed Little Spring) and Broughton Junior, Aylesbury are mirrored copies of Woodside School.
22. James Parke, pers.comm., 7 December 2010. This structure remained in place in Buckinghamshire until reorganisation in 1998.
23. James Parke, pers.comm., 7 December 2010.
24. James Parke, pers.comm., 7 December 2010.
25. Ali Abidi, pers.comm., 22 November 2010.
26. 1995 interview with James Parke, Senior Education Officer for Buckinghamshire County Council by Joyce Hartley, available at http://www.idoxplc.com/idox/athens/ntr/ntr/cdl/html/txt/u3350200.htm, accessed 15 August 2012.
27. Ali Abidi, pers.comm., 22 November 2010; James Parke, pers.comm., 7 December 2010.
28. John Stewart, pers.comm., 3 December 2010.
29. Quoted in Dudek 2000, 61. The school is written up in the *Architects' Journal*, vol. 198, no. 18, 10 November 1993, pp. 43-55. Kents Hill First School of 1995 is strikingly similar.
30. James Parke, pers.comm., 11 January 2011.
31. Crook 2002.
32. James Parke, pers.comm., 7 December 2010.
33. James Parke, pers.comm., 7 December 2010.
34. *Builder*, vol. 198, no.6096, 18 March 1960, pp.540-542.
35. *Architects' Journal*, vol. 173, no. 24, 17 June 1981, pp.1159-61.
36. James Parke, pers.comm., 11 January 2011.
37. James Parke, pers.comm., 10 December 2010.
38. 1995 interview with James Parke, Senior Education Officer for Buckinghamshire County Council by Joyce Hartley, available at http://www.idoxplc.com/idox/athens/ntr/ntr/cdl/html/txt/u3350200.htm, accessed 15 August 2012.
39. 1995 interview with James Parke, ibid.
40. 1995 interview with James Parke, ibid.
41. Edwards 2001.
42. 1995 interview with James Parke, ibid.
43. See, for example, Oak Green School, Aylesbury of 1947 or Western House School, Slough of 1952 (demolished; BCC 1977, 3). For Stillman, see Saint 1987, 53-57.
44. Institute of Education Archives: ME/V/1:letter of 17 May 1987 from Jack Speight to Andrew Saint.
45. For the development of Inter-grid, see Saint 1987, 143-51.
46. *Architect & Building News*, vol.225, no.10, 4 April 1964, pp.395-400. The Royal Grammar School coincided with Dean's design in precast concrete for the headquarters of Buckinghamshire County Council, with Malcolm Last and Martin Jones. Ali Abidi, pers.comm., 9 December 2010.
47. Pooley 1963A&B; Pooley 1968, 106.
48. Chalk 2006, 20.
49. Chalk 2006, 20.
50. Ali Abidi, pers.comm., 22 November 2010.
51. John Stewart pers.comm., 8 October 2010.
52. Pooley 1968, 106.

53. *Building Design*, nos.182/183, 4/ 11 January 1974, p.16.
54. Pooley 1968, 108.
55. Pooley 1968, 108.
56. Ali Abidi, pers.comm., 22 November 2010.
57. This style, employed by Buckinghamshire architects Arthur G. Humpston, Ambrose Frank Humpston, Don Pearce and Sid Hendle, was close to that labelled by the *Architectural Review* as 'the New Empiricism' (Bill Berrett, pers.comm., 6 December 2010; Frampton 1992, 263).
58. Institute of Education Archives: ME/V/1: letter of 17 May 1987 from Jack Speight to Andrew Saint. For R.C.N. Paul at Hertfordshire see Saint 1987 107-08. He was later County Architect for Berkshire.
59. Bill Berrett, pers.comm., 6 December 2010. The farm at Fulmer was published in *Architect & Building News,* vol.24, no.36, 4 September 1963, pp.361-65 and *Architectural Review,* vol. 134, no.979, July 1963, pp. 51-56.
60. John Stewart pers.comm., 8 October 2010. In Denmark, Utzorn designed housing schemes at Kingo, Helsingor of 1956-58 and Fredensborg of 1959-65.
61. BCC 1977; Ali Abidi, pers.comm., 22 November 2010. The best examples of the libraries designed by Ron Walker are Buckingham, Wendover, Great Missenden, Haddenham, Burnham and Stony Stratford. Great Missenden, Haddenham and Burnham are featured in the *Architects' Journal*, vol. 159, no. 8, 20 February 1974, pp. 379-98.
62. Darley and Davey 1983.
63. Pooley 1968, 110.
64. John Collins pers.comm., 10 November 2010.
65. Frampton 1992.
66. Ali Abidi, pers.comm., 22 November 2010; James Parke, pers.comm., 11 January 2011.
67. John Collins pers.comm., 27 October 2010.
68. Maclure 1984, 170. See also *Architects' Journal*, vol.157, no.7, 14 February 1973, pp.392-93.
69. *Architects' Journal*, vol.157, no.7, 14 February 1973, pp.390-91.
70. Pooley 1968, 111.
71. *Architect & Building News*, vol. 229, no.24, 15 June 1966, pp.1083-86. See also *Building,* vol. 210, no. 6416, 6 May 1966, pp.102-04.
72. Drawing number 1930/1/2, dated 4 June 1971, digital copy supplied by Buckinghamshire County Council, Strategic Property & Asset Management department.
73. Pevsner and Williamson 1994, 138.
74. See, for example, the large dormer Aldington added to John Craig's house at Haddenham.
75. Drawing number 2129/SK2, dated 21 May 1970, held at Milton Keynes Council (Design and Building Services department).
76. The late 1950s rebuilding of Rushbrooke village near Bury St Edmunds, Suffolk by Richard Llewelyn-Davies and John Weeks is a likely influence (Bill Berrett, pers.comm., 6 December 2010).
77. Turn End, Middle Turn and the Turn of 1963-68.
78. BCC 1977, 38.
79. Drawing number 2128/WD/1, dated June 1974, held at Milton Keynes Council (Design and Building Services department).
80. Ali Abidi, pers.comm., 22 November 2010.
81. The plan and section of Falconhurst was published in the *Architects' Journal*, vol.180, no.49, 5 December 1984, p.58. At the GLC Pimlico Secondary School (pages 201-03), the internal concourse was intended primarily for circulation route where informal social contact could take place, and not for learning. The same was true of the 'meeting path' which formed the backbone of Hans Scharoun's unrealised 1951 design for primary and secondary schools at Darmstadt, Germany.
82. John Collins pers.comm., 27 October 2010. See also *Architects' Journal*, vol. 173, no. 24, 17 June 1981, pp.1159-61.
83. Pevsner and Williamson 1994, 515.
84. The referenced buildings are Robert Venturi's Vanna Venturi House of 1962-64 and Stirling and Gowan's Leicester Engineering Building of 1959-63.
85. When first shown the plan, the Senior Education Officer James Parke called it a 'protractor school', to the architect's amusement (James Parke, pers.comm., 11 January 2011).
86. *Architect & Building News*, vol. 225, no.10, 4 March 1964, pp.395-400. See also BCC 1977, 18.
87. Qv Slough Central Library of 1974.
88. Weeks 1986, 119.
89. James Parke, pers.comm., 10 December 2010.
90. Oscar Newman's book *Defensible Space: Crime Prevention Through Urban Design* was published in 1973 at a time of widespread social unrest and vandalism and discontent with high-density housing schemes. At Sir Frank Markham Community School each range of a courtyard plan was overlooked by others and there are no setbacks or nooks and crannies.
91. Ali Abidi, pers.comm., 22 November 2010.

HAMPSHIRE

Figure 4.136: Hampshire: location of gazetteer entries.

Hampshire

The story of school-building in post-war Hampshire falls neatly into two halves, each responding to and representing wider trends of demographics, educational policy and architecture. The first three post-war decades in Hampshire, as elsewhere, was a race to put roofs over heads: more than 260 schools and colleges were built between 1945 and 1974, with a further 140 in progress at the latter date.[1] Hampshire is a large and predominantly rural county with a population of 1.75 million, mostly concentrated in three historic cities—Portsmouth, Southampton and Winchester—and a diversity of natural scenery including a southern coastline and rolling downland countryside. Hampshire County Council has historically combined relative affluence (boasting a considerable land bank amongst its assets) with conservatism, having strong representation from landowners, farmers and members of the armed forces. After 1945 the County experienced rapid and sustained population growth: a rise of 21% was recorded between 1951 and 1961 compared with 5% for the rest of the country. Its school population increased from 64,000 in 1946 to 110,000 in 1960.[2] Although much growth can be attributed to the 'bulge' in the birth rate, the regional factor was the expansion of industry, energy, the armed forces, transport facilities and the increasing migration of London's population and businesses. This growth continued to increase rapidly throughout the 1980s and 1990s, causing a continued demand for new primary schools that did not exist elsewhere.

Patrick Abercrombie's Greater London Plan of 1944 proposed expanded town schemes at Andover and Basingstoke to take London's 'overspill' population, having previously thought too remote. After the cancellation in 1960 of an LCC scheme for a new town for 100,000 at Hook, expanded town schemes were agreed at Andover, Basingstoke, Farnborough and Tadley. These generally took the form of housing in 'Radburn' layouts and industrial estates set around a commercial centre, the whole tied together by ring roads.[3] Additional expansion occurred with the replanning of the military town of Aldershot and the growth of the conurbation stretching from Southampton to Portsmouth (both separate LEAs). The extension of the M3 motorway in 1968-71 linked Camberley, Farnborough, Fleet and Basingstoke and enabled a corridor of housebuilding and high-tech 'sunrise' light industries. Although planned in the public sector, the large new suburbs were built by firms of house builders to standard designs. The absence of sports, recreational and community amenities, and indeed the lack of focal points and a sense of place was a matter of protest from the start.[4] The provision of schools in post-war Hampshire came to be viewed as a way of alleviating these problems through community provision or 'place making' architectural forms.

School building in Hampshire peaked in 1969-72, partly as a consequence of the raising of the school leaving age to 16 and a reorganisation scheme. The most adroit player of the 'numbers game' was Lt Col Harry Benson Ansell (1914-86), Architect to Hampshire County Council from 1960 to 1973. His retirement coincided with local government reorganisation and a necessary re-evaluation of every aspect of school building, from population trends to architecture. The emerging opportunities were seized by his successor Colin Stansfield Smith who, over the next 18 years, presided over a remarkable

shift from quantity to quality, transforming thinking about public buildings and their sites and remodelling the structure and culture of his Department in the process. In these years Hampshire acquired an international reputation for the eclecticism, wit and imagination of its buildings: 'the variety of Hampshire schools seems almost limitless', the *Architects' Journal* remarked in 1992.[5] By then, when most local authority architect's departments were being wound down, Hampshire was bidding for out-county projects such as the Shoreditch campus of Hackney Community College in London, jointly designed with Perkins Ogden Architects.

Quantity: the SCOLA Era

Hampshire's first permanent prefabricated school, Warblington Secondary School of 1955-56, was built in the BAC aluminium system.[6] Over the next few years Hampshire tinkered with a variety of proprietary systems based on concrete (Intergrid), timber (Medway and Derwent) and light steel frames (Hills).[7] A timber-framed system for primary schools was designed under Deputy Architect Robert Shaw.[8] Of serviceable construction, they remained small-scale, diffident ventures: the lion's share of the annual programme remained in brick. Unreformed traditional construction was labour intensive, increasingly difficult to keep within cost limits, but most of all too slow to meet demand.[9] It was necessary to place the entire programme on a different footing.

Figure 4.137: Prefabrication in practice: installing stair treads at Harrow Way Secondary School, Andover, c.1966. In a frame structure this kind of work could be completed under cover. Institute of Education Archives: ABB/B/1/216/2

The answer came with the arrival of Benson Ansell in 1960. A 'systems man' through and through, he had previously held the post of Deputy Architect at West Riding, a founder member of the CLASP consortium (page 160). His thoughts, he later recalled 'rather naturally turned towards the CLASP form of construction and at one time I had virtually persuaded the committee to join'.[10] But he was dissuaded by CLASP's inability to incorporate brick and judged its pin-jointed frame, designed for mining subsidence sites, redundant at Hampshire. The founding members of CLASP, for their part, had by 1960 decided the organisation had reached an optimum size, and Shropshire and Cheshire floated the possibility of establishing another consortium instead.[11] Cheshire, Dorset, Gloucestershire, Hampshire, Shropshire and West Sussex founded the Second Consortium of Local Authorities, known as SCOLA

('fancy celebrating coming second!' was Stansfield Smith's comment).[12] Ralph Crowe and Geoffrey Hamlyn of Shropshire were the prime movers, and development work was well underway before the initial meeting in June 1961.[13]

SCOLA, like most of the consortia systems, was not limited to educational buildings, and full membership could simply be gained by committing a certain sum to the annual programme and undertaking a share of development work. Hampshire accounted for 40% of its orders, effectively underwriting the consortium; it was, in Stansfield Smith's words the 'working class of SCOLA'.[14] The administrative structure comprised annual meetings of elected members, quarterly meetings of chief architects and monthly meetings of a technical working party.[15] At first development work was pooled amongst the authorities, each contributing a single development architect (Colin Swift represented Hampshire). From *c.*1968 a central SCOLA Development Group was established at Gloucester under Principal Architect Ray Freemantle, although Hampshire continued with development work.[16]

In many ways SCOLA was a typical 'light and dry' mode of prefabrication. Its Mark I was a fixed-end steel frame on a 3'4" module with lattice beams and pre-cast concrete floor slabs. Around the frame was wrapped metal-framed picture windows and spandrel panels, chunky hardwood rails, a plywood fascia and a flat, timber roof deck with asphalt covering. About thirty non-structural components were shared with CLASP.[17] Cladding options included shiplap boarding, interlocking tile, slate and brick: traditional in appearance, yet 'flush detailed' to occupy a single plane projecting well forward of the grid line, in best Modern Movement practice.[18] Most components were capable of being lifted and assembled by two men.[19] Significant constraints included a maximum span of 10 feet (dictated by the spanning properties of the timber rails) and a height limit of three storeys, later pushed to four. The system was rigourously tested through comparison with the cost plan for the MoE's Arnold Grammar School.[20] One of the first SCOLA schools was **Otterbourne Primary School** outside Winchester, built in 1962-63 (fig. 4.138). The first of several revisions, Mark Ia of 1964, substituted a pin-jointed, braced frame and a metal roof deck.

Figure 4.138: The SCOLA showcase: Otterbourne CE Primary School, Winchester; Hampshire County Council Architect's Department,1962-63. Institute of Education Archives: ABB/A/22/16

The early SCOLA schools looked smart in the promotional photos but there were long-running problems with the cladding, which Oscar Gammans attributes to the initial absence of a development group.[21] A new metal window-walling system was introduced in 1965-66 as Mark II, yet proved defective in many ways: For Guy Hawkins, a DES architect working with SCOLA Mark II at Delf Hill Middle School, Bradford, found the system 'really quite dire—minimal insulation, cold bridges and air leakage everywhere, flimsy roof, unresolved verge details, and inflexible floor-to-roof metal window system—the source of all the cold bridging'.[22] To this could be added a high rate of failure of the asphalt roof, poor ventilation and heating and a lack of fire breaks in the ceiling void—a contributory factor at several fires. With Mark IIa the 3'4" grid was modified to a I' planning grid (known as 3M) and a 2' structural grid (6M), which permitted modular coordination with compatible systems in line with central government recommendations.[23] This allowed SCOLA to jointly develop shared components with the SEAC consortium (page 314), such the as glassfibre-reinforced polyester (GRP) cladding first used at **John Hunt Comprehensive School**. Cupernham Infant School, completed in 1971, was the Hampshire prototype of the metric Mark III, which permitted brick cladding. After a decade of development, most of SCOLA's technical shortcomings had been resolved, yet demand had already peaked and with it the reputation of SCOLA.

But the niceties of prefabrication were only one aspect of the consortia approach endorsed by central government, which included the rationalisation of purchasing, tendering, costing and the production of drawings. Benson Ansell adopted these procedures wholesale, streamlining every stage of the school building process from design to erection. The scale of the programme demanded a production-line approach, run with military efficiency. As Oscar Gammans, Deputy Architect between 1971 and 1971, recalls 'there was the added pressure to get projects in the drawer so that each March we could go to the DES to soak up spare capital allocation not used by other Authorities'.[24] The operation was so well-oiled that on Benson Ansell's retirement it was questioned whether a county architect was needed at all.[25]

Most notorious was Hampshire's reiteration of entire designs.[26] The four 'repeat plans' produced *c*.1965 comprised a 2/3 form entry infant and junior school, a 3/5 form entry secondary school and a 4/8 form entry bilateral school. 'It would seem possible, with two or three exceptions,' Benson Ansell reported, 'to cover the whole SCOLA programme to 1967 […] by the judicious repetition of these designs'.[27] In practice, Gerry Way recalls, 'if you were busy you'd do a standard plan; if you had time or a tricky site, you'd do a one-off'.[28] Sloping sites were the biggest problem and occasionally tonnes of chalk were excavated to level sites at enormous expense.[29] Less time was spent at drawing boards, and from the late 1960s SCOLA pioneered the use of computer aided drafting (CAD) and computerised bills of quantities.[30]

Realising that large-scale prefabrication requires not a large workforce but a small cadre of highly skilled and specialised local firms, Benson Ansell soon set about reforming the way in which contractors were nominated and organised. The trial in 1962 of selective tendering (where invitations to bid are not advertised but issued to an approved shortlist) was a prelude to serial tendering (a batch of contracts let to a single contractor), trialled at 31 projects in the 1965-67 building programme.[31] Much

experience was gained from Nottinghamshire, where Henry Swain had introduced this method of procurement with success (page 134). The nominated contractors could build up expertise in SCOLA, invest in special plant and develop close working relationships early on in projects and programmes. Benson Ansell reasoned that 'the cost of a job is determined at the drawing board and the question could be posed as to why the builder is not brought in at this stage'.[32] An evaluation found that prices came in up to 5% lower than comparable one-off tenders, a margin which stood Hampshire in good stead during the inflationary period of the early 1970s. Serial contracts were also employed for the bulk purchase of everything from SCOLA components to chain-link fencing.

Educational Policy and Practice

In response to the Government's Circular 10/65 on comprehensive reorganisation and its intention to raise the school leaving age, in 1968 Hampshire County Council submitted a scheme of reorganisation combining comprehensives with integrated sixth forms and a smaller number of 12-16 comprehensives feeding 16-19 sixth-form colleges.[33] Of the latter, perhaps the most noteworthy were the technical colleges at Havant and Andover, designed by Graham Perkins and Trevor Harris respectively.[34] The Council adopted a cautious position by implementing their plan district-by-district: by April 1974, only eight out of the 19 educational divisions in the county had been reorganised, with deadlines agreed for a further six.[35] As at Buckinghamshire and elsewhere, the age of transfer to secondary education was raised to 12, mitigating the effect of the age raise. Larger primary schools were organised in two stages—first schools for ages 5-8 and middle schools for ages 8-12; primary schools served less populous areas.

What of pedagogy in Hampshire? On Oscar Gammans' arrival from Notts County Council as Deputy Architect in April 1971, he found 'a big machine churning things out with little educational input'.[36] Briefs were little more than schedules of accommodation and teaching methods were 'not a matter of discussion with the Education Department'.[37] Designs were displayed in the Advisers' Room at County Hall for three days but attracted few comments.[38] Planning concessions to 'child-centred' teaching practices mostly took the form of the 'Marley' folding partitions installed between pairs of classrooms. The SCOLA fixed partitions were demountable, so in theory the planning of the school could be reconfigured during the school holidays, but this was seldom carried out for educational reasons.[39]

Gammans sought to introduce something of the informal architect-educationist collaborations that had obtained under Henry Swain at Nottinghamshire (pages 138-39). He found allies in the Deputy Education Officer Richard Clark and Assistant County Architect Michael Morris, who joined Hampshire on the same day in 1972. The trio, assisted by Chief Quantity Surveyor John Bennett (also from Notts), formed the core of an inter-departmental development group with the aim of overhauling the standard briefs to better represent current educational practice.[40] They started by visiting recently completed Hants primaries and found teachers improvising in cramped and largely cellular layouts, with small groups squeezed into corridors and removing the coatpegs of the cloakrooms to better work there. Space had been squeezed so much that the designers of the contemporary Brockhurst Infant School, Gosport contrived extra

floor area by setting the external walls 900mm outside the grid with a patent glazed roof extension.[41] If anything, the experience confirmed their belief that educational activity should be the starting point for school design; an obvious point perhaps, but one overlooked in the Hampshire school-building campaign.[42] 'A set of scale-modelled Pel 'Forme' school furniture was bought', Morris recalls, 'and we sat around a sheet of squared paper playing "schools" like children'.[43] For Clark, 'the roles were reversed: the educationists had felt-tip pens, drawing on plans and flip charts.'[44] The team also consulted the DES Eveline Lowe Primary School (pages 110-11) and recent Nottinghamshire schools.

The primary brief issued in 1973 threw circulation into an open 'resource area' for shared and practical work, whilst providing withdrawing space in the form of a 'snug', an enclosed, cosy area for quiet reading.[45] At around the same time the Education Department collaborated with the DES Development Group on the design of Guillemont Junior School (pages 114-15). Here a deep plan accommodated a range of teaching areas, clustered around open courts. The project had little influence on Hampshire, perhaps because it bypassed the Architect's Department or because it coincided with personnel changes on local government reorganisation. A little later, divisional head David White's scheme for Pennington Special School provided a glimpse of the architectural and educational possibilities of Guillemont's 'semi-open' plan, but it was neither built nor its layout taken up at Hampshire.

The primary brief was further amended *c.*1978 by Senior Education Advisor Jock Killick, and in this form remained virtually unchanged for the following decade.[46] Influenced by the work of the Medds (page 106), Killick wanted a variety of teaching areas of different scale and character, grouped into a 'teaching cluster […] capable of a range of different organisational patterns and catering for age differences, variety in groupings and individual teacher preferences.'[47] Each enclosed classroom opened onto the playground and possessed its own tiled practical area and quiet area for study or tutorial work.[48] These were arranged by Stansfield Smith's staff into repeated units, invariably based on rows of classrooms. Corridors were widened and irregularly shaped to allow small group work. Hampshire regularly provided around 10% above the statutory minimum teaching area and the DES may have followed their lead in raising it in 1981.[49]

Broadly speaking, two generic plans evolved in response to the revised primary brief. Killick favoured centrally-planned layouts, with a hall at the 'heart'.[50] Red Barn Primary School at Portchester, designed in 1977-78 by Jackson Greenen Down & Partners and built in 1978-79, and the better-known **Four Lanes Primary School** at Basingstoke, an in-house design of 1980-81 are early examples (fig. 4.139). The shared central space presented the possibility of cooperative teaching, and at **Burnham Copse Infant School**, Tadley, architect Ian Templeton covertly arranged evening meetings with staff to discuss the educational possibilities of 'open plan', although direct contact was then discouraged by the Education Department.[51] **Newlands Primary School** at Yately, designed in 1978-79 by Mervyn Perkins, was the first application of a linear plan comprising a row of classrooms with paired quiet areas at the back and practical and shared areas reached from a circulation spine (fig. 4.140). In later designs the practical area was relocated to

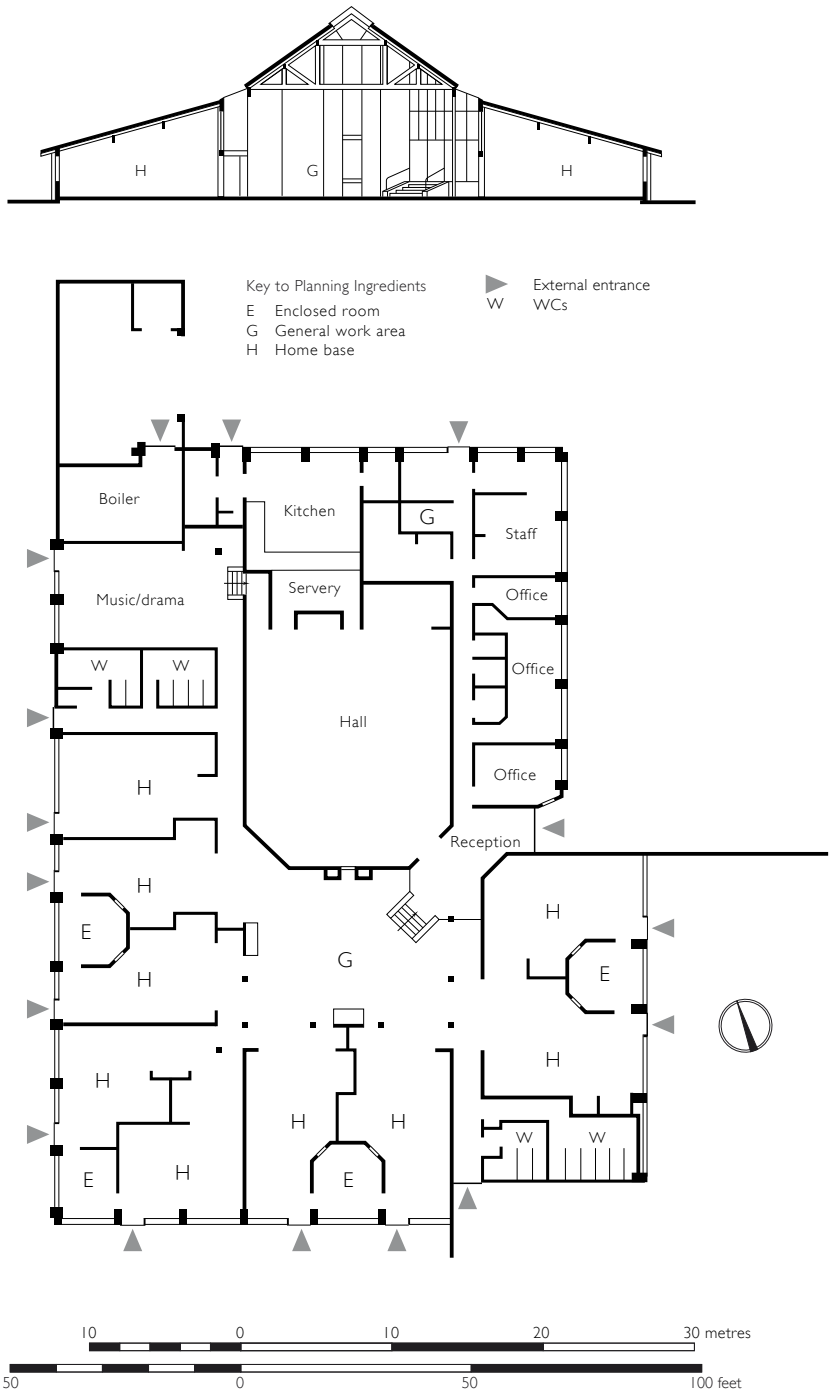


Figure 4.139: A plan with a 'hall at the heart'. Four Lanes Primary School, North Chineham, Basingstoke; Hampshire County Council Architect's Department, 1981-82.

the front so messy and wet work could continue outside. Killick did not favour the linear layouts, which were criticised by educationally-minded architects such as David Medd.[52]

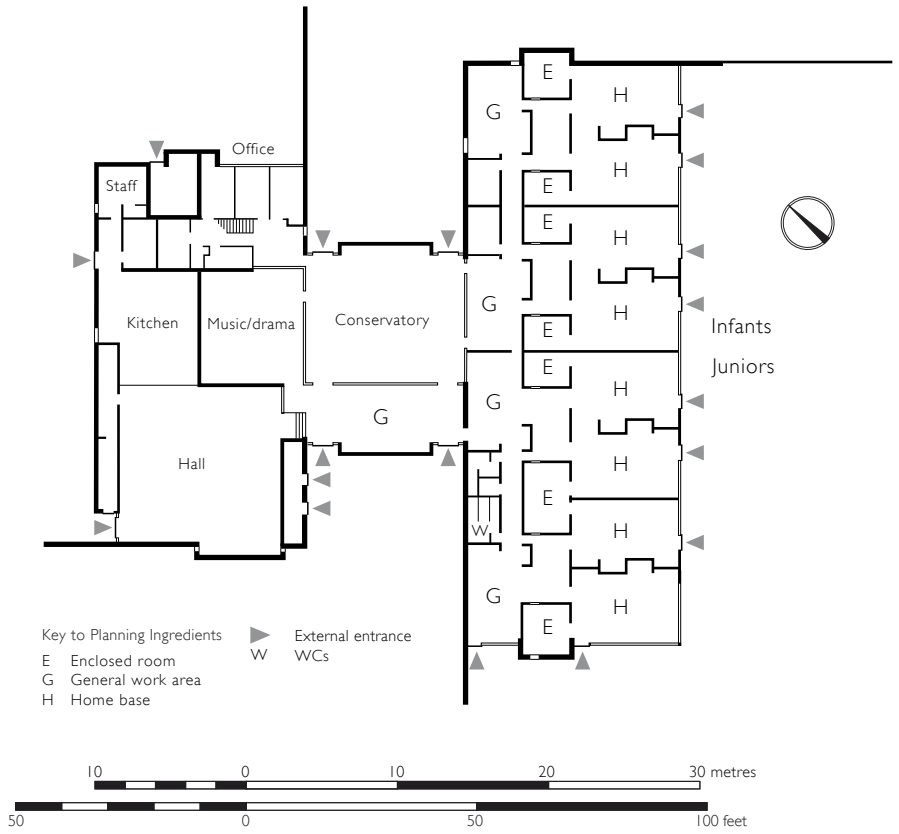


Figure 4.140: The return to rows of classrooms at Newlands Primary School, Yateley; Hampshire County Council Architect's Department, 1979-80.

The Hants Development Group reconsidered secondary planning at a new comprehensive school at Brighton Hill, Basingstoke, designed *c.*1973.[53] The school was Hampshire's first community school, and its layout was organised according to different degrees of public access and integration. It was to be jointly managed by a Head Teacher and Community Officer and supplementary funding from Basingstoke District Council allowed a larger gym and sports facilities.[54] Thought was also given to the 'rush hour' effect of hundreds of pupils transferring from lesson to lesson. Richard Clark had earlier taught at Woodberry Down School in Hackney, the first of the big comprehensives to be designed by the LCC; he knew from first-hand experience of the congestion in stairs and corridors when the bell rang. Analysing the timetable, Clark had the idea of grouping frequently-scheduled subjects and connecting them with wider corridors. Laboratories, workshops and 'language labs' were planned en suite so they could share teaching assistants. The practical rooms were designed with sufficient flexibility that, for example, a housecrafts area could be converted to a laboratory. The plan formed the basis for the initial phase of **Frogmore Comprehensive School** in Yateley, the last new Hampshire secondary school for some years.[55]

Quality: the Stansfield Smith Era

The culture of design fostered by Colin Stansfield Smith, County Architect from 1973 to 1992, could not have been a greater contrast with his predecessor.[56] He believed that public architecture 'must be the visible shop window of an enlightened local authority' and quickly realised that in an era of falling school rolls, energies could be devoted to one-off design.[57] In a 1984 address at the Royal Institute of British Architects he stated his position as the converse of what he inherited: product over process, project over programme, pluralism over standardisation, creativity over prescription, occasion and place over time and space.[58] At Hampshire, we see something close to the concept of 'critical regionalism' promoted by Kenneth Frampton (page 81).

Figure 4.141: Terry Riggs cartoon of Colin Stansfield Smith. Reproduced by kind permission of Hampshire County Council.

Yet the approach did not emerge fully formed. It is difficult to find a consistent theme amongst the many schools dating from the first five years of Stansfield Smith's tenure. Hampshire was committed to entire building programmes planned and specified under the old regime. Neither was it straightforward to decouple Hampshire from the SCOLA train, with all its political ties and the commitments of serial contracts and bulk purchase deals. It took time to assemble a team of young architects, ponder the course ahead and then to build up support amongst the elected members. The key political ally was councillor Freddie Emery Wallis, the Conservative leader of Hampshire County Council from 1976 to 1993, who backed an audacious and high-profile programme of public building. If, in the early years there was little indication of what would come, there was no doubting the strength of the reaction against the school building machine which Stansfield Smith inherited in 1974.

The backlash was not so much directed against the consortia approach *per se* as the lack of individual response to the design of buildings and their sites.[59] The sameness and mediocrity of Hampshire school sites, symbolised by the image of the typical SCOLA 'shoe box', amid-undifferentiated playing fields, tarmac'd playgrounds and chain-link fences, was another product of standardisation. In the name of efficiency, sites were carved up between autonomous departments with no single individual coordinating the whole. The grounds were planned on the width of a gang mower by the Estates Department, chain-link fences were provided by the Supplies Officer, the County Surveyor did the site roads and the architect was left with the bit in the middle; in all it was 'a sort of environmental game played by procedures and numbers'.[60] In the late 1970s Stansfield Smith wound down Hampshire's take-up of SCOLA and quietly left the consortium.

Soon after his arrival at Hampshire, Stansfield Smith poached a handful of bright designers from Cheshire, including David White, Huw Thomas and John Robinson,

Figure 4.142: Senior members of the Hampshire department at Winchester Great Hall in 1985. From left to right: Derek Poole (deputy county architect), David Chapman (building economist), Colin Stansfield Smith (county architect), David White (directing architect, north division), Geoffrey Burnaby (directing architect, west division) and Michael Morris (directing architect, central division). Reproduced with permission from Building*, vol.248, no.16, 19 April 1985, p.32.*

the latter Stansfield Smith's first Deputy.[61] The Portsmouth Polytechnic School of Architecture was another recruiting ground, providing Mervyn Perkins, Nev Churcher and David Morriss, year-out students and an interchange of ideas with staff such as Geoffrey Broadbent, James Powell and Barry Russell.[62] Stansfield Smith himself was a commanding presence, a persuasive performer 'in committee' and an accomplished designer in his own right. But most significant was his ability to recognise and encourage potential in his staff, creating a meritocratic environment in which talented designers thrived.

The Architect's Department, relatively small under Benson Ansell, grew to 180 by 1985, bucking national trends.[63] Three assistant county architects were each responsible for a tier of group leaders, who in turn headed teams specialising in police stations, libraries, residential homes, schools and so on.[64] Stansfield Smith reorganised the office into three geographical areas: central, northern and western divisions, each of 40-50 people and headed by a directing architect (fig. 4.142). The 'diet' of job architects thus became more varied and close working relationships with district planners and education committees developed, along with a friendly inter-group rivalry. Two architects usually worked together on bigger jobs, with assistance on drawing and detailing from a technician and keen interest from Stansfield Smith, especially during the conceptual stages. Job architects received due credit when projects were published in the architectural journals.

The Architect's Department became a 'design centre', with something of the atmosphere of an atelier or a school of architecture.[65] There were regular 'crits' or design reviews of current projects, voluntary life drawing classes, trips to see recent

architecture and architectural competitions were occasionally entered.[66] From 1976, presentation drawings and the work of the department's model makers under Alan Cooper were entered at the annual Royal Academy Summer Exhibition—hardly the traditional domain of local authorities—and exhibitions were held at the Great Hall in Winchester.[67] Richard McCormac, Edward Cullinan, Aldo van Eyck, Glenn Murcutt, Pirkko Higson and other luminaries came to Winchester to discuss their approach with the Department.[68] Barriers between public and private sector cultures were further breached and competition and influence encouraged by commissioning a share of the annual programme to private practices. Practices of national renown—Edward Cullinan, Michael Hopkins and Aldington, Craig and Collinge—were approached as well as the Winchester-based firms Jackson Greenen Down & Partners, Plincke, Leaman and Browning and Evans Roberts & Partners.[69]

The first glimpse of an alternative approach came with two projects for special schools, directed by David White, the key designer in the early years.[70] The first was a scheme for a day school for 50 children with severe mental disabilities, designed in 1976 by White and Brian Grayling for a site at Pennington near the south coast (fig. 4.143). Although it was not built, the scheme was prophetic in a number of ways. Its plan was an extraordinary game of geometry, clearly design-led, yet providing a variety of teaching areas in a fluid, interpenetrating configuration of teaching spaces. It was equally responsive to

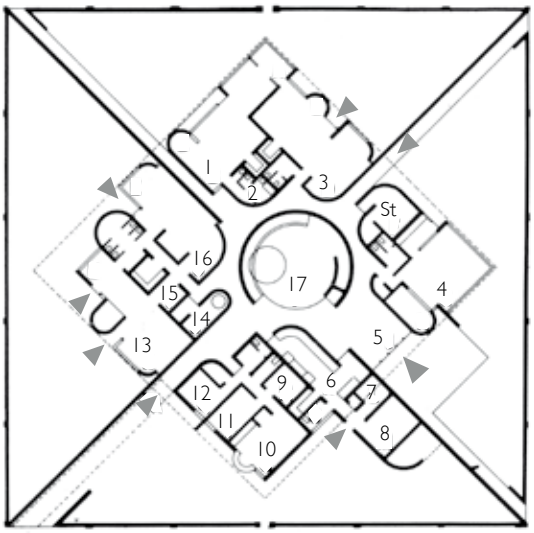


Figure 4.143 (left): The first of a 'one-off' tradition of design at Hampshire. A sketch by David White for the unbuilt Pennington Special School, c.1976. © Hampshire County Council.

Figure 4.144 (right) is a plan of the same scheme. The school is placed diagonally within a seventeenth-century walled kitchen garden. A mixture of 'semi-open' teaching spaces are grouped into quadrants. The project was shelved when Hampshire changed its policy on special education. Based on plan reproduced with permission from Architectural Review, *vol.163, no.971, January 1978, p.62*

Key

1	Nursery	12	Office
2	Bath	13	Younger pupils with severe disabilities
3	Middle years		
4	Older pupils	14	Splash pool
5	Dining	15	Wheelchairs
6	Kitchen	16	Older pupils with severe disabilities
7	Caretaker		
8	Boilers	17	Physical activities
9	Medical		
10	Staff	►	External entrance
11	Head	St	Store

Fig.4.145: A home base at St Francis Special School. Note the quiet bay, corner bay window and access to terrace. Photograph by James O. Davies – English Heritage; DP137498.

the character and idiosyncrasies of its site, to the extent that party walls stretch out to define play areas. White's 'guiding planes', inspired by Frank Lloyd Wright and Mies, recur at **Hulbert Middle School**, Waterlooville, **Newlands Primary School**, **Hatch Warren Infant School**, Basingstoke amongst others.[71] Pennington was to be fitted within a walled garden; the definition of edges and boundaries became a key preoccupation at Hampshire.[72] At the second school, **St Francis Special School** at Fareham, classes were planned as a series of staggered units, accessed from deeper shared central areas (fig. 4.145). This straightforward interpretation of the educational brief was the basis for many subsequent Hampshire plans, whilst at **Rookwood Infant School**, Eastleigh and **Elson Infant School**, Gosport the direct influence is clear. Pennington and St Francis Special Schools anticipate the sequence of projects upon which Hampshire's architectural reputation rests and which form the basis of the gazetteer below.

As a group, the Hampshire schools are best considered as variations on a series of spatial themes.[74] The first theme, the 'big roof' or 'barn' was first seen at **Fort Hill Secondary School**, Basingstoke (fig. 4.146).[75] A series of buildings followed which were notable for their lofty interiors and exposed trusses: **Four Lanes Primary School**, Chineham; Hulbert Middle School; Hatch Warren Infant School and the John Darling Mall at Eastleigh (a hostel of 1985 for young disabled adults). The second theme, the spine plan was developed

Figure 4.146: Four Lanes Primary School, North Chineham, Basingstoke; Hampshire County Council Architect's Department, 1981-82. Institute of Education Archives: ABB/B/1/217/2.

Figure 4.147: The lantern roof at Stoke Park Infant School. Photograph kindly supplied by Nev Churcher.

at Newlands Primary School, Elson Infant School, Netley Abbey Infant School near Southampton and the classroom wing of **Hatch Warren Junior School**. The layout was sometimes curved or staggered to close up spaces and create intimacy. Also linear were the 'arcades' of **Crestwood Secondary School**, Eastleigh; Farnborough College of Technology; **Fleet Infant School**, Velmead and **Queens Inclosure Middle School**, Cowplain, characterised by their central, top-lit corridors. The fourth theme was the festive conical roofs of Burnham Copse Infant School, Tadley; **Stoke Park Infant School**, Bishopstoke (fig. 4.147) and the hall at Hatch Warren Junior School.[76]

Beyond this it is difficult to generalise, although the fact that the Hants output can readily be classified by form is itself revealing. The themes were quickly picked up by the public and the schools acquired nicknames such as 'barns', 'tents' and 'tipis'. The one constant was the pitched roofs, which as Cedric Price explained:

> are not merely to shelter and enclose, but are used to signal the variety of volumes they cover, to indicate the nature of contained uses, to emphasise complexity, to unify the simple and to provide long range identity and colour.[77]

Remarkably for a generation raised on the modernist precepts of *plan libre* and flat roof, the pitched roof was enthusiastically employed in a variety of configurations by Hampshire architects; it was seen as a means of organisational discipline rather than a constraint.[78] The cross section, extruded along a straight, faceted or curved path, replaced the plan as the generator of architectural form; with this came the challenge of how to resolve the end walls.[79] Split-level plans were used at sloping sites where they helped to organise compact spaces, as at **Hatch Warren Infant School**. The conceptual

basis for other schemes, starting with **St Francis Special School**, was the juxtaposition of contrasting forms or volumes, expressed by Aldo van Eyck as the 'twin phenomena'.[80]

An alternative typology of Hampshire schools might take the basis of materials, traditions and styles of building. After SCOLA, detailing did not come easily, and long-forgotten brick and timber details had to be relearned from construction textbooks.[81] Stansfield Smith admitted that 'there is in the department a healthy creative tension between two factions where one side wishes to explore and speculate with new materials and new forms and the other side wishes to exploit the continuing tradition of building'.[82] Both approaches were equally capable of fashioning the standard educational brief into a multitude of forms. The former is represented by the hard-edged, orthogonal and metallic architecture of Phase II of **Frogmore Comprehensive School**, **Fleet Infant School**, **Queens Inclosure Middle School** (fig. 4.148), and straying into further education, Alton Tertiary College, Warsash College of Maritime Studies and the Farnborough College of Technology. These projects draw upon the high-tech idiom and the work of Australian architect Glenn Murcutt.

Figure 4.148: Queens Inclosure Middle School (now Queens Inclosure Primary School). © Hampshire County Council.

By contrast, the so-called 'brick and stick' approach produced earthbound, pragmatic and carefully-detailed buildings, such as **Bosmere Middle School**, Havant (fig. 4.149); **Elson Infant School**; **Burnham Copse Infant School**; **Woodlea Primary School**, Whitehill and Hazelwood First School, Totton.[83] The influence of vernacular forms such as tithe barns and traditional materials was better assimilated at Hants than in much contemporary

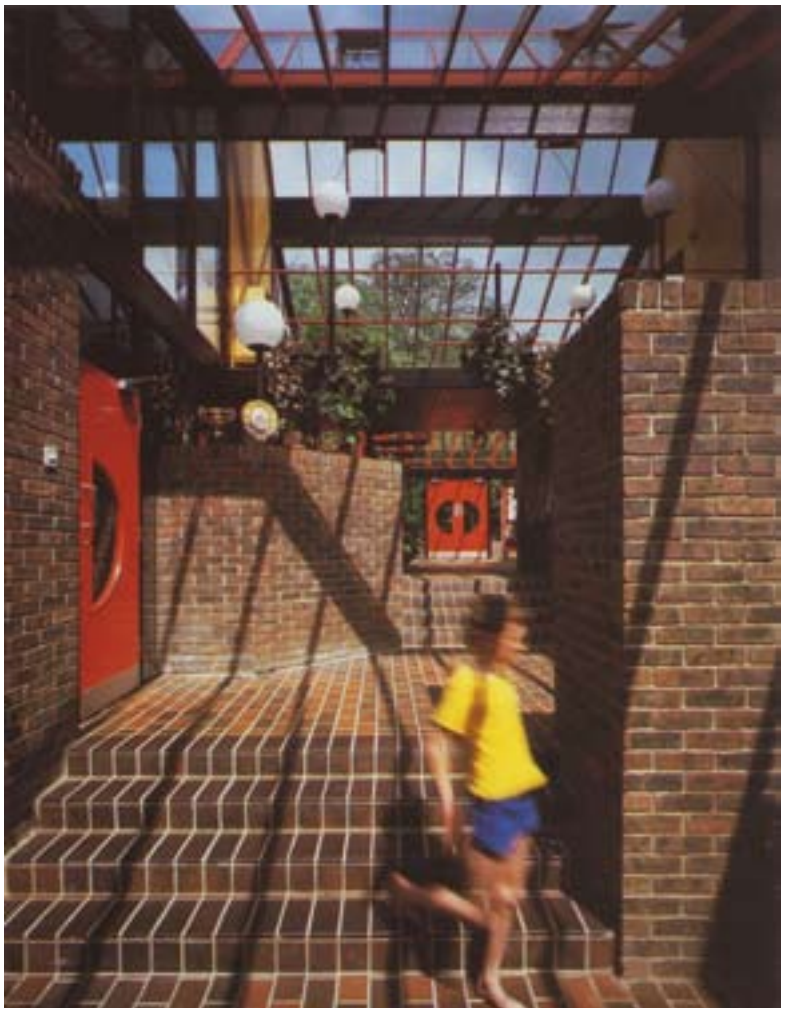


Figure 4.149: Bosmere Middle School. © Hampshire County Council.

'neo-vernacular' architecture. The polarity between groups should not be overemphasised, and there were common affinities with contemporary practices Aldington, Craig and Collinge, Richard MacCormac, Edward Cullinan and Robert Maguire. An interest in Alvar Aalto, Arne Jacobsen and Jørn Utzon, shared with Bucks architects (pages 248-50), showed in the dark stained joinery, boarded ceilings, exposed trussed rafters and painted fair-face brickwork that warm up many interiors. The English free school, the Arts and Crafts movement and the Victorian engineering tradition provided further points of reference.

In terms of the school design triumvirate of architect, educator and administrator (page 16), the Hampshire architect was in the ascendant. The other two arguably paid the price of architectural determinism, the former literally (it was not uncommon for projects to run over budget, requiring creative subsidy from other funds) and the latter figuratively, in that few Hants projects fully grasped the creative opportunity offered by patterns of educational activity. A given idea, such as a big interior volume, would typically be justified in the pragmatic terms of ventilation, cost or energy conservation; but architecture was invariably the impetus.[84] 'We must always be seen to give worthy and justifiable reasons to this third party client [the educational committee], as to why buildings should be built in the manner that we suggest', Stansfield Smith confided to his RIBA audience. 'This strange dialogue wherein we search for functional pegs on which to hang our architectural justifications has become almost ritualistic'.[85] He justified the latter in terms of education in its widest (and inevitably visual) sense: 'If there has been a hidden agent it is this aspiration for environments that stimulate and delight the spirit and these are part of educational experience'.[86]

Hampshire's concern for improving the quality of the school *environment* embraced such varied topics as interior design, energy efficiency, landscaping, historic building conservation and artworks. An interest in passive energy and environmental design took a variety of forms. There was a concern that most spaces should be naturally ventilated and daylit—one reason for the adoption of shallow, linear plans. The 'barn schools', with their deeper plans and large-volume interiors, were claimed as an energy conservation asset rather than a liability.[87] There was also much interest in highly-glazed 'buffer spaces' which would act as a thermal reservoir, keeping down heat losses in the main building.[88] The idea of the glazed open-air courtyard first surfaced in an aborted scheme of *c.*1976 for the conversion of Gosport School into a sixth-form college. Mervyn Perkins, who at Portsmouth Polytechnic had written a dissertation on glass and energy, incorporated a conservatory at **Newlands Primary School** and the glazed arcade was developed by Huw Thomas at **Crestwood Secondary School**.[89] Derek Poole, specialist on environmental design at the Architects and Building Branch, was appointed Deputy County Architect at Hampshire in 1979.[90] He drew the strands tentatively explored at Newlands and Crestwood together and underpinned them with external research. Collaborations were initiated with the Martin Centre at Cambridge University and the Science and Engineering Research Council (SERC) to study the collection, storage and diffusion of solar energy in buildings. The SERC-funded project was applied at an unbuilt project for Locksheath Junior School and later at **Netley Infant School**.

The public environment could also be enriched with art and Stansfield Smith encouraged artists' commissions and residencies at schools. The Arts Council's 'artists in schools' initiative would often pay for the residency, whilst the school contributed to the cost of the materials. Biennial sculpture exhibitions held at the Winchester Great Hall provided a source of contacts.[91] Rachel Fenner, working with the schoolchildren of **Fort Hill Secondary School**, produced *the Watchers*, a series of wooden totem poles inspired by the Iron Age hill fort from which the school takes its name.[92] The seven classrooms at **Woodlea Primary School** each incorporate encaustic tiles designed by several artists. Another Hants tenet was the integration of school buildings with their sites and wider landscapes (pages 90-91).

At Hampshire as elsewhere, much reorganisation and refurbishment of the existing building stock was necessary. Stansfield Smith was an advocate of estate management though 'creative demolition', and at Bridgemary Community School in Gosport reordered a campus of two secondary school, retaining only two-thirds of the existing buildings and knitting them together with brick garden walls and covered ways. In dealing with its existing building stock, Hants architects Michael Morris, John Reynolds and Tim Dyer discovered a rich building tradition. Many nineteenth-century village and board schools were restored or extended sympathetically.[93] At the Victorian St Mary Bourne, Crondall, Cheriton and Fairfield Primary Schools, post-war accretions were removed and mezzanine floors inserted. Bold extensions were provided at the 1875 Wellow Primary School near Romsey and Petersfield County Infant School, the latter of 1984-87 to the designs of Plincke Leaman and Browning.

Gazetteer

[Note: The design team for most Hampshire schools included both architects and technicians The gazetteer accordingly uses the formula 'job architect with *technician']*

Primary Schools

¶ **Otterbourne Church of England Primary School**, Main Road, Otterbourne, Winchester. Hampshire County Council Architect's Department (job architect Jeff Brown), built 1962-63.

Hampshire's first SCOLA building, and one of the earliest in England, coming soon after a mock-up erected outside the offices of Shropshire County Council in mid-1962.[94] Three square classes, each with outside entrance and toilets, open onto a small shared area. The exterior is distinctive, with a black-painted fascia, white frames, wide timber rails, geometrical tiles and weatherboarding. The school was extended *c.*1975 and survives in this enlarged form.[95]

¶ **Newlands Primary School**, Dungells Lane, Yateley; Hampshire County Council Architect's Department (job architect Mervyn Perkins); designed 1978-79, built 1979-80.

Newlands was the first Hampshire school to exploit the potential of the large-volume interior to create spatial interest and natural ventilation. This single-form entry primary school for 280 pupils served new estates built in the relatively prosperous suburb of Yateley. Two low-pitched ranges, a teaching block and a shorter one for the hall, kitchen, music room and staff offices, are entered via a glazed 'conservatory'. Eight south-facing classrooms are combined with open shared areas for practical work and quiet spaces. The building makes connections with its small but wooded site: the brick paving and timber-boarded eaves soffit are brought inside, and the north and east exterior walls extend out to define hard landscaped areas. The exterior is calm and controlled with dark-stained, bolted king post trusses over white-painted brick planes.

The full-height interior is chunkily detailed with great care. The quarry-tiled floor, white-painted brick and laminated timber trusses recalls Peter Aldington's houses and a mutual love of vernacular buildings. The metal space frame roof of the conservatory, painted bright red, was made in the garage of Tony Pritchard, an industrial designer noted for his work with Norman Foster. Pipework and artificial lighting

Fig.4.150: The main entrance at Newlands. Photograph by James O. Davies – English Heritage; DP137492.

Fig.4.151: A classroom at Newlands Primary School. Photograph by James O. Davies – English Heritage; DP137477.

are carried by boarded overhead service ducts. These devices, inspired by Frank Lloyd Wright's Usonian houses, introduce an intimate scale and appear in many subsequent Hampshire designs, as did the 'in-and-out' classroom partition wall which incorporates storage niches.[96]

Newlands marked a step towards a Hampshire strategy for environmental control based on daylighting, natural ventilation and solar gain. Oversailing eaves, clerestory vents and opening apex windows bring natural light and ventilation into the centre of the plan, whilst limiting solar gain. Heavy concrete tiles, brick cavity walls and extensive use of quarry tiles inside increase the building's thermal capacity. The unheated and glazed 'conservatory' reduces heat loss from the main blocks during the winter. More importantly it served as an entrance hall, a place for adults to socialise and a 'safety valve' for the younger children, filled with planting, pond and—initially—'aviary birds'.[97] In the Newlands conservatory can be seen the germ of interest

Fig.4.152: The conservatory at Newlands. Photograph by James O. Davies – English Heritage; DP137474.

Figure 4.153: Rookwood Infant School. © Elain Harwood.

in glazed intermediate spaces, such as atriums and arcades, that form crucial elements of later Hampshire schemes.[98] The school won several awards.[99]

¶ **Rookwood Infant School**, Penshurst Way, Eastleigh; Hampshire County Council Architect's Department (job architect Neill Beasley with Jon Dale), built 1980-81.

Rookwood is a two-form entry primary school for 240 children amid-the sprawling housing of Boyatt Wood. Standing aloof from these surroundings, it is a hard, restless yet elegant building, and one of the first Hampshire forays into a geometrical formalism expressed in a high-tech, industrial idiom. Rookwood's plan is a right angled-triangle with stepped, south-facing classrooms along the hypotenuse, essentially tidying up David White's plan for **St Francis Special School**.[100] Alan Cooper's model for the school had a mirror along the central axis, emphasising the symmetry.[101] Clustered around the classrooms are enclosed bases for quiet study, with shared space beyond. The main entrance is awkwardly located in the sloping north-west elevation.[102]

The roof is articulated by repeated monopitches on a 5.4m module, forming a sawtooth roof mirrored about the centre line. Deep overhangs shelter small verandas outside each classroom and clerestorey glazing is built into the monopitches. A structural steel and laminated timber frame, painted bright green and with a boarded soffit, stands upon rendered insulating blockwork and storey-height softwood windows painted yellow. The original colour scheme, in

strong orange and green, does not survive. Like the unbuilt but influential project for Pennington Special School (page 277), Rookwood was conceived as a building within a walled garden in the manner of Sissinghurst Castle, although trees rather than walls enclosed the triangular playground.[103] It closed in 1997 after a rationalisation plan and its future remains uncertain.[104]

Figure 4.154: The hall at Rookwood. © Elain Harwood.

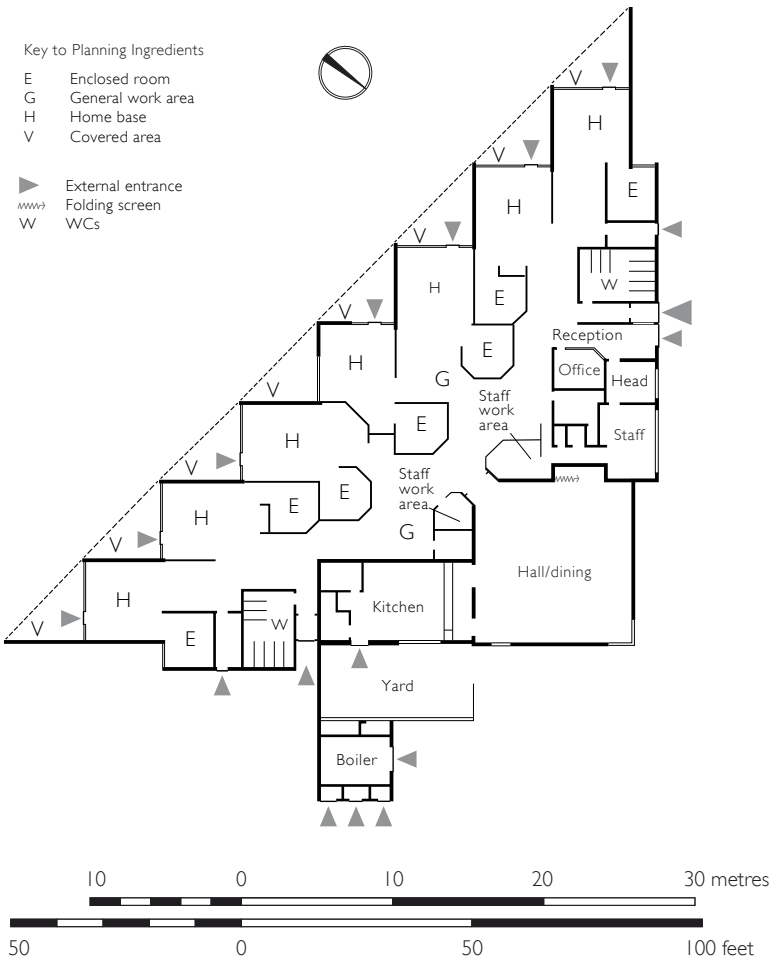


Figure 4.155: Rookwood Infant School, Eastleigh; Hampshire County Council Architect's Department, 1980-81.

¶ **Four Lanes Primary School** (now Four Lanes Community Junior School), off Hanmore Road, North Chineham, Basingstoke; Hampshire County Council Architect's Department (job architects Ian Templeton and Stephen Harte), designed 1980-81, built 1981-82. Later Infant and Nursery by Stephen Harte, c.1989.

The first deep plan open to a big roof, in contrast with **Fort Hill**. The roof, rising out of a mounded landscape and set against mature woodland, presents a dominant and distinctive image to the suburban estates beyond. The acknowledged precedent was Maguire and Murray's St Paul with St Luke Primary School in east London (page 198), but the Four Lanes roof surpasses the utilitarian aesthetic and evokes a medieval barn or circus marquee.[105] 'Its primitive decoration, including tile patterning, raised ridge board and carved finials', its architects wrote, 'is calculated to introduce an element of fairy tale, and should appeal to the imagination of a child, as well as being a source of visual excitement to the whole community'.[106] The glazed roof tiles were fired with the assistance of Southampton University.[107] Templeton and his wife had long collected decorated tiles and enjoyed their use in the Romanesque buildings of Burgundy.[108]

The main entrance is signalled by a gable and a projecting wall and from here one is led to the main reception with views into the hall. The break in roof pitch clearly articulates the layout: the imposing volume of the central hall surrounded by a more intimate, aisle-like perimeter of classrooms, administration and service rooms. Although the form of the building prohibits an extension, the versatility of the plan was demonstrated when pupil numbers increased to the extent that the headmistress turned the plan inside-out, using the central area for quiet working and the perimeter rooms for noisy and messy activities.[109] A top light over the exposed queen-post trusses brings natural light into the deep plan. The central shared area is decorated with an abstract mural by Terry Riggs which echoes the roofline.

¶ **Burnham Copse Infant School**, New Church Road, Tadley; Hampshire County Council Architect's Department (job architect Ian Templeton with Ian Lower); designed 1982-83, built 1983-85, demolished 2010.

Burnham Copse replaced a series of military huts that had been in service since 1956.[110] Many pupils were the children of defence workers at the former Atomic Weapons Research Establishment at Aldermaston. The layout of Templeton's earlier Four Lanes Primary School was refined into two centrally-planned groups, a decagonal teaching block and an octagonal hall, with a glazed entrance link (cv Newlands Primary School). Burnham Copse was the first centrally-planned school in Hampshire and influenced Stoke Park Infant School and Hatch Warren Junior School.[111]

The teaching block accommodated seven wedge-shaped classrooms with enclosed quiet bases on the outside. Two pairs of classrooms shared an inter-communicating door, and curtains instead

Figure 4.156: A 1987 photograph of Burnham Copse Infant School, Tadley; Hampshire County Council Architect's Department, 1983-85, demolished 2010. Institute of Education Archives: ABB/B/1/217/6.

Figure 4.157: Classroom at Burnham Copse Infant School. Institute of Education Archives: ABB/B/1/217/6.

of doors led to the central space and bays for coats and bags. The remaining segments were taken up with a porch and a covered play space intended for future conversion to classrooms. The central 'big top' was conceived as a teaching space capable of subdivision with furniture. The hall had exposed timber trusses spanning to an octagonal collar, the whole structure stained bright red. This allowed a continuous ring of top lights, with vents at the apex drawing air through the building. Services were carried around the perimeter in timber-clad ducts at intermediate level, as at Newlands.

The sweeping, multi-pitch conical roofs were conceived as festive incidents in an undistinguished suburb. Richard Weston suggested that 'Henry Morris would have loved them, for here indeed is a building fit to stand "side by side with the parish church" as a symbolic centre for the community it serves'.[112] The variety of nicknames coined by pupils, local residents and others— tipi, circus tent, roundhouse, oast house, chapter house, 'magic roundabout'—suggested that the architects achieved their aim of providing an evocative and place-making form.[113] The steep upper pitch of the roofs were decorated in layers of slate, glass and clay tiles, the latter painted and fired by the children.[114] The teaching block was surmounted by a patent-glazed lantern and globe finial, and the tiles of the hall roof were arranged in a herringbone pattern, as at Four Lanes.

Equal care was taken with the landscaping, although elements such as hard-landscaped play areas outside each classroom were cut when the budget overran. Instead excavated earth was arranged into landscaped mounds, sloping up to the perimeter of the blocks and along the south-east boundary to reduce noise from a planned road beyond. Planting to the west of the site enclosed a 'wild area'. In September 2008 the infants moved into the neighbouring Burnham Copse Junior School as a result of falling rolls. The vacant building was vandalised and eventually demolished in August 2010.

¶ **Elson Infant School**, Elson Lane, Gosport; Hampshire County Council Architect's Department (job architect Nev Churcher with Alex Upton), designed 1983, built 1984-85.

This replacement for a series of 1940s HORSA huts provides another formal variation on Jock Killick's educational brief.[115] A crescent of south-facing classrooms peels off from an orthogonal block. Here, a walled courtyard separates the administrative suite from the servery and music room (prompting Stansfield Smith to protest 'you can't have a courtyard in a linear building').[116] The resulting plan is a fusion of the triangular plan of St Francis Special School and Rookwood Infant School with the curved linear street of Crestwood Secondary School and Bosmere Middle School.

Between the classrooms and the rest of the school is a flat-roofed street with a formal entrance at the west and children's entrance at the east. Bays were provided between pairs of enclosed quiet bases. The entrances to the courtyard, music room and hall allow visitors and teachers coming from the reception area or staffroom to keep an eye on things. The street narrows from east to west as pupils peel off into their classrooms after break. As at Newlands Primary School, there is some confusion with entrances: the playground entrance is located away from its 'natural' position adjoining the classroom terrace.[117] The structure is a hybrid of insulated cavity construction for the quiet 'pods' and exterior classroom walls, and an exposed laminated timber frame.

The classroom party walls extended out to define a series of terraces, reached by sliding 'patio doors' and sheltered by a row of trees on the same alignment.[118] Churcher was intent on 'greening' the barren site, but was forced

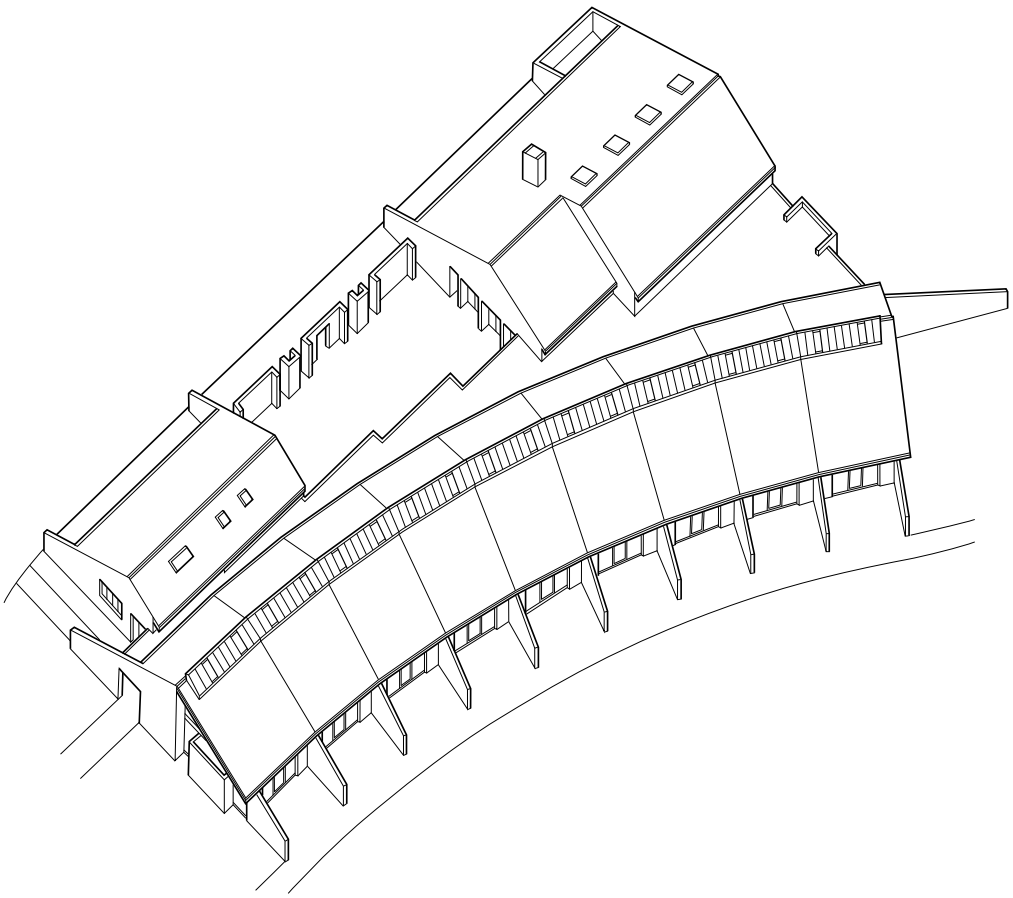


Figure 4.158: Axonometric drawing of Elson Infant School.

to think laterally when, by the end of the job, only a tiny fraction of the budget remained for landscaping. The road, parking and playground from the old school were all retained, the savings used to purchase 150 trees which were planted around the curved approach road and a play area. A heap of soil excavated from the foundations was banked around the edge of the site. David White and Tina Bird designed a neighbouring Junior School, completed in 1987.

¶ **Netley Abbey Infant School**, Westwood Road, Netley Abbey, Southampton; Hampshire County Council Architect's Department (job architect Dennis Goodwin), designed 1982-83, built 1983-84.

Shortly after Dennis Goodwin joined Hampshire in 1979, he volunteered to work with Derek Poole on developing low-energy design (page 85). Poole brought in Dean Hawkes and Nick Baker from the Martin Centre at the University of Cambridge, who had developed an environmental modelling system and a generic cross section. Funding from the Science and Engineering Research Council (SERC) allowed the team of designers and consultants to work together on Netley. The school offered a suitable site for passive solar design and an enthusiastic head teacher.[119]

The team set themselves two goals at Netley: to make maximum use of daylighting, ventilation and solar gains, whilst allowing the occupants to modify ventilation and heating. Like St. George's County Secondary School in Wallasey (grade II), passive solar energy supplements a central heating system. The plan resembles **Newlands Primary School** but rotated through 180°: a row of northwest-facing classrooms, behind which is a semi-open assortment of shared and quiet space and a south-east facing corridor. The hall, kitchen, staff rooms and library form a somewhat unresolved group around a central atrium, and further classrooms project to the south east to define garden courts. The long elevations present a restless series of classroom gables rising from low eaves. The side walls, by

contrast, present large stretches of blind walling to the play area.

The fully-glazed corridor, termed 'conservatory' by the architects, is the engine for the heating and ventilation of the building. During the winter warm air from the conservatory is drawn into the classrooms across air handling units situated in an upper level service gallery. In summertime, hot air is expelled from the classrooms into a ridge ventilator though stack effect ventilation, drawing cooler air into the classrooms from louvres in the north wall. Solar blinds can be drawn across the conservatory and temperature and ventilation controls in each classroom allows teachers to mix preheated fresh air and recirculated air. Despite teething troubles with the pumps and boilers in the first heating season, an independent monitoring study found that the school performed as intended, resulting in a marked reduction in energy consumption.

Figure 4.159: Classroom pavilion at the Hurst School, Tadley; Aldington, Craig and Collinge, 1983-85. Photograph kindly supplied by Peter Aldington.

¶ Additions to the **Hurst School** (now Hurst Community College), Brimpton Rd, Baughurst, Tadley; Aldington, Craig and Collinge (job architect Peter Aldington), 1983-85.

A series of classroom pavilions, grouped to create a variety of enclosed spaces which knitted together a disparate assortment of existing buildings. Outside benches and tables were provided to give children spaces to congregate during breaks, and much play space was reclaimed by repositioning the car park a short distance away from the buildings. Aldington completed the landscaping with trees and generously-planted borders. Each pavilion was square in plan and flat-roofed with three brick walls and one patent-glazed end wall. These were linked with patent-glazed walkways; inside services were exposed and each classroom painted a different colour.

¶ **Hatch Warren Infant School**, Gershwin Road, Basingstoke; Hampshire County Council Architect's Department (job architect Stephen Harte), designed 1983, built 1984.

The sheltering barn form of Hatch Warren sits on an exposed hillside site in housing estate west of Basingstoke. The school is dug into the slope, and the deep plan is arranged around three tiers, with infants at an upper level, a central hall, music and resources area, and juniors on the southeast facing side. The upper level cantilevers over the hall to give the infants a viewing gallery. The tiers are separated by top-lit corridors with glazed screens in wall which are extended out into the landscape. The junior wing has since been extended to the south.

¶ **Fleet Infant School**, Velmead Road, Fleet; Michael Hopkins & Partners (job architects Michael Hopkins, Patty Hopkins and Shelia Thompson), designed 1984-85, built 1985-86.

The steel-framed, 'high tech' strain at Hampshire, implicit in **Frogmore Comprehensive School**, was developed in the mid-1980s at Fleet and the closely related **Queens Inclosure Middle School**. Fleet was a replacement for a Victorian Infant School amid-heathland and the coniferous Spring Woods not far from Farnborough Aerodrome. When he commissioned Hopkins in 1984, Stansfield Smith had in mind the masted membrane structures they had developed with

Figure 4.160: Fleet Infant School. The sail-like awning in Teflon-coated PVC is an allusion to Hopkins's initial proposal for a tent-like masted structure. Photograph by James O. Davies – English Heritage; DP137509.

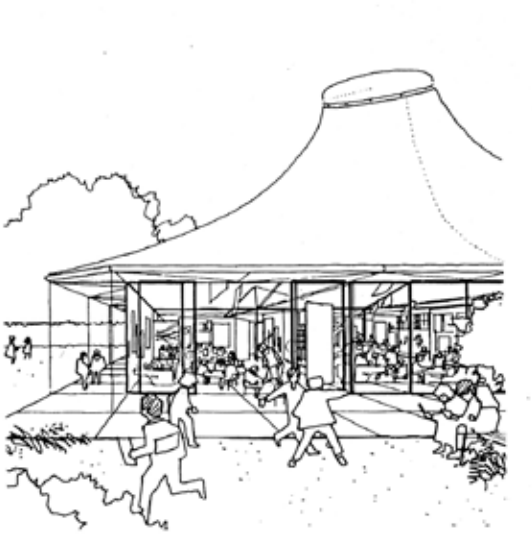


Figure 4.161: Hopkins's initial proposal for Fleet Infant School. © Hampshire County Council.

the engineers Büro Happold for an abortive project to enclose the town square in Basildon.[120] Hopkins developed a scheme in which a tent of Teflon-coated fabric roofs billowed out over a rectangular glazed envelope. Despite the support of Stansfield Smith, the scheme was opposed by education officers and rejected by the education committee.

A modified design substituted a low-pitched metal roof, whose continuous ridge glazing complemented the linear internal street already present in the first proposal. The pattern of shared corners and pods resembles **Newlands Primary School**, **Elson Infant School** and **Netley Abbey Infant School**. The nine classrooms are open to the street and separated with head-height partition walls. Beyond are rubber-floored practical areas with double doors that open onto a paved terrace. It appears that the initial scheme was rotated 90° and although this results in better classroom lighting, the location of the 'adult' entrance now seems arbitrary; it formerly led straight from the car park.

Fleet is a good example of the high-tech idiom developed by Hopkins, Richard Rogers, Norman Foster and Nick Grimshaw. Structure is clearly expressed inside and out, so that the classroom divisions coincide with the structural bays. Attenuated, hollow-section columns at 6m centres support cranked rafters and a roof of insulated metal decking, like that

Figure 4.162: A pair of home bases at Fleet Infant School. Photograph by James O. Davies – English Heritage; DP137503.

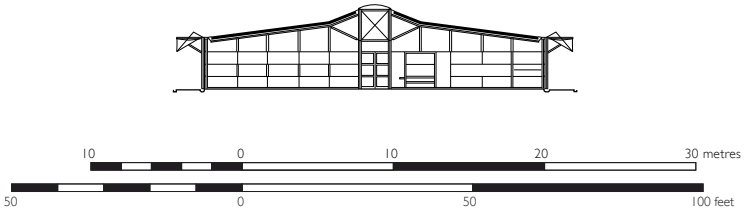


Figure 4.163: Cross-section, Fleet Infant School; Michael Hopkins & Partners, 1985-86.

of **Hulbert Middle School**. The frame was designed in collaboration with Ted Happold, who commented that 'in concept the structure has its origin in those large French electricity pylons that support their wires on outriggers'.[121] The 'dumb-bell' arrangement of paired inner and outer columns is a characteristic Hopkins refinement, with the inner column doubling as a rainwater downpipe and junction with the internal partitions. But the aesthetic brought practical drawbacks such as glare and summer overheating from the glass walls; high energy bills and condensation problems from the lightweight, single-skin roof.

The interior is lofty, light and more open than the in-house designs at Hampshire. The 3.2m eaves height was determined by the perimeter location of the sports hall. The darker, enclosed pods with their porthole windows provide contrast. There are perhaps too many hard surfaces for comfortable acoustics, although the floor is largely carpeted. High-level louvres encourage cross ventilation and vents are incorporated in the central ridge to generate a stack effect. To the south of the school is a boggy heath land, which the teachers and architect jointly insisted be retained as an educational resource rather than drained for playing fields.[122] In 1998, Hopkins designed a music pod to adjoin the north side of the school.[123]

¶ **Stoke Park Infant School**, Abbotsbury Road, Bishopstoke; Hampshire County Council Architect's Department (job architects David White, Tina Bird, Stephen Harte with John Laye and Alec Upton); designed 1985-87, built 1988-89.

The design of this school for 315 infants was started by David White and Tina Bird as an organic form, half buried within a south-facing grassy slope between Forestry Commission woodland and a post-war estate. After White's death in December 1985 the scheme was developed by Stephen Harte, who drew on the centrally-planned **Burnham Copse Infant School** to create a focal point for the community. The difference is that here the entire school is contained under a single, massive conical roof: as Richard Weston put it, 'the big roof to end all big roofs'.[124]

Like Burnham, the school has a central hall at its heart. But the geometry is considerably more intricate: the centre of the hall is displaced from the apex of the roof, and the swirling plan is generated centrifugally from these twin points of origin. The hall is a top-lit drum 15m in diameter with its helix-like roof rising to a lantern at the apex. The roof, designed with Michael Dickson of structural engineers Büro Happold, is a

Figure 4.164: Stoke Park School. © Hampshire County Council.

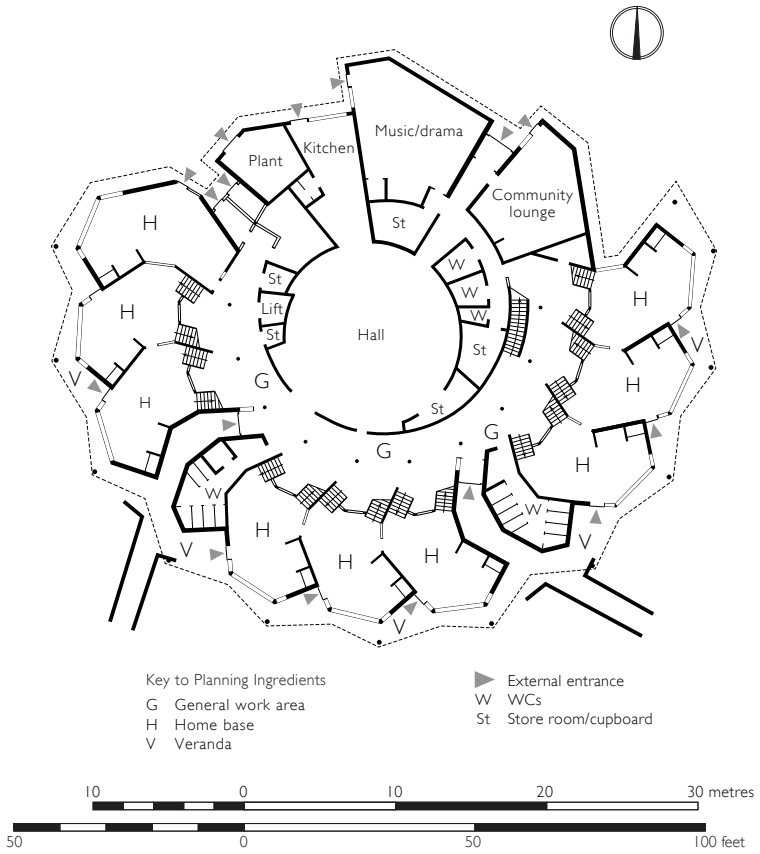


Figure 4.165: Stoke Park Infant School.

Figure 4.166: Stoke Park Infant School. Institute of Education Archives: ABB/B/1/220/1.

composite structure which combines exposed laminated rafters and purlins with slender steel ties meeting at a central ring. A split-level section, reacting to the sloped site, contributes another layer of complexity. The hall and the adjoining, curved street are dug into the slope, half a flight lower than the nine, south-facing classrooms beyond. These spiral out clockwise from the centre, twisting into a cranked form which is further complicated by the low, curving roof. Each classroom opens out onto a hardstanding play area. From the classrooms stairs and ramps ascend to an intermediate level of quiet bases, positioned over the shared area and overlooking the hall. To the north, the offices and staff rooms are reached via an open gallery within the hall. Also at this upper level is the visitors' entrance, accessed via a footbridge over a grassed moat.

The exterior is dominated by the gently concave 'tipi' roof, with layers of zinc and cedar shingle cladding crowned by a glazed lantern and sculptural finial. Concentric glazing strips light the classroom and quiet bases. A zinc canopy overshoots the exterior walls and from underneath emerges the classrooms, which alternate white blockwork walls and full-height glazing. To the north, a break in the lower skirt of the roof exposes the jagged, white-walled forms of the kitchen, music and drama studio and community rooms. The buildings apparent mass is further reduced by its landscaping of curved earth bunds which reuse soil excavated for the foundations.[125] Stoke Park represents the culmination of the centrally-planned Hampshire schools. Its elaborate plan was conceived to respond to the need of a young child for personal territory and its strong urge to form part of a community. In 1992, a two-class extension with a green roof was bedded into the banking behind the school.

¶ **Farnborough Grange Junior School**, Wren Way, Farnborough; Edward Cullinan Architects (job architects Edward Cullinan, Sasha Bhavan, John Romer, Seán Harrington, Matthew Letts),1987-90.

Stansfield Smith first invited Edward Cullinan's practice to recondition some of the first generation of SCOLA schools, by now showing their age. The common way to repair SCOLA schools was then to strip them down to the frame and install new fibreglass cladding and flat roofs. At Calthorpe Park Secondary School (1981-83) and Crookham Junior School (1984-87), Cullinan contrived decorated permanent scaffolding, incorporating a metal roof and brise soleils. Farnborough Grange was the third SCOLA reconditioning project, but the condition of the 1963 building was found to be beyond repair and Cullinan asked to design its replacement: 'after all the previous refurbishments and insertions', he said, 'it was lovely to design a whole new school'.[126]

The unusual Y plan is angled so that two classroom wings catch the sun. Most of the school is of flat-roofed brick which contrasts with the attenuated, white-painted steel and wavy roofs of the classrooms and hall. The double curve of the corrugated aluminium roof sweeps up to a clerestorey on the opposite side; below is the lower roof of the practical area, which opens onto an outdoor terrace.[127] The classroom wings terminate with semicircular tutorial rooms. A fatter 'stem' to the north contains the hall, kitchen, changing rooms offices and service rooms. A lighthouse-like drum rises over the central resources area and from where the teachers can 'retreat from the hurly burly of schooling.'[128] This feature recurred at Cullinan's Greenwich Millennium School and Health Centre of 2000.

¶ **Hatch Warren Junior School**, Gershwin Road, Basingstoke; Hampshire County Council Architect's Department (job architect Joe Collins),1988-91.

A recapitulation of two Hampshire themes. A roundhouse hall and kitchen (based on Burham Copse and Stoke Park Infant Schools), unfurls from a curved terrace of classrooms, as at Crestwood Secondary School, Bosmere Middle School and Elson Infant School, but claiming inspiration from Hampshire landforms and tumuli.[129] The linear form was partly chosen to enable future extension. The classrooms curve around an avenue of trees and a circular playground (an intended 'spiral land form' was not built). Materials include brick and timber cladding with tile and metal sheet pitched roofs.[130]

¶ **Woodlea Primary School**, Atholl Road, Whitehill, Bordon; Hampshire County Council Architect's Department (job architects Nev Churcher and Sally Daniels), designed 1989, built 1990-91.

Woodlea school enjoys the spectacular setting of a wooded hill, with an Iron-age hill fort at the summit and ancient woodland below the site. The brief was for separate infant and junior schools but after visiting the site, Churcher persuaded his client to opt for a single primary school. Woodlea was conceived as a 'cluster of houses around a town hall'.[131] The crescent-shaped building is worked around the contours of a grassy bowl; Churcher had originally envisaged curving walls. Like many of Churcher's buildings, it is a composite structure, with a outer 'crust' of brick walls cut into the hillside, sheltering a 'soft' timber-framed core. The building steps across its sloping site with three changes in level totalling a metre. The main entrance, staff rooms and library are on the central level, with lower teaching wings and the hall and music room crowning the composition.

Figure 4.167: One of many coloured plans of Woodlea produced by the architects. Drawing kindly supplied by Nev Churcher.

Three staggered infant classrooms have integral practical areas with sinks and decorated encaustic floor tiles. Brick-built pods are provided for quiet work. To the south is a cranked wing with four junior classrooms and a tutorial room for reading groups. The teaching spaces have picture windows with low sills, top-hung clerestorey windows and skylights. Each classroom opens onto a shared area, and from there can be reached timber decks with chunky hardwood handrails. Natural finishes of timber and aluminium were chosen to show the children what their school was made of. The hall has a portal frame of laminated timber which rises cruck-like from the ground. Its asymmetric curves recall Aalto's church in Riola, Italy of 1975-78. The adjoining music room is irregular on plan for reasons of acoustics, and has an assortment of windows of various shapes set into its brick walls. These elements were a challenge to build and the contractor admitted that 'the men were frightened of it at first, it was so different from anything they'd done before, but then they got into it'.[132]

The relaxed, organic plan is disciplined by the application a 1.2m module. Daniels, a year-out student, set out all walls, partitions and services onto four angled planning grids which change direction at 'node points' where different grid alignments met.[133] The plan, with its staggered and non-orthogonal geometry, has some affinity with the schools designed by Hans Scharoun and Devaris and Manteuffel's Michael Hall Steiner School, Sussex of *c*.1980.[134] The cedar shingle roofs and generous eaves respond to the wooded site. The 'impure' combination of flat and monopitched roofs attracted some criticism within the Department, and a working model with adjustable roof pitches was used to finalise the form of the building.[135] Churcher's simple, robust detailing has proved durable and practical for cleaning and maintenance. The landscaping by Pirkko Higson and Stuart Pearson incorporates curved playgrounds, garden, ponds and the planting of 150 species of plants and trees, now approaching maturity. Lower down the slope a flat playing field was cut into the slope, out of sight from the school.

Figure 4.168: The hall at Woodlea School. Photograph by James O. Davies – English Heritage; DP137523.

Figure 4.169: Library at Woodlea School. Photograph by James O. Davies – English Heritage; DP137514.

Middle Schools

¶ **Hulbert Middle School** (now Hulbert Junior School). Springwood Avenue, Waterlooville; Hampshire County Council Architect's Department (job architects Mervyn Perkins and David White with John Godding), built 1981-82.

Hulbert is a further rationalisation of the Hampshire 'barn schools' **Fort Hill Secondary School** and **Four Lanes Primary School**. The former grounds of a large house provided a bosky, rolling site north of Portsmouth. The rural surroundings prompted the architects to look to agricultural buildings, the precedent being Maguire and Murray's St Paul with St Luke Primary School in east London (page 198), and they adapted an agricultural portal frame in collaboration with the Timber Research and Development Association (TRADA).[136] The deep plan and structure achieved savings which the architects spent on additional teaching areas, achieving 20% in excess of the DES minima.[137] The roof, termed 'floppy hat by White, had to achieve sufficient height to permit the building to step up a slope and to allow mezzanine levels to be slotted in.[138] Over the wide-span hardwood structure was draped a pitched roof clad in corrugated aluminium sheeting.[139] The profile is complex, with double-glazed strips separating changes of pitch; White repeated the idea at the John Darling Mall at Eastleigh.

The organising principle, established at **Four Lanes Primary School**, is of a perimeter of cellular classrooms around a central shared area, with service and administration facilities similarly grouped around the hall. Thanks to the stepped section, upper and lower schools are literally that. They are further delineated by retaining brick walls which extend outside the building as boundary walls. Carpets, timber boarding and low ceilings lend domesticity to the classrooms. They are generously lit by a combination of side lighting, a rooflight strip at the rear of the room and borrowed light from clerestorey glazed screens in the partitions. The architects struggled with the greater specialisation and practical emphasis of a middle school: the small craft, pottery and cooking rooms are too few, and poorly lit and positioned. Fewer quiet areas were provided than the contemporary **Bosmere Middle School**.

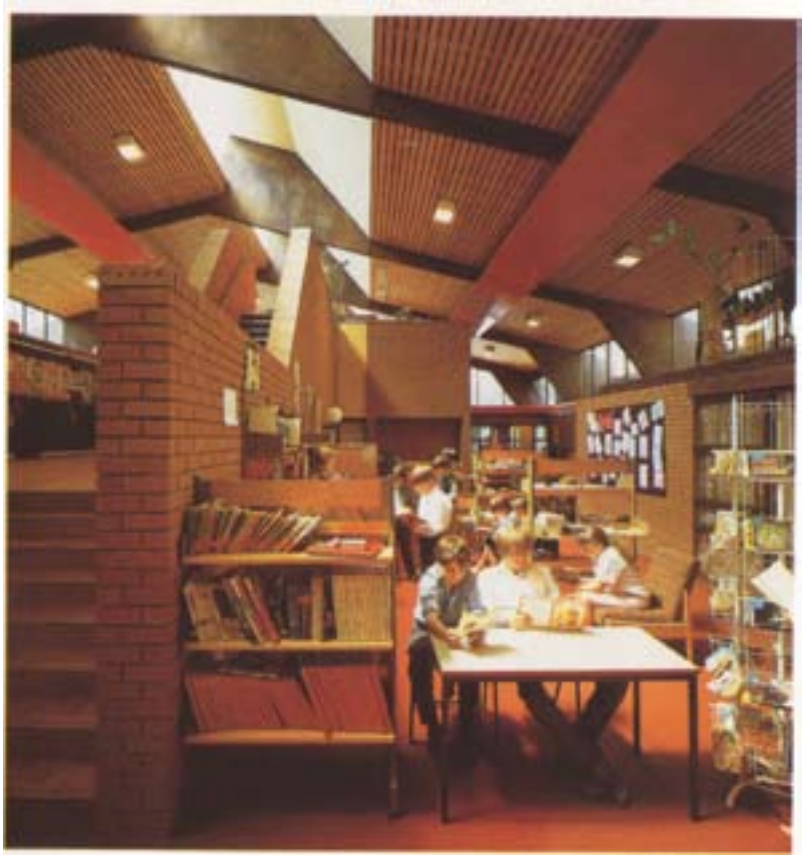


Figure 4.170: Hulbert Middle School. © Hampshire County Council.

At the heart of the school is a free-flowing sequence of communal spaces at the centre: shared areas, hall and music and drama room. The classrooms can be locked and the central area is generously served by adults' WCs and changing rooms and can be opened to community groups in the evening. These lofty spaces have a harder interior, defined by low brick walls, clay pavers and floodlit by sodium lamps, but softened by the sloping softwood ceiling. The central area has a higher thermal capacity than the perimeter and was intended by the energy-conscious Perkins to act as a heat sink for the building. The staffroom and library occupy a mezzanine level, set over the music and drama room. The long elevations are articulated by the cedar-boarded classroom stores which alternate with glazed walls. The end elevations are less tightly controlled, with brick volumes spilling out from under the aircraft-like profile of the aluminium roof and entrances picked out in a vivid yellow.

¶ **Bosmere Middle School** (now Bosmere Junior School), South Street, Havant; Hampshire County Council Architect's Department (job architects Nev Churcher, Peter Galloway and Mervyn Perkins), designed 1981-82, built 1982-83.

Like many replacement schools, Bosmere had to fit into a small site amongst a scatter of HORSA and terrapin huts until completion to avoid 'decanting' children to another site during construction. This, together with a desire to retain mature trees, explains the double curve of its tadpole-like plan, which is formed of

Figure 4.171: Bosmere Middle School, Havant. 1:1,250 scale site plan.

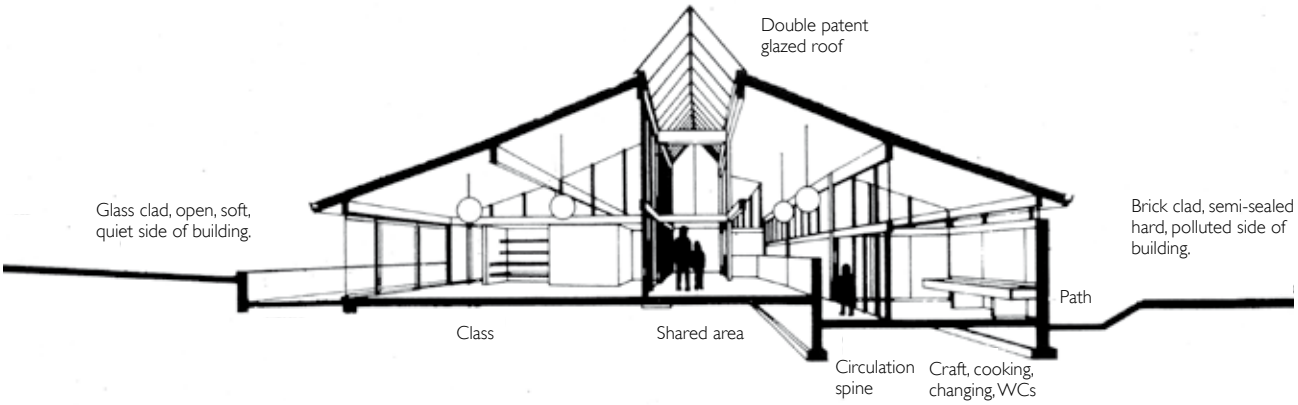


Figure 4.172: Sectional perspective of Bosmere Middle School, Havant; Hampshire County Council Architect's Department, 1982-83. Based on presentation drawing kindly supplied by Nev Churcher.

a 'head' of hall, kitchen and administration separated from its teaching 'tail' by a glazed conservatory-cum-entrance, as at **Newlands Primary School**. The curve (in fact, a series of facets) hugs the contours of a gently sloping site, allowing a stepped section. The wide corridor which runs the length of the school is animated by changes in level and a gentle curve which shortens the sightline and tones down the acoustics. Along one side, the activities of a range of craft and domestic science workshops can be glimpsed through internal windows. These noisy and wet activities are contained in a brick-built and artificially-ventilated space which form an acoustic buffer to the noisy road junction beyond. From the quieter side of the street is accessed a longer row of classrooms and intervening quiet and practical rooms. Each classroom has large sliding doors opening onto the copse. The upper and lower schools are separated by a library, which adds 'incident' to the circulation spine.

Figure 4.173: Bosmere Middle School, Havant; Hampshire County Council Architect's Department, 1982-83. Institute of Education Archives: ABB/B/1/223/1

The section takes the form of a double pitch, split at the apex by a continuous double-glazed rooflight. It is manipulated along the school's length to accommodate a variety of floor levels and room depths. Construction is a mixture of brick cavity wall (for the street and workshops) and laminated timber columns and beams framed at 6m centres, each incorporating a 3° change in angle (increasing to 15° towards the head). The interior is well detailed and full of architectural incident. Churcher's formative architectural experience was building his own house, from which certain details are derived such as the soffit boarding which extends to the eaves. The formal entrance, a space often neglected in post-war schools, is an elegant set piece combining paviours, low brick walls, a glazed roof, planting and bright red doors with circular panes. Attention was also paid to the landscaping, with earth banks planted with trees acting as a buffer at the noisy western boundary of the site. The school has since been extended to the north by Mervyn Perkins.[140]

¶ **Queens Inclosure Middle School** (now Queens Inclosure Primary School), Cornelius Drive, Cowplain, Waterlooville; Hampshire County Council Architect's Department (job architect Dave Morriss with Alec Upton), designed 1987-88, built 1988-90.

When the design originally prepared by Dave Morriss for a timber-framed school was found to be prohibitively expensive, he was faced with a complete redesign a few days before the scheme went before the education committee. Instead, he decided to rework Michael Hopkins & Partners's design for **Fleet Infant School**, itself a rethink. Morriss implemented a number of changes. Influenced by the houses of Glenn Murcutt, Morriss replaced the double pitched roof with a pair of parallel segmental vaults, defining served and servant zones, with an intervening glazed barrel vault over the internal street. He turned the building through 180° so that the class bases face north with woodland views. The orientation of the pods was reversed so that they are entered from the street rather than the classroom, allowing them to be used by older children for craft and cookery. But the pods and staff offices were still treated as freestanding objects within a large perimeter. Glazed screens run up to the roof from the classroom partitions; at Fleet the equivalent space was open. Aluminium louvres with adjustable blades replace Hopkins's fabric awnings. But there are otherwise few differences with the Hopkins scheme.

The silvery steel and aluminium shed of Queens Inclosure sits over a grassed meadow (hence 'cow plain') at the boundary with mature woodland, a remnant of the ancient Forest of Bere (hence 'Queens Inclosure'). The visitors' entrance is approached head-on rather than oblique approach to Fleet. Landscape designer Trevor Goodenough banked pedestrian paths with Hidcote lavender and bands of rosemary planted around vehicular areas. Half of the site is kept and a meadow and an 'ecology paddock' occupies the north east corner.[141] The nine-class school was designed before the inception of the National Curriculum but its plan was sufficiently flexible to allow the headmaster John Clouting to reorganise the layout on the basis of subject areas rather than the year groups conceived by Morriss. Queens Inclosure was a runner up in the BBC Design Awards 1990 and national winner of the RIBA president's Building of the Year Award in 1991.[142]

Secondary Schools

¶ **John Hunt of Everest Comprehensive School**, Oxford Way, Basingstoke; Hampshire County Council Architect's Department (job architects David J. Morgan and D. Day), 1969-70, demolished *c.*2005.

John Hunt was initially designated as a 650-place bilateral school for the expanded town of Basingstoke. After it had been designed Hampshire adopted a comprehensive reorganisation plan in July 1970, and a second phase was added to double the initial intake. The original plan had separate blocks in a cross formation, linked by covered ways to a central, 'moated' administration block. Phase two simply filled out the corners, making a three-by-three grid. The school was intended as a showcase for the versatility of the SCOLA Mark IIa system, and included precast concrete panels with exposed white flint aggregate, GRP cladding panels and modular Forticrete blocks, all developed in Hampshire.[143] The three- and four-storey teaching blocks included house rooms equipped with a servery and lifts to enable them to be used for dining. The school was demolished *c.*2005 as part of a 'land swap' arrangement.[144]

¶ **Frogmore Comprehensive School**, Cobbetts Lane, Yateley, Hampshire; Hampshire County Council Architect's Department. Phase I: job architect Graham Dugan, completed 1974. Phase II extensions: job architects Peter Galloway and Mervyn Perkins, built 1978-79.

Like **John Hunt**, Frogmore was planned as a four-form entry school with an extension to double the roll. The plan was based on Brighton Hill School (page 274) with single-storey teaching blocks grouped around a central, two-storey library to create enclosed and landscaped courts. The initial phase, in SCOLA Mark III, was clad in grey brick and glazed panels. It was the last large-scale use of SCOLA in Hampshire.[145]

Phase II comprised two further teaching blocks for a total of 300 pupils to which, at a late stage, was added a sixth form centre and community facilities. The architectural challenge was how to break with the now-discredited SCOLA system whilst maintaining a sense of cohesion in the completed school as a whole. They chose to take up light and dry construction on their own

terms, bringing in Anthony Hunt & Associates, a structural engineering firm best known for its work with Foster Associates, to devise a one-off steel-framed building with enhanced environmental control, energy conservation and aesthetics.[146] The sleek, minimal boxes of phase II invite comparison with Hunt's earlier collaborations, such as the IBM Pilot Head Office, Cosham of 1970-1971 by Foster Associates and Michael Hopkins's house at Hampstead of 1975-76. A frame of square-section stanchions at 7.2m centres accommodates full-height aluminium frames with gable walls of grey brick. At the corner the frame is exposed in the Miesian tradition, and a flash gap raises the structure from its gravel perimeter. The WCs are housed in semi-circular brick pods projecting from the blocks. The large amount of glazing is mitigated by aluminium *brise soleil* and perimeter heating and sliding insulating panels for winter use. If the exterior is refined, the interiors are hard and noisy, with blockwork partitions and an exposed perforated steel deck in place of ceiling tiles. Perimeter heating allowed a suspended ceiling to be omitted thus achieving a 600mm reduction in overall height. The frame and fittings of the two blocks are colour coded green and red in the high tech manner.[147]

¶ **Fort Hill Secondary School**, Winklebury, Basingstoke; Hampshire County Council Architect's Department (job architects Trevor Harris with John Laye), designed 1975-76, built 1976-78.

Fort Hill, an eight-form entry secondary school for 1,200 pupils, presents an alternative image to the flat-roofed post-war secondary school. Its 'big roof', the first of many in Hampshire, dominates an exposed site on Winklebury Hill, yet conceals a conventionally ceiled and artificially-lit deep plan. The interior was, as Richard Weston put it, 'devoid of that sense of place promised from outside'.[148] In this respect Fort Hill is comparable with the neo-vernacular Hillingdon Civic Centre of 1973-78 by Robert Matthew, Johnson Marshall and Partners. The interior is more enclosed than the contemporary **Frogmore** Phase II.[149] The school lies within the ramparts of an Iron Age fort and is bedded into the ground behind earth mounds. The plan is conventional, with teaching blocks pinwheeling about a central courtyard. Fort Hill is largely of load-bearing construction, clad with fairfaced brick outside and blockwork inside, but it is the roof which catches the eye with its concrete pantiles and clay ridge tiles and finials.

Figure 4.174: Fort Hill Secondary School from the air. Photograph kindly supplied by Nev Churcher.

¶ **Crestwood Secondary School**, Shakespeare Road, Boyatt Wood, Eastleigh; Hampshire County Council Architect's Department (job architects Huw Thomas and David White with Alastair MacDonald), designed 1978, built 1981-82.

At Crestwood, a conscious reaction against dispersed planning took the novel form of an 'arcade school', a full-height internal street sandwiched by two-storey teaching blocks, the whole facetted into a crescent. The street is top lit from a fully glazed roof on lightweight metal trusses and provides a covered, unheated and landscaped space for circulation, socialising and informal teaching. The form recalls the commercial architecture of the nineteenth-century shopping arcade.[150]

The 600-place school was originally intended to be steel-framed, but was eventually built in a hard, unsentimental idiom of blind facets of red brick, lightweight steel latticework painted red, and corrugated plastic roofing sheets, faintly recalling James Stirling's Cambridge History Faculty. The inner crescent peels off to the east, creating a funnel-like entrance. The facilities available for community use such as the hall are located here, as close as possible to a local shopping parade. Three sets of stairs are accommodated in the wedges of space between rectangular classrooms. The north-facing outer arc has pairs of ground floor classrooms and

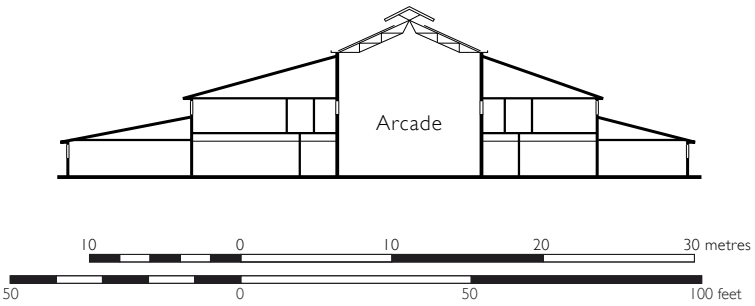


Figure 4.176: Cross-section through Crestwood Secondary School.

laboratories with further classrooms fanning out from between them. The street abruptly ends in a sheer wall of glazing with the blind volumes of the drama studio and gym beyond. Six sets of stairs lead to first-floor common rooms, library, staff room and administration suite.

But functional difficulties resulted from shoehorning the complex planning requirements of a secondary school into a predetermined form. Most of the accommodation is double banked and therefore single aspect; the inner classrooms borrow daylight from the street through small windows and the art rooms are dependant on artificial light. The pitches to the teaching blocks are ceiled 'hats' without toplighting. First-floor corridors and multiple stairs were chosen over galleries and bridges over the street. Service rooms present blind, buttressed walls to the prominent outer sweep of the street. Crestwood represents the introduction of a fruitful concept—the glazed, full-height internal street—but one only convincingly developed by later educational buildings in Hampshire, such as **Bosmere Middle School**, the John Darling Mall of 1985 and the Farnborough College of Technology of 1986. In this respect it is to the linear plan what **Fort Hill Secondary School** is to the 'barn school'.[151]

Figure 4.175: The 'street' at Crestwood Secondary School, Boyatt Wood, Eastleigh; Hampshire County Council Architect's Department, 1981-82. Institute of Education Archives: ABB/B/1/220/3

Special School

¶ **St Francis Special School**, Patchway Drive, Oldbury Way, Fareham; Hampshire County Council Architect's Department (job architect David White with Alastair MacDonald, Richard Pert, Alec Upton and John Godding), designed 1975-76, built 1976-78.

St Francis was built for 80 severely mentally-handicapped children aged 3-16. When the school was designed it was Hampshire's policy to concentrate special school provision into a few educational campuses, this one containing special schools for juniors, infants and physically disabled children. Shortly after the building was completed came the Warnock Report, which advocated greater integration into mainstream

education (page 58). Fareham was the first major Hampshire project to forego SCOLA, and the intricacy of the design seems to revel in a new-found freedom.

The complex, stepping plan is influenced by Aldo van Eyck's orphanage of 1955-60 in Amsterdam. Seven identical bases, each for ten children, are staggered along the south flank of the building for greater informality and enclosure. Their monopitch roofs allow clerestorey lighting from the north east. At 35m² the bases are small enough to encourage smaller groups to venture out to other parts of the school. Each has access to its own south-facing terrace and a corner bay window with inbuilt seats encourages the enjoyment of the mature woodland. The bases are contrasted with a expansive sequence of communal spaces: the hall, a dining area, three shared areas and a long, low-walled ramp leading from the main entrance, the whole intended as a stimulating *promenade architecturale*.[152] The entrance ramp negotiates the sloping site whilst providing a noise buffer between the seniors and the younger children. The hall, kitchen, services and administrative suite act as a protective buffer to a noisy road to the north of the site. A few more enclosed rooms were provided: a unit for severally disabled children, a housecraft room and workshop for the seniors, a library for quiet work and a top-lit 'splash room' for hydrotherapy. Shared practical areas are provided for the nursery and infant, middle and senior bases, as recommended by the DES.[153]

The exterior is a series of spare forms in yellow stock brick amid-trees. Large expanses of blind stretcher bond and brown concrete tile are relieved by the black, boxed-out bay windows and serrated roofscape. Inside, white-painted fairfaced blocks dominate, although the end walls of each base are painted with a strong colour and elsewhere there are decorative ceramic tiles and pin board. Dark stained softwood windows complete a Scandinavian-tinged interior. St Francis was the first Hampshire scheme to be entered into the Royal Academy's Summer Exhibition, in 1976.[154]

Figure 4.177: St Francis Special School, Fareham.

ENDNOTES

1. Hardcastle and Dunford 1974, 11. In 1986 Hampshire had a total of 870 schools, 100 of which were secondary; 17 colleges of further education; and one polytechnic which is now a university (Stansfield Smith 1994).
2. Hampshire Record Office: H/ED2/8, chapter 1, p. 7.
3. Alexander 2009, 77; Bullen *et al* 2010, 87; Hansard, House of Commons, written answers, 16 February 1973, vol.850, cc.445-6W.
4. In 1965 the MP for Basingstoke addressed the House of Commons: 'One cannot simply dump down a large number of people with inadequate facilities for social, cultural and recreational activities. A sports centre, a swimming pool and things of that sort are all an essential part of the overall picture of the town. There are churches, "pubs" and shops, and shopping facilities are urgently needed with the enormous increase in the population. A town must have a heart. […] I ask urgently that this aspect should not be forgotten. Hansard, House of Commons debates, 3 August 1965, vol.717, cc.1556-67.
5. *Architects' Journal*, vol.195, no.22, 3 June 1992, p.28.
6. Saint 1987, 135-38.
7. Hampshire Record Office: H/CL5/1f/26; Benson Ansell 1963.
8. Anthony Burrows pers.comm., 28 July 2011.
9. Benson Ansell 1963.
10. Benson Ansell 1963, 615.
11. Benson Ansell 1963, 615; Maclure 1984, 108-09.
12. Colin Stansfield Smith pers.comm., 8 July 2008.
13. *Architects' Journal*, vol.135, no.26, 27 June 1962, p. 1444. The *Architects' Journal* (vol.142, no.27, 7 July 1965, p.44) reported that 'by mid-1962 a prototype had been erected at the Salop County Council offices'.
14. Weston 1991, 9; Colin Stansfield Smith pers. comm., 8 July 2008.
15. Hampshire Record Office: H/ED2/8, chapter 9, p. 18-22.
16. Hardcastle and Dunford 1974, 20; Gerry Way pers.comm., 5 July 2011.
17. *Interbuild*, vol.11,no.1, January 1964, p.35.
18. Michael Morris, who worked with Method at Somerset and SCOLA at Hampshire, recalls that the latter lacked the carefully profiled timber sections of the former, which shed water more effectively (Michael Morris pers.comm., 1 September 2011).
19. Russell 1981, 490.
20. Benson Ansell 1963, 616.
21. Oscar Gammans, pers.comm., 2 September 2012.
22. Guy Hawkins pers.comm., 10 March 2011.
23. DES 1968b. A 4" module was recommended by The Ministry of Public Building and Works (MPBW 1963).
24. Oscar Gammans, pers.comm., 2 September 2011.
25. *Building*, vol.248, no.7390, 19 April 1985, pp.32-33.
26. The use of 'repeat plans' in Hampshire predated the arrival of Benson Ansell (Benson Ansell 1963, 612-13).
27. Page 1, *Serial Tendering*, report of 9 March 1965 by the County Architect for the Education Buildings Sub-Committee (Hampshire Record Office: H/CL5/1f/26).
28. Gerry Way pers.comm., 5 July 2011.
29. Mervyn Perkins pers.comm., 1 March 2011; Michael Morris, pers.comm., 1 September 2011.
30. Gerry Way pers.comm., 5 July 2011. Hampshire shared an IBM light pen computer with West Sussex and a QS computer with Cheshire. From 1967 Hampshire's Quantity Surveyor's Division ran bills of quantities on their own machine (Hardcastle and Dunford 1974, 4).
31. Hardcastle and Dunford 1974, 23.
32. Page 1, *Invitations to Tender for Building Works*, report of 1 May 1962 by the County Architect for the Education Buildings Sub-Committee (Hampshire Record Office: H/CL5/1f/26).
33. Memorandum of July 1969 by County Education Officer R.M. Marsh (Hampshire Record Office: 9M83/4/2).
34. They were three-storey blocks with deep plans reliant on air-conditioning and artificial lighting, and divided by adaptable partitions. *Architects' Journal* , vol. 159, no. 4, 23 January 1974, pp.153-55.
35. 'Summary for secondary reorganisation schemes April 1974 (Hampshire Record Office: 9M83/4/3).
36. Oscar Gammans pers.comm, 8 July 2011.
37. Michael Morris, pers.comm., 1 September 2011.
38. Oscar Gammans, pers.comm., 2 September 2011.
39. Gerry Way pers.comm., 5 July 2011.
40. Oscar Gammans, pers.comm., 2 September 2011.
41. Oscar Gammans, pers.comm., 2 September 2011; Contract dated 1972 (Hampshire Record Office:H/CL8/534)

42. Weston 1991, 9; Richard Clarke pers.comm., 11 July 2011; Oscar Gammans, pers.comm., 2 September 2011.
43. Michael Morris, pers.comm., 1 September 2011. The FORME range of school furniture was designed by David Medd and manufactured by Pel Ltd (Saint 1987, 193-94).
44. Richard Clarke pers.comm., 11 July 2011.
45. Michael Morris pers.comm., 8 July 2011; Oscar Gammans pers.comm, 8 July 2011; Richard Clarke pers.comm., 11 July 2011.
46. *Architects' Journal*, vol. 189, no. 12, 22 March 1989, p.58.
47. Mervyn Perkins, pers.comm., 1 March 2011. Architects' Journal, vol. 173, no. 25, 24 June 1981, pp. 1199-1214
48. In Hampshire, quiet areas were termed home bases. This terminology is not used here as the term 'home base' was generally used to denote the pastoral base of a class.
49. DES, *Standards for school premises regulations* (stat instrument 890), 1981 revision.
50. Weston 1991, 23.
51. Weston 1991, 24.
52. Weston 1991, 23. Medd wrote, 'the one common feature of the 4 primary schools we saw was standardised repetitive classroom in rows—each and every one the same. Effort no longer goes into the detailed educational thinking that can inspire design that helps children and teachers in their work.' (Institute of Education Archives: ME/V/1: letter of 6 July 1987 from David Medd to Andrew Saint). Elsewhere Medd listed the four educational buildings visited as Newlands Primary, Yateley; Cricklade Tertiary College, Andover; Alton Sixth Form College; and Frogmore Comprehensive School, Yateley (Institute of Education Archives:Me/T/7, David Medd's lecture notes for talk given at an Architects and Buildings Branch meeting on 13 May 1987, p.38).
53. The contract and plans for the first phase of Brighton Hill are dated 1974 (Hampshire Record Office: H/CL8/414).
54. Oscar Gammans pers.comm, 2 September 2011
55. Michael Morris pers.comm., 8 July 2011; Oscar Gammans pers.comm, 8 July 2011; Richard Clarke pers.comm., 11 July 2011.
56. Stansfield Smith was at the Cambridge School of Architecture 1953-8, LCC Schools Division 1958-60, Emberton Tardrew and Partners 1960-71, Deputy County Architect at Cheshire 1971-3, and Hampshire 1973-92. Colin Stansfield Smith pers. comm., 8 July 2008.
57. Burnaby 1985, 78.
58. Stansfield Smith 1984, 47.
59. Colin Stansfield Smith pers.comm., 8 July 2008.
60. Stansfield Smith 1994.
61. David White had worked in Coventry City Architect's Department under Arthur Ling. Stansfield Smith and Robinson had met in the LCC Architect's Department, where the latter had worked in Colin Lucas' group in Housing Division (Michael Morris, pers.comm., 1 September 2011).
62. The student sponsorship scheme whereby an architectural student's 'year out' was hosted with the prospect of employment on qualifying was introduced to Hampshire by Benson Ansell, who had perhaps been influenced by Frank Chippendale, Head of the Leeds School of Architecture, during his time at the West Riding (Michael Morris, pers. comm., 1 September 2011).
63. *Building* 19 April 1985, vol.248, no.7390, p.32-33.
64. Michael Morris, pers.comm., 8 July 2011.
65. *Architects' Journal*, vol.171,no.16, 16 April 1980, p.761-75 (p.764).
66. Colin Stansfield Smith pers.comm., 14 June 2011; Gerry Way pers.comm., 5 July 2011. Colin Stansfield Smith, John Robinson and David White entered the Northampton County Hall competition in 1973 (Michael Morris, pers.comm., 1 September 2011).
67. The following schools were exhibited under Stansfield Smith's tenure: St Francis Special School (1976; model and drawing), Pennington Special School (1977; model), Gosport Sixth Form College (1978; model and drawing), Agricultural Teaching Unit (1981, model), Bosmere Middle School (1982, model), Tadley Infant School (1983, model), Bishops Waltham Infant School (1985, model). Information from Royal Academy Library. An exhibition entitled 'Designs on the rates' was held in Winchester Great Hall in 1989 (Hampshire Record Office: HPUB/PBRSI/1/1/4).
68. Stephen Harte, pers.comm., 24 September 2011.
69. The practice of contracting out jobs to local architectural practices had existed under Benson Ansell (Gerry Way, pers.comm., 5 July 2011, Michael Morris, pers.comm., 1 September 2011).
70. White died in late 1985 (*Architects' Journal*, vol.183, no.5, 29 January 1986, pp.21-23).
71. Similar walls may been seen in Frank Lloyd Wright's prairie houses and Mies van der Rohe's 1923 project for a brick country house.
72. Colin Stansfield Smith pers.comm., 14 June 2011.
73. *Architectural Review*, vol. 163, no. 971, January 1978, p. 62.

74. Colin Stansfield Smith pers.comm., 14 June 2011.
75. Nev Churcher, pers.comm., 10 February 2011.
76. These projects can be compared to the central planned factory Michael Hopkins and Partners designed for David Mellor at Hathersage in the Peak District, reusing the foundations of a gas holder 26m in diameter. It was built *c*.1987-88 (*Architects' Journal*, vol. 187, no. 37, 14 September 1988, pp. 26-30).
77. Burnaby 1985, 73.
78. Stansfield Smith 1984, 40.
79. Weston 1991, 18.
80. Colin Stansfield Smith pers.comm., 14 June 2011; Van Eych 1962.
81. Weston 1991, 13.
82. Stansfield Smith 1984, 46.
83. Weston 1991, 27.
84. Colin Stansfield Smith pers.comm., 14 June 2011.
85. Stansfield Smith 1984, 39.
86. Stansfield Smith 1994.
87. In the large volume schools, stack-effect ventilation is triggered by the introduction of warm air around perimeter windows. This gathers under the apex of the central volume acting as an insulating heat blanket before cooling and returning.
88. *RIBA Journal*, vol. 88, no. 2, February 1981, pp.46-47.
89. Mervyn Perkins pers.comm., 1 March 2011.
90. Poole was the author of DES 1977 (Building Bulletin 55).
91. Colin Stansfield Smith pers.comm., 14 June 2011.
92. Fenner produced an earthwork and maze for St Denys School in Southampton.
93. Stansfield Smith 1984, 46; Michael Morris pers. comm., 8 July 2011; Weston 1991, 44-45.
94. *Architects' Journal*,vol.142,no.27, 7 July 1965, p.44. The tender date of the SCOLA Wrockwardine Wood Church of England Junior School, Shropshire was October 1962 (MoE 1964 (Building Bulletin 23), 82-85).
95. Hampshire Record Office: H/CL8/583: Signed contract and plans of 1975 for extensions to Otterbourne CE Primary School, Winchester. The school was published in *Interbuild*, vol.11, no.1, January 1964, pp.32-35; *Architect and Building News* vol.225/17, 22 April 1964 p.723 and *Builder*, vol.206,no.6304,13 March 1964, p.564.
96. Weston 1991, 21-22.
97. *RIBA Journal*, vol.90,no.8, August 1983, p.47. The school was also published in *Architects' Journal,* vol. 189, no. 12, 22 March 1989, pp. 51-63. *Architectural Review*, vol. 167, no. 995, January 1980, p. 10; *Architects' Journal*, vol. 173, no. 25, 24 June 1981, pp. 1199-1214; *AC*, vol. 28, no. 1 (107), April 1983 Apr, pp.69-71; *RIBA Journal*, vol. 90, no. 8, August 1983, p. 47 and *Building Services*, vol.6, no.12, December 1984, pp.34-38.
98. *Architects' Journal,* vol. 177, no. 19, 11 May 1983, pp. 67-70.
99. *Education* School Design award winner 1982; Civic trust award winner 1982; RIBA architecture award regional winner 1983.
100. The plan resembles the contemporary St John's Primary School in Clacton-on-sea, Essex. From the air, the school resembles a coeval piece of industrial design: the US stealth bomber.
101. Nev Churcher, pers.comm., 10 February 2011.
102. *Architectural Review*, vol. 172, no. 1025, July 1982, pp. 18, 21-27.
103. Colin Stansfield Smith pers.comm., 8 July 2008.
104. In June 2009 the Local Area Committee of Eastleigh Borough Council granted planning permission granted for demolition (source: http://www.eastleigh.gov.uk/meetings/mgConvert2PDF.aspx?ID=13737, accessed 15 August 2012)
105. Stansfield Smith 1984, 40.
106. *Architectural Review*, vol. 171, no. 1019, January 1982, p. 62. Four Lanes won a Civic Trust Award in 1984.
107. Stansfield Smith 1984, 43.
108. Weston 1991, 23.
109. *Architects' Journal*, vol. 180, no. 50, 12 December 1984, pp. 31-52.
110. Source:http://www.bcp.hants.sch.uk/page_viewer.asp?section=About+our+School&sid=11&page=School+History&pid=6, accessed 15 August 2012).
111. There is an unexpected precedent in the 1962 rotunda of the Winchester School of Art.
112. Weston 1991, 24.
113. Stansfield Smith referred to Burnham Copse as 'the oast house school' (pers.comm., 8 July 2008). The comparison to the eponymous popular children's TV series *the Magic Roundabout* was made by Patrick Hannay in the *Architects' Journal,* vol. 185, no. 22, 3 June 1987, pp.35-52. Burnham Copse was also published in *Deutsche Bauzeitung*, vol. 121, no. 10, October 1987, pp.63-65. The school won the 1986 School Design Award of the *Education* journal and was a regional winner of the RIBA architecture awards.
114. Colin Stansfield Smith pers.comm., 8 July 2008.
115. The Hutting Operation for the Raising of the School Age (HORSA) was an emergency initiative of the Attlee government.
116. Nev Churcher, pers.comm., 10 February 2011.

117. *Architectural Review*, vol. 177, no. 1058, April 1985, pp.36-44.
118. The walls separating the terraces have been removed by the school to prevent children climbing up to the roof (Nev Churcher, pers.comm., 10 February 2011).
119. Dennis Goodwin, pers.comm. 11 February 2011; *Architects' Journal*, vol. 187, no. 25, 22 June 1988, pp.31-49; *Building Services*, vol. 8, no. 4, April 1986., p. 19-22.
120. *Architects' Journal*, vol.177,no.22, 1 June 1983, p.42.
121. Addis and Walker 1997, 119.
122. *Architects' Journal*, vol. 186, no. 39, 30 September 1987, pp. 37-53.
123. Bullen et al 2010, 287.
124. Weston 1991, 24.
125. *Architectural Review*, vol. 183, no.1096, June 1988, pp.73-75; *Architectural Review*, vol. 188, no. 1125, November 1990, pp. 43-52.
126. Powell 1995, 139.
127. *Architectural Review*, vol. 189, no. 1135, September 1991, pp. 28-35.
128. Powell 1995, 139.
129. Hampshire Record Office: HPUB/PBR51/1/1/3: *Hampshire Architecture*, page 9.
130. *Architects' Journal*, vol. 196, no. 14, 7 October 1992, p.22, 24.
131. *Architects' Journal*, vol. 195, no. 22, 3 June 1992, p. 39; see also *Building*, vol. 261, no. 7963 (43), 25 October 1996, pp.44-47. Woodlea school was voted building of the year in the 1992 Education awards, the 1993 RIBA awards and the 1994 BBC design awards.
132. *Architects' Journal*, vol. 195, no. 22, 3 June 1992, p. 36.
133. Nev Churcher, pers.comm., 10 February 2011.
134. Design for a primary school, Darmstadt, (1951); Girls School (now a comprehensive school); Geschwister Scholl Schule, Lünen, (1956–62); Main and primary school, Marl, (1961–66). *Architects' Journal*, vol. 171, no. 10, 10 March 1980, pp.473-79.
135. *Architects' Journal*, vol. 195, no. 22, 3 June 1992, p. 36.
136. *Energy in Buildings*, vol. 1, no. 1, October 1982, pp. 14-15.
137. *Architects' Journal*, vol. 180, no. 50, 12 December 1984, pp.31-52.
138. Weston 1991, 31.
139. Perkins's first choice of translucent cladding was rejected by the fire officer (*RIBA Journal*, vol. 88, no. 2, February 1981, p. 46-47).
140. *Architects' Journal*, vol. 179, no. 13, 28 March 1984, pp. 28-29; *Architects' Journal*, vol. 180, no. 50, 12 December 1984, p. 31-52; *Architectural Review*, vol. 177, no. 1058, April 1985, pp.36-44. The school received a commendation in the 1986 RIBA architecture awards.
141. *Building*, vol. 256, no. 7692 (15), 12 April 1991, pp.41-48; *Architectural Review*, vol. 188, no. 1125, November 1990, pp. 48-52.
142. *Architects' Journal*, vol. 192, no. 4, 25 July 1990, pp.22-24.
143. The panels were later used at sixth form colleges at Havant (main job architect Graham Perkins) and Andover (Trevor Harris). *Architects' Journal*, vol.159, no. 4, 23 January 1974, pp.153-55. *Architects' Journal*, vol.154,no. 35, 1 September 1971, pp.467-68; *Surveyor*, vol.134, no. 4026, 1 August 1969, pp.30-34; HCC 1972, 5-6.
144. http://www.basingstoke.gov.uk/planning/northpopley/proposals/johnhunt.htm, accessed 15 August 2012.
145. Russell 1981, 511.
146. *Architects' Journal*,vol.171, no.12, 19 March 1980, pp.565-80.
147. *Architects' Journal*, vol. 171, no.11, 12 March 1980, pp.519-36.
148. Weston 1991, 18.
149. Fort Hill was published in *Architects' Journal*, vol.171,no.11, 12 March 1980, pp.530-36; *Architects' Journal*,vol.171,no.12, 19 March 1980, pp.565-80; *Building design*, no. 446, 18 May 1979, pp.20-21; *Landscape design*, no.133, February 1981, pp.11-12; *Baumeister*, vol. 79, no. 5, May 1982, pp.469-472; *Concrete Quarterly*, no. 133, April/June 1982, pp.16-19; *RIBA Journal*, vol. 89, no. 8, August 1982, p. 47. It received a Civic Trust award in 1980 and an RIBA Architecture Award Commendation in 1982.
150. Stansfield Smith had been impressed with nineteenth-century arcades encountered on a trip to Brussels (Huw Thomas pers.comm., 2 February 2011; Colin Stansfield Smith pers.comm., 14 June 2011). Examples of a wider contemporary interest in arcades include the 1979-83 scheme of Richard Rogers Partnership for the redevelopment of Coin Street on London's South Bank, inspired by the Galleria Vittorio Emmanuele in Milan.
151. *RIBA Journal* vol. 88, no. 3, March 1981, p. 48. The school was also published in *Architectural Review* vol. 172, no. 1025, July 1982, p. 18, 21-27;. *Architects' Journal*, vol. 180, no. 48, 28 November 1984, pp.63-76; *MD*, vol. 30, no. 3, March 1984, pp.62-65 and *Deutsche Bauzeitung*, vol. 117, no. 8, August 1983, p. 22-23.
152. *Architects' Journal*, vol. 168, no. 51/52, 20/27 December 1978, pp.1183-98.
153. DES 1972b.
154. Information provided by the Royal Academy Library.

WEST SUFFOLK

Figure 4.178: West Suffolk: location of gazetteer entries.

West Suffolk

A relatively conservative and agrarian county, much of Suffolk is low-lying arable land, with the wetlands of the Broads to the north and a shingle coastline backed by ancient heaths to the east. Between 1889 and 1974 the county was divided into East and West Suffolk, with Ipswich qualifying for county borough status (page 331). The landlocked West Suffolk was based at Bury St Edmunds with only a handful of large towns, and most of the county's children were educated in small, nineteenth-century village schools, many of them church schools. West Suffolk County Council was a small, rural authority, its key positions dominated by farmers or landowners.[1] Suffolk was reunified on local government reorganisation, and this chapter concludes with a brief survey of the schools built by the Suffolk County Council in the 1970s.

Yet in school building terms, West Suffolk in the mid-1960s was comparable with Hertfordshire twenty years earlier. The migration of people from London demanded a major programme of school building, which could only be met through prefabrication and the industrialisation of construction. This was masterminded by Jack Leonard Stanford Digby (1924-2006), an unconventional county architect whose qualities of charisma, imagination and bloody-mindedness are vividly recalled by former colleagues (fig. 4.179). Digby signed his county up to the South Eastern Architects' Collaboration (SEAC), and this chapter also traces the development of that consortium from its Hertfordshire origins. Given the heavy workload of West Suffolk it is perhaps unsurprising that many of the new school buildings were unassuming, even routine and aspects of their design were standardised. But Digby's department were nevertheless responsible for a handful of schools noteworthy for their architectural design or for embracing child-centred teaching practice; some of these may be found in the gazetteer which concludes this chapter.

Population and Provision

The district councils of West Suffolk, like others in East Anglia, saw an opportunity in the 1944 Greater London Plan and the Town Development Act of 1952 to 'pump prime' the regional economy, upgrading municipal infrastructure in the process. Agreements were formed with the London County Council and expansion schemes secured for six of its largest towns by 1961, negotiating necessary amendments to the 1946 West Suffolk Development Plan with the Minister of Housing and Local Government.[2] The largest schemes were at Haverhill and Bury, which eventually expanded by about 4,500 new houses apiece. These were joined by lesser developments in Sudbury (including Great Cornard), Mildenhall (1,400 houses), Newmarket (1000), Brandon (576), Long Melford and Hadleigh. West Suffolk was the fastest growing county in the country by 1971, recording a 27% increase in population in ten years.[3]

Most of the new homes were financed, designed and built by the London County Council and its successor the Greater London Council. They usually took the form of peripheral housing estates on the 'Radburn' principle, in which schools were one of the few points of reference.[4] Although the movement of people was described by the

government in terms of liquidity—the jargon included 'decanting' and 'overspill'—the social and economic problems of assimilation were nonetheless concrete enough, especially for children and young adults. Issues of estrangement and integration were portrayed in the BBC soap opera *The Newcomers* (1965-69), where Haverhill stood in for the fictional expanded town of Angleton.[5] Schooling presented the local authority with an opportunity to mix 'children of newcomers with those of the older parts of town'.[6]

It fell to the Education Committee of West Suffolk County Council to predict in urgent and dynamic circumstances where future provision would be needed. Their proposals had then to be approved by the DES well in advance. It was a balancing act, and the Committee recognised that 'If economic conditions check the Town Development schemes, or even private housing development, the estimates of school rolls could be badly out'.[7] Perhaps inevitably, there were those who felt that resources were being directed at the incoming population at the expense of replacing cramped and outdated school buildings for the existing population. John Hill, the Chief Education Officer stated in 1967 that 'it is still not possible to claim a new school simply on account of poor conditions without pressure of numbers also to bolster the case'.[8] In exceptional cases such as the primary schools of **Hartest**, Norton and Great Thurlow, the Education Committee sanctioned the replacement of small village schools out of the 'minor works' allocation (page 18). Digby observed that 'fortunately the DES has turned a blind eye to this rather naughty activity', perhaps because their model village school at Finmere of 1958-59 had set the example.[9]

Many Victorian two- or three-class primary schools were rebuilt, and at the time Digby joined West Suffolk its Education Department was debating the merits of whether their replacements should be three class village schools or five class 'area schools' which served a larger catchment area. The latter, it was argued, would ease the transition of pupils to town-based secondary schools.[10] On the other hand, there were doubts about the collection and transport of younger children, future changes to county boundaries and legal restrictions governing the expansion of voluntary schools. It was eventually decided to consider the size of rural schools on a case-by-case basis with reference to the amended Development Plan for the county; **Hartest** and Norton primary schools were designed to be capable of a later expansion to four classes.[11]

No less urgent was the provision of secondary school places. It was noted in 1962 that 'many of the secondary schools recently built are short of accommodation, not only to meet the raising of the school leaving age […] but also for their present needs'.[12] The solution to many of West Suffolk's problems was found in the form of 9-13 middle schools; in June 1966 the Education Committee noted a 'strong current of support for a change from the bipartite system and towards a middle school pattern of comprehensive education', and a motion for reorganisation was carried by 17 votes to 7.[13] The proposal had the additional attraction of alleviating the most overcrowded village primary schools. John Hill suggested that 'a full four-form entry school, which would yield up to 480 pupils and a full stream of "academic" pupils, is likely to be a good size for a middle school'.[14] It was decided to permit each district to decide its own scheme, which placated opposition from long-established grammar schools. The first of them, **Westley Middle School** in Bury St Edmunds, was designed so that the lowest year group could be added at a

later date.[15] Existing secondary modern schools were generally reorganised into middle schools and some grammars became co-educational and comprehensive upper schools. The Architect's Department consulted other authorities on this question and met with DES architects who were then compiling a Building Bulletin on the subject.[16]

In 2007 Suffolk County Council announced a return to a two tier education system, to be implemented in three phases corresponding to regional groups of schools. This will have widespread implications on Suffolk's school estate, with most primary schools extending their schools to accept years five and six, upper schools accepting years seven and eight. It is likely that many of Suffolk's forty middle schools face closure with a smaller number being converted into large primary schools or absorbed into 'split site' secondary schools.[17]

Jack Digby and the Story of SEAC

It was surely the prospect of a major programme of school building that attracted Jack Digby to this small, rural authority in 1964. After military service and training at the Southend School of Architecture, Digby began his career at the Harlow Development Corporation. In the late 1950s he joined the Development Group of the Ministry of Education's Architects and Building Branch where, unusually for a future County Architect he worked as a qualified landscape architect on Arnold Grammar School in Nottinghamshire and additions to Greenhead High School in Huddersfield, two development projects which employed the precast concrete Laingspan system. This brought him into contact with key figures in post-war school building, such as David and Mary Medd and John Kay (pages 103-07). A longstanding ambition to join Hertfordshire County Council was realised when Digby became a Group Leader under County Architect Geoffrey Fardell. He had long been aware of Herts' reputation in school building, having cycled to the pioneering Cheshunt and Essendon Schools from his home in Essex. An opportunity in West Suffolk arose on the retirement of John Creese, the County Architect since 1933. (Creese's planning module for new schools was 5' by 2'6", the size of a toilet cubicle).[18] Digby was recommended by a contact at the Ministry and took up the post in the summer of 1964.[19]

Figure 4.179: Jack Digby in sprightly mood, inspecting progress on a friend's house at Bury St Edmunds in summer 1971. Photograph kindly supplied by Laura Bowles.

By that time it was apparent that only prefabrication would realise the quantity of new school places required in West Suffolk. Before Digby's arrival the Education Department had commissioned a few primary schools such as **Thurston Primary School** in the timber-framed Derwent system, the last of which were completed in 1968. But Derwent buildings were limited to a single storey and would not do for the middle or upper schools now being contemplated. Perhaps chivvied by his contacts at the Ministry, in March 1965 Digby signed West Suffolk up to the South Eastern Architects' Collaboration (SEAC), the technical basis of which he had encountered in an earlier form in Hertfordshire.

The development of SEAC can be traced back to 1956, when Herts architect Jack Platt devised a planning grid on a module of 2'8" with increments of 4" to replace the old 3'8" system.[20] The new module was applied to three construction methods intended for a range of educational buildings. The first and most familiar of which was a light steel frame with delicate lattice beams carried on box columns. This was a descendant of the prefabricated building system developed at Herts from 1946 in collaboration with the Hills Patent Glazing Company of West Bromwich.[21] For primary schools a 'rationalised traditional' method of brick cross-wall construction on a related module of 1'4" was developed *c.*1958.[22] Finally a pre-cast concrete frame system, capable of rising to eight storeys with higher load bearing capacity was developed for colleges of further education.[23] Secondary components such as windows and partitions were compatible with all three systems.

On Hills' sudden liquidation in 1962 the Ministry of Education persuaded Fardell to establish a new consortium in early 1963, resurrecting the three Herts systems as its Mark I.[24] Donald Gibson was also involved in these preliminary conversations as the Director General of Works at the War Office, as he was looking for a building system for use at military establishments. In his earlier role as County Architect for Nottinghamshire Gibson instigated CLASP (page 125).[25] The founder members of SEAC were Hertfordshire and Kent County Councils and the War Office, and Essex and the DES joined not long after. Full membership was limited to these powerful authorities, and the SEAC chairman and Kent County Architect E.T. Ashley-Smith remarked that 'meetings sometimes have a flavour of the United Nations about them'.[26] The first SEAC school got on the ground in 1965.[27] At first the development of each system was allocated to one of the three counties who enjoyed full membership of SEAC in collaboration with the manufacturers and with the coordination of a Technical Working Party. Unsurprisingly, the steel frame was taken on by Herts. Kent got the brick system, renamed DISC and based on a 4' module and a 16' planning grid. DISC was notably specified by David Medd at Eveline Lowe School in London (page 110-11). The pre-cast concrete frame became Essex's responsibility, although its development was hampered by cuts in further education funding.[28] The steel frame accounted for about 69% of the SEAC building programme for 1966-67, with 21% allocated to DISC and 10% to the concrete frame.[29]

SEAC Mark II showed the influence of the Ministry of Public Buildings and Works (MPBW) and their circular *Dimensional Co-ordination 3*.[30] The system was employed for a wide variety of non-educational buildings to which the architects of MPBW contributed SEAC post offices and telephone exchanges. Components thus had to satisfy the building

Figure 4.180: The tilehung Westgate Primary School, Bury St Edmunds, of 1968-69, built in SEAC Mark II (P5925023).

regulations in addition to those of the DES for educational building.[31] In early 1968 a Central Development Group headed by Jack Platt was established with offices in Epping to coordinate work on the metric Mark III[32]. By then the government was encouraging the convergence of the 'closed' systems, and SEAC shared its window system with SCOLA and its partitions and staircases with SCOLA and Method.[33] A new tendering system based on component performance rather than dimensional or material specifications was introduced the following year.[34] But it soon became clear that no amount of technical tinkering could hide the fact that the economic basis of prefabrication was rapidly being undermined. The curtailment of school building programmes after 1973 diminished the SEAC annual programme and its ability to effect economies of scale. SEAC eventually disbanded in March 1977 although the system continued to be commercially available from the manufacturer.[35]

School Design in West Suffolk

By the late 1960s, the West Suffolk Architect's Department was split into three interdisciplinary teams—colour coded red, blue and yellow—each of around eight qualified architects and led by Brian Phillips, Bobby Coulten and Dennis Hindson respectively.[36] Despite the autonomy that this structure permitted, Digby 'kept on top of things by going around the office all the time, looking at people's projects', as Brian Phillips recalls.[37] The groups were served by a centralised administrative pool and a services department. Job architects would generally only take on one project at a time, running it from start to finish sometimes with the assistance of a technician. The occasional school was farmed out to local private practices such as the Ipswich-based Johns, Slater and Haward (page 331 *et seq*); in this way Digby set up a 'buffer' of work which could be sacrificed if cuts had to be made.[38]

West Suffolk's first batch of SEAC schools, including Adrian Palmer's Howard County Primary in Bury St Edmunds, opened in early 1967. West Suffolk's status as an associate member allowed the authority to deploy SEAC when and where they wished without the commitment to minimum orders that full membership entailed. By the same token West Suffolk had little say in its technical development. In the hands of Jack Digby SEAC can be credited with the rationalisation of many aspects of design work. Construction details were increasingly standardised and shared between jobs, a habit which persisted at the reunified Suffolk County Council even in designs of traditional construction.[39] To some West Suffolk architects the revisions issued by the Central Development Group

got out of hand, especially when it was necessary to redraft technical drawings for jobs in progress; other, more aesthetically-minded designers found the whole idea of a system building 'a bit of a bore'.[40] On the whole however, SEAC was regarded in West Suffolk as a straightforward and flexible system capable of producing robust and even attractive buildings; its picture windows and roof lights allowed abundant natural lighting and the variety of cladding options was appreciated.[41] The system came into its own for the large upper schools required on comprehensive reorganisation.

But Digby was keen to demonstrate that 'he wasn't just a Meccano bits and pieces man'. East and West Suffolk both joined the Anglian Standing Conference (ASC), an organisation founded in 1964 'to pursue traditional building methods where they are allied to a high degree of organisation and management'.[42] With this formality in place and the bulk of the annual programme allocated to SEAC, Digby was free to distribute a handful of rationalised traditional 'one-offs' amongst a few trusted designers.[43] Digby set the ball rolling himself, directing the design of **Hartest** to show how things could be. This and other showpieces were published in the architectural journals where they attracted bright, recently-qualified architects who 'liked the look of the work [West Suffolk] were doing'.[44] The work of his department sometimes brought Digby into conflict with members of the Council, and particularly the Planning Officer. But he would rarely back down and could usually rely on the support of the elected members who trusted his professional judgement even if they could not see the educational or aesthetic merits of the design in question.[45]

Figure 4.181: Toplit hall at Kedington Primary School of 1969-70 (P5925024).

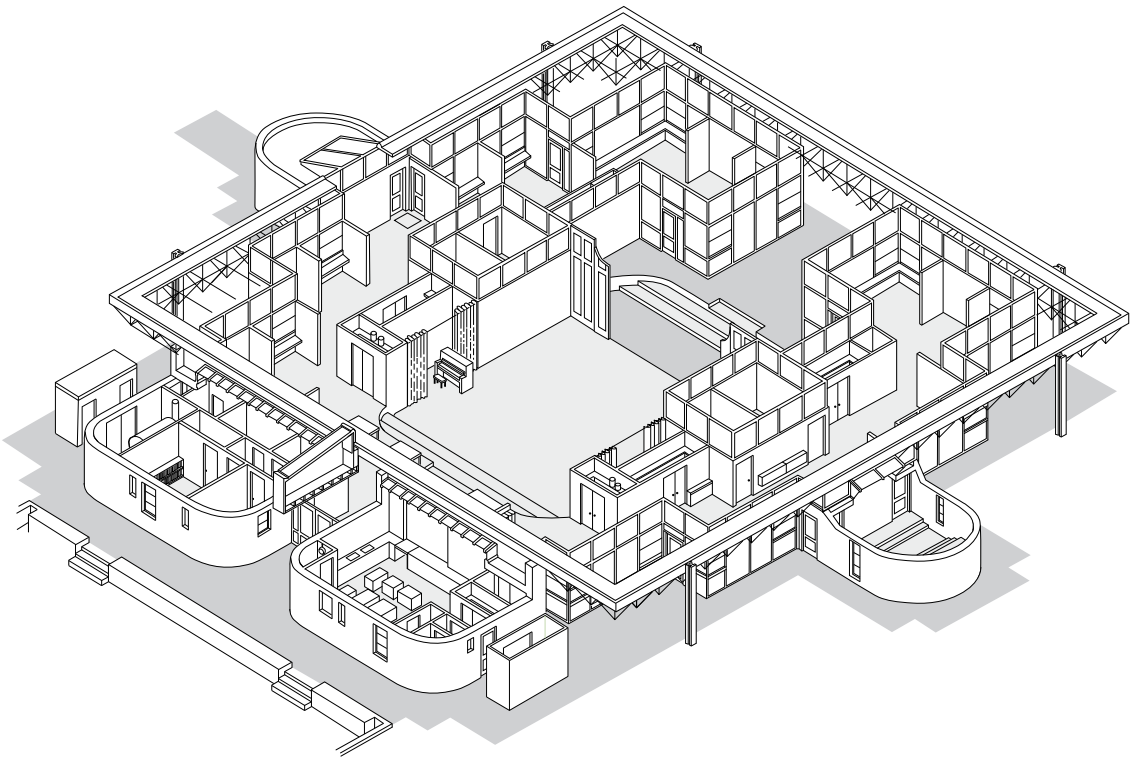


Figure 4.182: Cutway of Great Waldingfield Church of England Voluntary Controlled Primary School.

Primary school planning developed gradually in West Suffolk. **Thurston** and **Hartest**, both designed in 1965 still have conventional cellular classrooms, but Digby soon alighted on the educational possibilities of the Medds' Finmere School, a village school with a compact but varied layout (page 33). Around 1966 he took the Deputy Education Officer and some of his architects there, enthusing 'this is what I want to do!'[46] The design of Pakenham Primary School, completed in 1966 and the later **Risby Primary School** indeed closely follow the Medds' designs. **Kedington Primary School** (fig. 4.181) and Johns, Slater and Haward's **St Marys Primary** School in Hadleigh were typical examples of the 'hen & chicks' layout popularised at Hertfordshire (pages 32-33), whereas views through the informal and deep plan of **Great Barton Primary School** were provided by internal courts. But perhaps the boldest planning is seen at James Blackie's **Great Waldingfield Primary School** (fig. 4.182) and its smaller sibling at **Hopton**, the former now altered. Taking child-centred education as its starting point, Blackie developed a series of interlinked spaces strongly imbued with architectural characteristics: the openness of the central hall is complemented by the high space frame roof, whereas the 'womb-like' quiet spaces have apsidal brick walls projecting beyond the space frame. The influence of the Medds also shows in the perimeter bays for dry practical work and intervening tiled areas for messy activities.

Exteriors were carefully detailed whether the school was in rural or suburban surroundings. At **Great Barton**, Ixworth and **Kedington**, white bricks and black weatherboarding reference vernacular details found in the surrounding rural landscape. This idiom was shared by Llewellyn-Davies, Weeks' housing for agricultural workers in Rushbrooke village of 1955-64 and a 1968 scheme for police bungalows in Maynewater

Lane, Bury by Dick Stevens of the West Suffolk Architect's Department.[47] Digby used white painted brick at Matsudana, his own house of 1966 on the Hall Park estate at Great Barton. At **Westley Middle School** and later secondary schools the black and white aesthetic was translated into SEAC. The clusters of pitched roofs seen at **Hartest** and Norton primaries were less common. As a qualified landscape architect, Digby took a personal interest in the landscaping of school sites, and encouraged his staff to exploit the topography, flora and views of his sites with imagination (pages 88-89).

After 1974: School Building at Suffolk County Council

Jack Digby's tenure at West Suffolk was cut short by local government reorganisation in 1974, when East and West Suffolk were merged with the headquarters of the new authority in Ipswich. Although he stood a good chance of obtaining the newly-created post of Suffolk County Architect, Digby had no hesitation in returning to his beloved Hertfordshire as County Architect. His successor J. Brian Jackson had little interest in hands-on design but 'recognised talented designers and let them get on with it'.[48] Some key West Suffolk architects like Henk Pieksma and Jos Dalley moved from Bury to Ipswich; others set up in private practice or sought other local authority posts, and much design experience was dispersed.

After 1974 a programme of school building continued, buoyed by the last few years of house building in West Suffolk. SEAC was used, sometimes in modified form, for the large upper schools built in several phases at Mildenhall (1973-78), Great Cornard (1974-78), Haverhill (Samuel Ward Upper School, completed 1978) and Lowestoft (**Benjamin Britten High School**, completed 1979). At Mildenhall and Lowestoft, designs which contrasted white cladding panels with full-height, black-painted window walling perhaps relate to the earlier **Westley Middle School**. The result is not dissimilar to the 'neo-purist' aesthetic pursued in contemporary housing schemes designed by the Milton Keynes Development Corporation, the London Borough of Merton and elsewhere.[49] Mildenhall is also notable for its sports dome which, like the contemporary Edinburgh Dome at Malvern (pages 390-91), was erected in a single day using Dante Bini's Parashell system.[50] The neo-vernacular **Stowupland High School** is equally a product of its time. Primary schools were fewer in number and unremarkable in design, although they illustrate a transition from a highly conditioned and insulated 'controlled environment', with small, non-opening windows to a more 'selective' approach pioneered at Essex and Hampshire schools, in which daylight is again admitted to provide working light and beneficial solar gains.[51]

Gazetteer

Primary Schools

¶ **Thurston Church of England Voluntary Controlled Primary School**, School Lane, Thurston; West Suffolk County Council, designed 1965, built 1966.

Tentative experiments were made with prefabricated building before Jack Digby came to West Suffolk. Such was the urgency of providing places in Great Cornard, the Education Committee formed a special sub-committee to consider how the Pot Kiln Primary School could be completed apace. After first considering the Terrapin temporary classrooms used to expand the County's existing schools, the timber-framed Derwent system was recommended, 'subject to discussion between the County Education Officer and the new County Architect'.[52] Derwent was perhaps the smartest of a post-war explosion of proprietary school building systems (page 68). It was developed in the early 1950s by the ex-Herts architect Samuel Morrison with the Derbyshire building firm of Vic Hallam Limited. Derwent made its characteristic appearance at a handful of West Suffolk schools, serving as a useful pre-consortium stopgap as it had for Nottinghamshire and Derbyshire during the development of CLASP (page 127).[53] Timber framing proved flexible, cheap, easy to assemble and, crucially for mining areas, capable of withstanding subsidence. Structural and fire regulations limited the use of structural timber to single storey buildings, so it was generally restricted to primary schools.

Thurston was designed in early 1965 before Digby signed up to SEAC. It was increased from four to five classrooms at a late stage as the education department grappled with population projections.[54] The plan, based on a module of 6'4", is conventional, but the exterior, with dark-stained hardwood boarding contrasting with white-painted metal-framed windows, is more convincing than many of its SEAC predecessors,. The Derwent system was again used for the renovation and extension of the school in 1991, not long before Vic Hallam ceased trading.

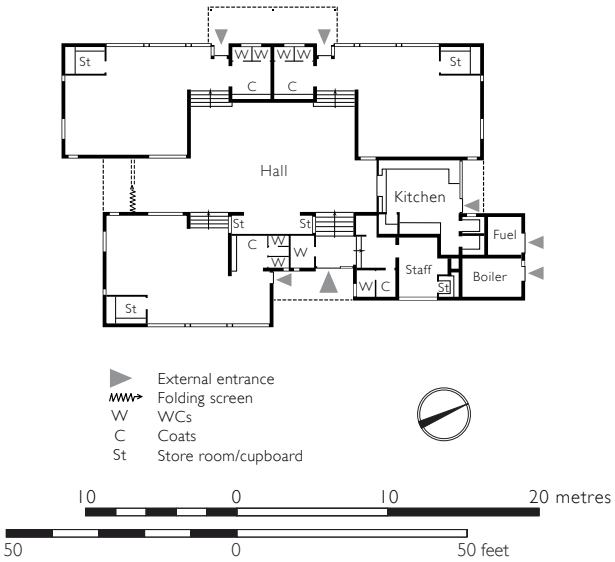
¶ **Hartest Church of England Voluntary Controlled Primary School**, the Row, Hartest; West Suffolk County Council (job architects Jack Digby and Dudley Baylis), designed 1965, built 1966.

Hartest was the first design with which Digby was personally involved, and he steered the scheme through resistance from the planning department and councillors.[55] Built on a minor works allocation of around £25,000, its split-level design exploits a sloping site and brick and pitched roofs blend in well with the historic village.[56] The plan is a compact one: a top-lit, central hall with three classrooms at the corners, although the split section constrains movement between interior spaces. The continuous 'fold' of the roof is arranged to avoid awkward junctions and contrive extra height for the hall, and the pitch of 22½° is about the same as the surrounding hillside.[57] The Scandinavian-inflected exteriors are of pale buff brick interspersed with white-painted timber window walling.

Figure 4.183: Thurston Primary School, one of several West Suffolk schools constructed in the timber-framed Derwent system (P5925025).

Figure 4.184: Classrooms at Hartest. © Elain Harwood.

Figures 4.185 and 4.186 (below): Jack Digby's Hartest Primary School. Since this photograph was taken in 2005 the building has been extended to the north. © Elain Harwood.



Hartest received a Civic Trust Commendation in 1968 and was one of the few post-1962 schools identified in an English Heritage research report of 1996.[58] Since then there has been some refenestration in UPVC and a timber-clad extension to the north.

¶ **St Mary's Church of England Voluntary Aided Primary School**, Stonehouse Road, Hadleigh; Johns Slater and Haward (partner in charge John L. Harding, assisted by Eric Doe and Barry Topple), designed 1965, opened January 1968.

Johns Slater and Haward are best known as architects to the Ipswich Education Committee (page 331). There Haward developed his own method of building on a 12' structural grid, and St Mary's was one of a dozen schools built in this way between 1962 and 1970.[59] The classrooms are articulated with pyramidal timber shell roofs, with a 36' square version for the hall; the remainder is of flat-roof construction. The system was sufficiently flexible to permit an informal plan with a three-class infant wing, hall, and four-class junior wing (since extended to five), all loosely grouped around a central court. The building is clad in chunky vertical cedar boarding with timber-framed window wall panels, the latter replaced with UPVC. The school won a Civic Trust award in 1969.

Figure 4.187: A timber shell roof at St Mary's Primary School, Hadleigh; Johns Slater and Haward, 1966-67 (P5925026).

Figures 4.188 and 4.189 (below): Great Barton Primary School (P5925027).

¶ **Great Barton Church of England Voluntary Controlled Primary School**, School Road, Great Barton, Bury St Edmunds; West Suffolk County Council (job architect E.M. Stow), designed 1966, built 1967.

This 150-place school replaced two small village schools in a rapidly growing area north-east of Bury St Edmunds. Five classes are arranged in an arc separated from the hall by three courts and linked by carpeted quiet areas or library. Each class has access to a veranda. The building is of light-grey brick and block cavity walling with timber window walling, planned on a three foot grid. The larger spans of the hall are supported by two feet deep laminated timber beams bearing on piers of grey bull-nosed brick. These create aisles lit by sloping patent glazing. The head commented 'I am somewhat suspicious of open planning […] but at Great Barton we have the best of both worlds, it goes far enough in terms of openness and flexibility and we can see through the glazed panels, across courtyards […] retaining a feeling of one large family.'[60] The school has neither been extended nor had its windows replaced. Ixworth Church of England Voluntary Controlled Primary School, designed in early 1968, is a mirror image of Great Barton.

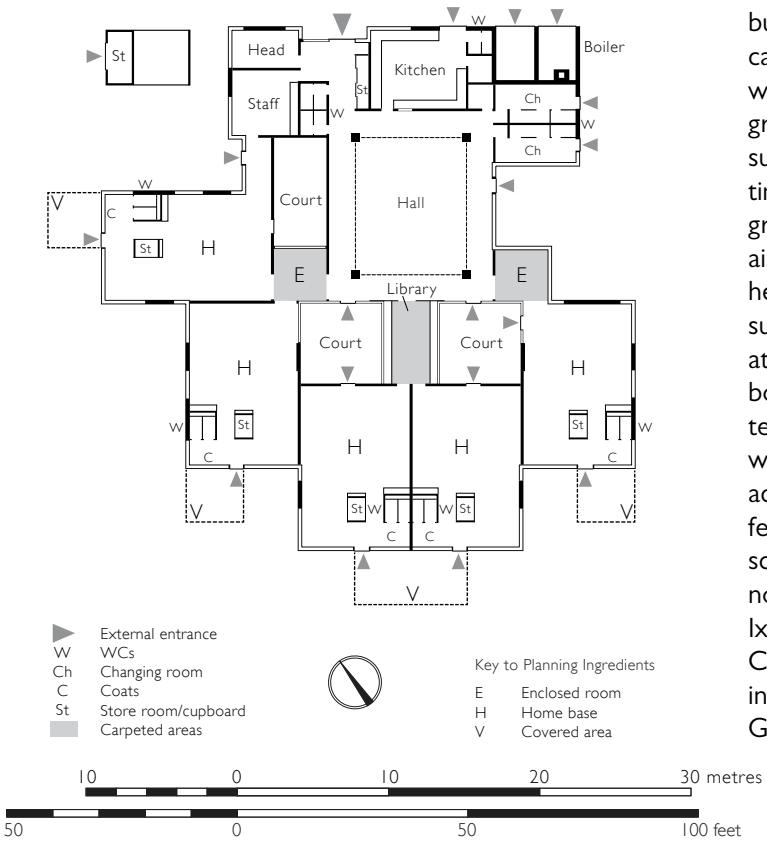


Figure 4.190: Risby Primary School in 1971, during a visit by Mary Medd and other members of the DES Architect's and Building Branch, just visible in the background. Risby is closely based on a Medd design study of 1960. Institute of Education Archives: ME/Z/5/2/176.

¶ **Risby Church of England Voluntary Controlled Primary School**, Aylmer Close, Risby; West Suffolk County Council (job architect Brian Grayling), designed 1967, built 1967-68.

The design of Risby was a replica of the recently opened school at Pakenham, which was demolished after closure in 1989. Constructed in a later mark of the Derwent system, Packenham/Risby has a compact plan, with sliding partitions connecting three classrooms to a clerestoreyed central hall. Each class has access to a quiet area, practical workspace and veranda.

The design is closely based on a design study by David and Mary Medd published in a 1961 Building Bulletin on village schools and itself a three class version of their Finmere Primary School of 1958-59.[61] The work of the Medds was much admired by Jack Digby, and Risby was one of several schools he took them to in 1971.[62] Two extra classrooms were added in 1994.

Figure 4.191: Bildeston Primary School; West Suffolk County Council, 1967-68 (P5925028).

¶ **Bildeston Primary School**, Newberry Road Bildeston; West Suffolk County Council (job architect James Blackie), designed 1967, built 1967-68.

This U-plan school was built around a large lime tree, which the architect insisted on retaining (it was recently felled).[63] The 'in and out' massing of arms of the U creates internal and external corners to encourage individual and small group work. The influence of the contemporary Eveline Lowe School (page 110-11) is reflected by the 'riverside kiva' and the 'Pullman' dining and music area overlooking the inner court. Blackie used SEAC Mark II with stained horizontal weatherboard cladding. A veranda was installed outside the dining area in 2009 and a new classroom was recently added to the east of the hall.

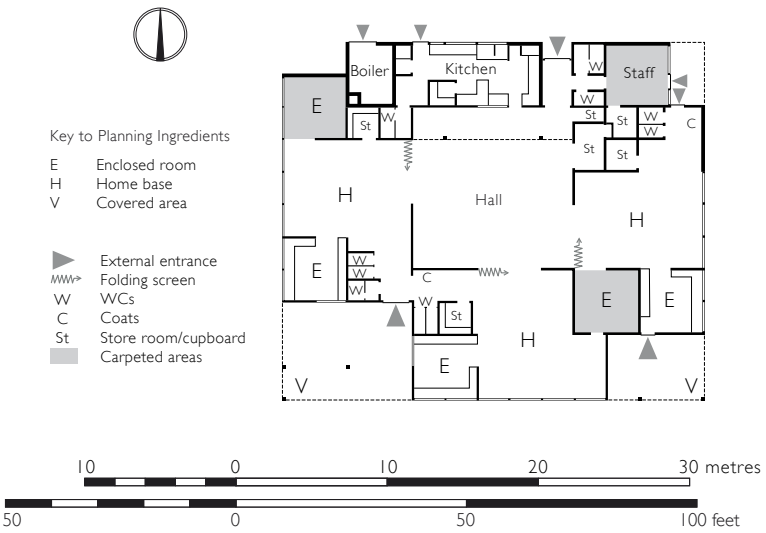


Figure 4.192: Risby Primary School.

Figure 4.193: Kedington Primary School (P5925029).

¶ **Kedington Primary School**, Church Walk, Kedington; West Suffolk County Council (job architects Brian Grayling and Dennis Hindson), designed 1968-69, built 1969-70.

Kedington replaced a small village school in a village outlying the much expanded town of Haverhill. In 1967 the Education Committee noted 'Kedington's new school will come none too soon—the school population has more than doubled there since September 1964'.[64] Three pairs of classrooms are grouped off a central hall in a 'hen and chicks' arrangement that is looser than contemporary schools such as Pakenham. Much detail from **Great Barton** was recycled, including the external elevations of grey brickwork, black stained joinery and facias; the aisled hall, with its glue laminated beams and patent glazing is copied verbatim. Two classrooms for year five and six pupils have recently been added as a result of the district's reversion to the two-tier system.

¶ **Great Waldingfield Church of England Voluntary Controlled Primary School**, Folly Road, Great Waldingfield; West Suffolk County Council (job architect James Blackie), designed 1969, built 1969-70.

'Pressure mounts at Great Waldingfield and the new school, now approved for 1969/70, is badly needed'.[65] The 130-place primary school so eagerly anticipated by the West Suffolk Education Committee replaced a two-class

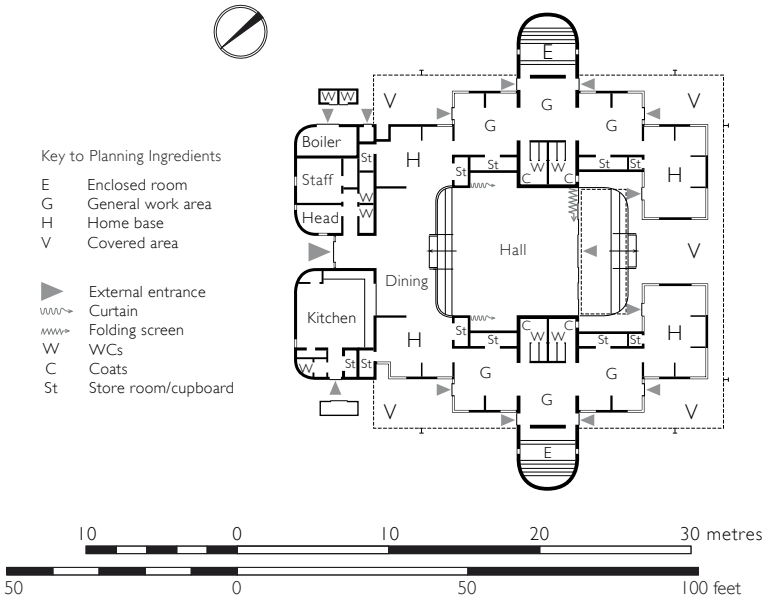


Figure 4.194: Great Waldingfield Primary School; West Suffolk County Council, 1969-70.

Figure 4.195: Digby's landscaping at Great Waldingfield in 1971. The pond has now been filled in. Note also the original appearance of the cladding panels. Institute of Education Archives: ME/Z/5/2/176

village school and in September 1969 a tender of £38,621 was accepted.[66] The near-symmetrical design, developed by Blackie from a design by Jack Digby, combines a variety of teaching space under a high space-frame roof.[67] A lightweight timber curtain wall weaves its way through the square space frame. Brick walls indicate the fixed elements of kitchens, boiler rooms and offices, and bring a comforting solidity to two curved quiet areas which project outside the roof. Blackie's then wife was a teacher and supportive of 'open plan' layouts, but it would be more accurate to describe the Great Waldingfield plan as a sequence of inter-connected spaces—library, study, quiet areas, dry and wet practical space, with a sunken hall at the heart of the school.[68] Paul Thompson, writing in the *Architectural Review* commented 'Waldingfield is one of the few instances I know in which a new building has been directly instrumental in transforming educational practice'. [69] Perhaps the most well known of the West Suffolk schools, Great Waldingfield was published internationally and won a Civic Trust Commendation in 1971.[70] Since 2005 the curtain wall was been replaced with UPVC and a reception extension built on the north eastern elevation.

¶ **Hopton Church of England Voluntary Controlled Primary School**, Thelnetham Road, Hopton, Diss; West Suffolk County Council (job architect James Blackie), designed 1971, built 1972-73.

Hopton is a development of Blackie's earlier **Great Waldingfield**, although the latter's space-

Figure 4.196: The sunken hall at Great Waldingfield with its space frame roof. © Elain Harwood.

Figure 4.197: Jack Digby revisits Great Walindingfield in 2005. The curtain wall has since been replaced. © Elain Harwood.

frame roof proved too costly to be replicated.[71] Four semi-open plan teaching areas surround a sunken central hall with toilets and quiet rooms in curved, brick-built pods. The kitchen, staffroom and boiler is housed in a brick block to the north. The design, in SEAC Mark III, has a flat metal roof deck is supported on steel stanchions with lightweight window-walling. The school has been extended to the north west in recent years.

Middle School

¶ **Westley Middle School**, Oliver Road, Bury St Edmunds; West Suffolk County Council, designed 1968, built 1970-71.

This four-form entry school was designed in early 1968 for an initial intake of 460 pupils with an 140-place first year centre to be added when the county adopted the three-tier system (pages 312-13).[72] There was to be community provision for Further Education courses and a partial hearing unit.[73] Four symmetrical centres radiate from a central gym; the classrooms face outward and corridors are lit by internal courts. The elevations, in SEAC Mark II, are equally formal, with white, full-height walling panels contrasting with black-painted metal window and spandrel panels. Doors are picked out in red. Jack Digby commissioned a series of nine large open-cast aluminium panels from the sculptor Geoffrey Clarke in *c.*1970.[74] These were installed in one of the courtyards.

Figure 4.198: Westley Middle School (P5925030).

Secondary Schools

¶ **Sudbury Upper School**, Tudor Road, Sudbury; West Suffolk County Council (main job architects Hugh Thomas, Jos Dalley, Dudley Baylis, Brian Grayling, James Blackie), designed 1969-71, built 1971-72.

Sudbury was initially planned as a secondary modern for 450 pupils, but when the Secretary of State for Education approved West Suffolk's reorganisation plan in June 1967 extra places were allocated for an upper school, the county's first.[75] In December 1969, Jack Digby presented a report on the 'challenging design problems of this school' and by 1970 the Council announced 'the plans for the very large Sudbury Upper School are ready, having taken many months of close consultation between the staffs of the Architect's and Education Departments and the teachers who are likely to work in it.' [76]

The school was organised into four houses each of 250 pupils and an 180-place sixth form. Each house included a large common room, adjoining quiet room, staff room, locker area and lavatories. They were supplemented by subject rooms grouped within four main faculties: humanities, physical education, maths & science, and arts & crafts. A speech and drama studio was linked to an auditorium with sliding doors.[77] The building takes the form of a long block with three internal courts which lies across a steeply sloping site. The section is stepped to give a two-storey entrance front which reduces to a single storey at first floor level and reverts to two storeys on the upper part of the slope. Construction is of SEAC Mark II with aggregate-faced concrete slabs and coloured spandrel panels. A teaching block was added to the south east *c.*1999, later joined by detached arts and vocational centres.

Figure 4.199: A view towards the 'sports barn' at Thurston Upper School (P5925031).

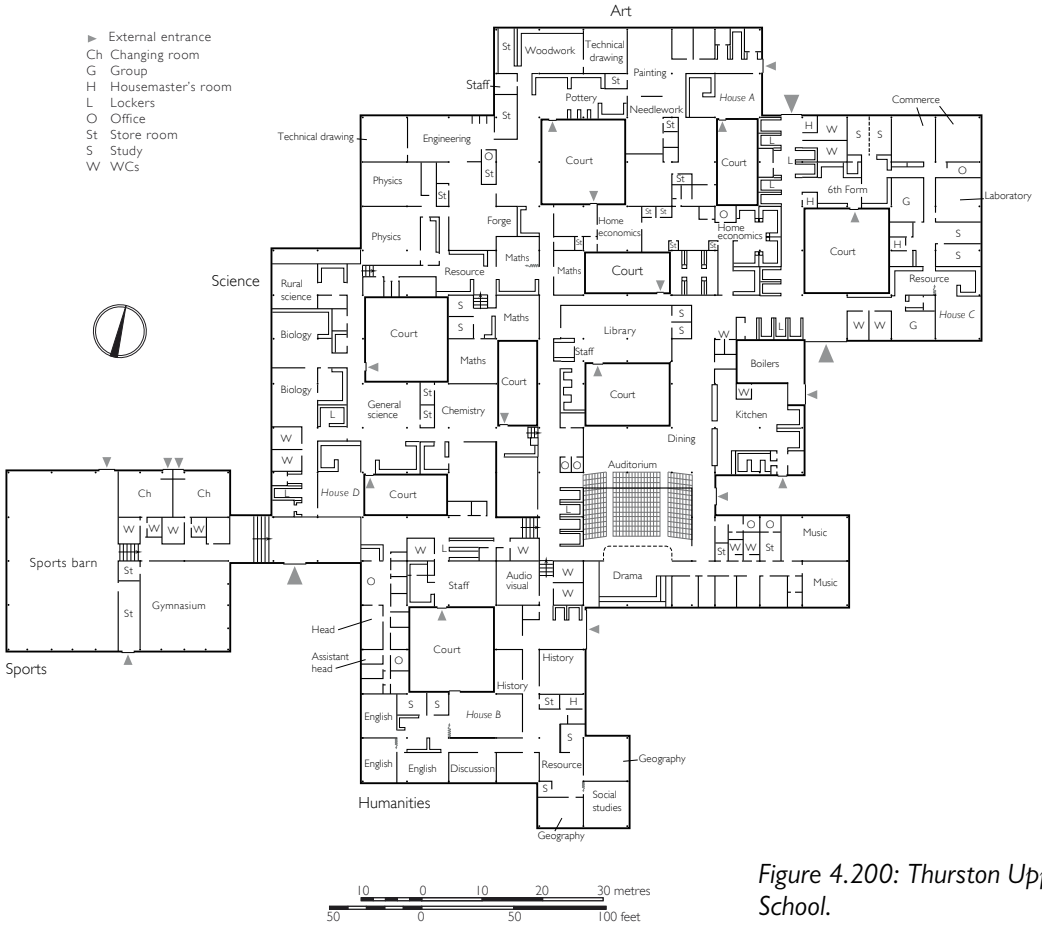


Figure 4.200: Thurston Upper School.

¶ **Thurston Upper School** (now Thurston Community College), Norton Road, Thurston; Bury St Edmunds; West Suffolk County Council (main job architect Bob Edwards), designed 1969-71, built 1972-73 (phases 1-3), 1979 (phase 4).

Like Sudbury, Thurston Upper was organised into four houses and four faculties, but here they are loosely planned around several courtyards. This large, single storey school is constructed in SEAC Mark II with a weatherboarded facia, continuous clerestorey and brick cladding panels. The larger spaces of the 'sports barn'/ gymnasium block and drama studio are clad in stained horizontal weatherboarding reminiscent of regional vernacular farm buildings.

¶ **Stowupland High School**, Church Rd, Stowmarket; Suffolk County Council (job architects Jos Dalley and Peter Brooks), designed 1976-77, built 1977-80.

The school is organised into five blocks of two storeys ranged around courtyards. Although using structural elements from Essex County Council's system MCB, the array of monopitched and split-pitched roofs and the materials (pantiles and dark-stained weatherboarding) recall vernacular farm buildings. Peter Brooks recalls that Buckinghamshire County Architect Fred Pooley's work was a reference (pages 248-50).[78]

¶ **Benjamin Britten High School**, Blyford Road, Lowestoft; Suffolk County Council, completed 1979.

The waterlogged farmland site demanded special foundations and a lightweight SEAC structure. A 'controlled environment' with high levels of insulation and air conditioning were chosen for this windswept, easterly location, although opening louvre windows were later installed.[79] The brief for this 750-place upper school was almost identical to **Stowupland** but the aesthetics are very different, with the alternating white cladding panels and dark, full-height tinted glazing holding their own in the Broads landscape. The 'Stramit' cladding panels, of compressed straw faced with plastic-coated sheet steel, were manufactured locally.

ENDNOTES

1. Woods 2005, 43.
2. Hansard: House of Commons Debate, 6 February 1947, vol. 432, cc.1950-1.
3. *The Economist*, 21 August 1971, p.188.
4. Alexander 2009, 77.
5. http://www.imdb.com/title/tt0159897/, accessed 15 August 2012.
6. Suffolk Record Office: 3077/1: Minutes of Finance Sub-committee of West Suffolk County Council Education Committee, 13 January 1964, p.43; Primary Education Sub-committee, 4 March 1965, p.7.
7. Suffolk Record Office: 3077/2: Minutes of Primary and Secondary Sub-committees of West Suffolk County Council Education Committee, 22 January 1968, p.40.
8. Suffolk Record Office: 3077/2: Minutes of Primary Education Sub-committee of West Suffolk County Council Education Committee, 28 September 1967, p.36.
9. Suffolk Record Office: HG3/3/2/68/4/24, letter of 9 July 1968 from Jack Digby to Herbert Tayler.
10. Suffolk Record Office: 3077/1: Minutes of Primary Education Sub-committee of West Suffolk County Council Education Committee, 9 December 1963, p.10.
11. Suffolk Record Office: 3077/1: Minutes of Primary Education Sub-committee of West Suffolk County Council Education Committee, Report by Chief Education Officer, 9 January 1964, p.12.
12. Suffolk Record Office: 3077/1: Minutes of Finance Sub-committee of West Suffolk County Council Education Committee, 30 March 1962, p.37.
13. Suffolk Record Office: 3077/2: Minutes of Secondary Education Sub-committee of West Suffolk County Council Education Committee, 14 June 1966, p.13; Education Committee 29 June 1966,. p.3.
14. Suffolk Record Office: 3077/2: Minutes of Secondary Education Sub-committee of West Suffolk County Council Education Committee, 14 June 1966, p.35.
15. Suffolk Record Office: 3077/2: Minutes of Secondary Sub-committee of West Suffolk County Council Education Committee, 26 March 1969, p.7.
16. Suffolk Record Office: 3077/2: Minutes of Finance Sub-committee of West Suffolk County Council Education Committee, 11 October 1966, p.49; DES 1967 (Building Bulletin 40).
17. http://www.suffolk.gov.uk/sor
18. Jos Dalley, pers.comm., 29 November.2011; James Blackie, pers. Comm., 28 November 2011; Adrian Palmer, pers.comm, 8 February 2012.
19. Jack Digby, pers.comm. to Elain Harwood, 10 May 2005.
20. Saint (1987, 109-11) states that the module of 2'8" was trialled at extensions to the Clarendon School at Oxhey (1958-59, job architect J.H. McMorrow) and the grade II listed St Albans College of Further Education (1958-60, job architect R.J.A. Wakely). See also Platt 1969.
21. In 1949 the company changed its name to Hills (West Bromwich) Ltd.
22. The prototype was Cadmore Lane School in Cheshunt, built in 1959-60 to the designs of V.H. Lee. *Modular Quarterly*, no.33, Summer 1960, pp. 22-25; Hertfordshire County Council, *New Schools Building Programme*, unpublished schedule of 1970, copy in Post-War Steering Group files (schools, box 4), Designation Department, London Region, English Heritage.
23. Russell 1981, 523. The concrete system was first employed at extension to the Queen Elizabeth Girls' Grammar School in Barnet (1963-65, job architect C.J. McIntosh) and the South West Herts College of Further Education (1963-65, job architect A. Dickens). Hertfordshire County Council, New Schools Building Programme, unpublished schedule of 1970, copy in Post-War Steering Group files (schools, box 4), Designation Department, London Region, English Heritage.
24. Russell 1981, 520-22; Saint 1987, 109-11; 'Tribute to Geoffrey Fardell' by John Onslow in *SCALA News*, Easter 2001; David Harrison pers.comm., 5 May 2010.
25. *Education*, vol.134, 25 July 1969, p.981. The War Office was absorbed into the Ministry of Public Building and Works in 1962.
26. RIBA *Journal*, vol.76, May 1969, p.199.
27. Maclure 1984, 109.
28. *System Building and Design*, January 1968, p.68; *Education*, vol.134, 25 July 1969, p.981.
29. Wigglesworth 1966, 270.
30. Ministry of Public Building and Works 1964; *System Building and Design*, January 1968, p.68.
31. RIBA *Journal*, vol.76, May 1969, p.199, 201.
32. Association of Education Committees 1969 *The Education Committees' Yearbook*, p.933
33. RIBA *Journal*, vol.76, May 1969, p.199, 202.
34. *Financial Times*, 8 September 1969, p.9.
35. *Education*, vol.147, no.17, 29 April 1977, p.301; *Architect's Journal*, vol.164, no.49, 8 December 1976.
36. James Blackie, pers.comm., 28 November 2011.
37. Brian Phillips, pers.comm, 8 May 2012.

38. Roderick Rees, pers.comm., 9 February 2012.
39. Peter Brooks, pers.comm., 1 December 2011.
40. Jos Dalley, pers.comm., 29 November.2011; James Blackie, pers.comm., 28 November 2011.
41. Jos Dalley, pers.comm., 29 November.2011.
42. Wigglesworth 1966, 272; Jones 1967.
43. Jack Digby, pers.comm. to Elain Harwood, 10 May 2005.
44. Jos Dalley, pers.comm., 29 November.2011.
45. James Blackie, pers. Comm., 28 November 2011; Adrian Palmer, pers.comm., 8 February 2012.
46. James Blackie, pers. Comm., 28 November 2011.
47. RIBA *Journal*, vol.65, no.3, December 1957, p.45; *Architectural Review*, vol.127, no.756, February 1960, pp. 118-20. The Rushbrooke scheme won the West Suffolk Award to Architects and Builders, an annual prize instituted in 1953.
48. Sandy Ingles, pers.comm., 30 November 2011.
49. Franklin 2012a.
50. *Building Design*, no. 345, 6 May 1977, p. 3.
51. Suffolk Record Office Local Studies Library: Suffolk County Council 1979 *Suffolk County Architect's Department 1974-79*, shelfmark 2413/1; *Architect's Journal*, vol.174, no.38, 23 September 1981, p.810.
52. Suffolk Record Office: 3077/1: Minutes of Primary Education Sub-committee of West Suffolk County Council Education Committee, 23 July 1964, p.5.
53. Saint 1987, 164-66.
54. Suffolk Record Office: 3077/1: Minutes of Primary Education Sub-committee of West Suffolk County Council Education Committee, 19 January 1965, p.4.
55. Jack Digby, pers.comm. to Elain Harwood, 10 May 2005; James Blackie pers.comm., 28 November 2011.
56. Suffolk Record Office: HG3/3/2/68/4/24, letter of 9 July 1968 from Jack Digby to Herbert Tayler.
57. Jack Digby, pers.comm. to Elain Harwood, 10 May 2005; 'Village schools in West Suffolk', in *Era: Journal of the Eastern Region of the Royal Institute of British Architects*, vol. 1, no. 3, June 1968, pp. 24-28.
58. *Post-war Educational Buildings: the Rolling Programme:* unpublished English Heritage report of September 1996 by Dr Diane Kay, copy at English Heritage, papers of Post-War Steering Group, Education, Box 7.
59. Haward, B. 1993 *Johns, Slater & Haward: [A] Selection of schools designed 1946-80*. Unpublished manuscript, copy at Suffolk Record Office Local Studies Library, accession number 70026, class number qS 727, p.118.
60. 'Village schools in West Suffolk', in *Era: Journal of the Eastern Region of the Royal Institute of British Architects*, vol. 1, no. 3, June 1968, p. 24.
61. MoE 1961 (Building Bulletin 3), 28.
62. Institute of Education Archives: ME/2/5/2/176: DES photographs of 24.6.1971.
63. James Blackie pers.comm., 28 November 2011.
64. Suffolk Record Office: 3077/2: Minutes of Primary Education Sub-committee of West Suffolk County Council Education Committee, 27 September 1967, p.35.
65. Suffolk Record Office: 3077/2: Minutes of Primary Education Sub-committee of West Suffolk County Council Education Committee, 27 September 1967, p.36.
66. Suffolk Record Office: 3077/3: Minutes of Primary Education Sub-committee of West Suffolk County Council Education Committee, 24 September 1967, p.6.
67. *Architectural Review*, vol.152, no 900, February 1972, p. 74.
68. James Blackie pers.comm., 28 November 2011.
69. *Architectural Review*, vol.152, no 900, February 1972, p. 75.
70. *Techniques & Architecture*, no. 298, May 1974, pp. 90-92; *A&U*, vol. 2, no. 10, October 1972, pp. 39-46.
71. *Architectural Review*, vol.152, no 900, February 1972, p. 75.
72. Suffolk Record Office: 3077/3: Minutes of Secondary Education Sub-committee of West Suffolk County Council Education Committee, 26.March 1969, p.7.
73. *Ibid*, p.30.
74. Jonathan Clarke, pers.comm., 10 February 2012.
75. Suffolk Record Office: 3077/3: Minutes of Secondary Education Sub-committee of West Suffolk County Council Education Committee, 26 September 1967, p.39; Minutes of Secondary Education Sub-committee, 6 March 1968, p. 30.
76. Suffolk Record Office Local Studies Library: *A Survey of the Work of West Suffolk County Council April 1967– March 1970*, shelfmark 352.042644, p.24.
77. Suffolk Record Office: 3077/3: Minutes of Secondary Education Sub-committee of West Suffolk County Council Education Committee, 4 December 1969, p.12.
78. Peter Brooks, pers.comm., 1 December 2011.
79. Suffolk Record Office Local Studies Library: Suffolk County Council 1979 *Suffolk County Architect's Department 1974-79*, shelfmark 2413/1 ; www.flickr.com/photos/jelltecks/4274341837/, accessed 15 August 2012.

IPSWICH

Figure 4.201: Ipswich: location of gazetteer entries.

Ipswich

The County Borough of Ipswich was an education authority until 1974, succeeding the Ipswich School Board founded in 1871. Before the First World War it commissioned a number of schools from the architects Eade and Johns, a local practice that in 1921 became Johns and Slater after Edwin Thomas Johns took his nephew, Martin Johns Slater, into partnership. Johns was subsequently appointed Surveyor to the Ipswich Education Committee, and was responsible for the borough's new schools as well all alterations and repairs to the existing stock. Slater designed eighteen new schools between 1930 and 1939, built of load-bearing brick with flat roofs and horizontal steel windows, and composed of lines of classrooms served by covered ways and later by corridors, with a higher assembly hall and gymnasium. After the war more schools were needed to serve Ipswich's new housing estates and the reform of secondary education, so the practice sought a new assistant to handle the work. Johns died in 1947 and, although Slater continued in practice until his retirement in 1962, most of the new work was handled by the new assistant, Birkin Haward, who became a partner in 1949.

Birkin Haward was born in 1912 in Ipswich, and thanks to his love of drawing and skill in maths was articled in 1929 to H. Munro Cautley, a local architect who was also the Diocesan surveyor and an antiquarian. He went on to study at the Bartlett School of Architecture in London, whence he joined Mendelsohn and Chermayeff as an assistant to work on the detailed design of the De La Warr Pavilion in Bexhill. Haward got on well with Mendelsohn and became his closest English assistant, working not only on the Cohen House in Chelsea but also in Palestine. Mendelsohn and Chermayeff's partnership foundered during 1937, and Haward began to enter competitions, coming second in the prestigious one for an urban secondary school run that year by a national newspaper, the *News Chronicle*. This was to prompt his later specialisation in schools, but first he became involved in a new trade union, the Association of Architects, Surveyors and Technical Assistants, and he worked on air-raid precautions with Berthold Lubetkin and Tecton, in the 1930s the most exciting British architectural practice.

Haward joined William Holford and Partners in 1941, designing hostels for munitions workers at Swynnerton near Stafford, but left in 1942 to become the national organiser of the Association of Architects, Surveyors and Technical Assistants (AASTA). This trade union work provided valuable introductions to other specialist schools architects, among them members of the Architects' Co-operative Partnership, Mary Crowley and David Medd. From April 1943 he served in the Royal Engineers, returning to England in November 1945. At this point Haward could have expected a successful career in London. He was ambitious, his experience and connections set him among the leading young architects of the time, and his success in the schools competition had brought him attention in that field. But Haward had married an Ipswich art student, Muriel Wright, in 1936, and by the time of his demobilisation in January 1946 they had two sons, with a third on the way. He decided therefore to give up his promising London career in favour of settling with his family in Ipswich.

In the years 1948-74 the firm of Johns, Slater and Haward designed 44 new primary schools and nine secondary schools, while altering or extending forty more. Haward's work in Ipswich led to commissions for schools in Hertfordshire and Essex, while schools in the North Riding of Yorkshire and in Leeds came via the *News Chronicle* success. There were also two Colleges of Further Education and additions to the Universities of East Anglia and Essex. Haward was also responsible for office buildings and public housing around Ipswich, as well as the Castle Hill Congregational Church, listed in 1998 for its folded plate roof structure and dalle de verre glass. The house he built for himself and his family in 1960, The Spinney, No.108 Westerfield Road, was finally listed in December 2009. Over his long career Haward entered 24 open competitions; he was placed second no less than six times and won three other placings, but never came first.

The interest of Haward's work lies in his primary schools, to a standard brief for 240 infants and 360 juniors, often built in separate programmes over some five years. They provide a snapshot of the evolution of primary school design, from the use of lightweight steel-framed construction in the late 1940s, through experiments with more imaginative systems in the 1950s, to the use of a regular grid in the early 1960s and to open planning in the late 1960s and 1970s. He developed a particular interest in the use of timber to span large spaces, most distinctively in his economical 'sports domes'. Haward explained in his autobiography of 1996 that he was 'generally of similar standpoint' to the Hertfordshire architects regarding the need for lightweight schools appropriate to the needs of very small children, but working as a consultant to Ipswich Education Authority meant that he did not have the problem of a large programme and he could enjoy a greater design freedom, aided by the long-standing relationship between architect and client.[1] The secondary schools were always less interesting, tending to be secondary moderns to supplement the town's venerable grant-aided schools and which were later extended for use as comprehensive schools. After his retirement around 1980, Haward developed an interest as an antiquarian, recording stained glass and medieval arcades in Suffolk churches, and to a lesser extent in Norfolk. He died in 2002.

Haward's first schools combined the light-weight steel frame from Hills of West Bromwich, used in Hertfordshire's successful programme, with cross walls of traditional brickwork and cladding of horizontal concrete panels. It was a happy compromise that used the best of old and new technology for both robustness and economy. The first, **Rushmere Hall School** of 1947-49 (fig. 4.202), was one of just three schools in Britain given a Festival of

Figure 4.202: Rushmere Hall School, Lanark Road, Ipswich. Its Festival of Britain plaque is visible on the end wall. Photograph © Elain Harwood.

Britain Merit Award in 1951 (Herts County Architect's Department did not submit any entries). The long, straggling plan comprises two lines of classrooms, for infants and juniors, either side of a central block containing staff rooms, kitchen and dining facilities, with an assembly hall at each end. The separation of each classroom by an open courtyard (reached through sliding and folding doors) was developed from his *News Chronicle* plan, which has similarities, too, to that of the winning design by Denis Clarke Hall, realised at Richmond Girl's High School, while at least one of the assembly halls has projection facilities for showing films; although the materials were modest, the plan and fittings are indicative of the relatively generous budget immediately after the war. The *Architects' Journal* described it as having 'a refreshingly direct handling of materials and a solid honesty of expression that is likely to wear better than many sophisticated exercises in the modern style'.[2]

Rushmere Hall was followed by **Whitton White House School** (now White House School) using identical materials and a very similar plan, but built more slowly, the infants opening in 1950 but the juniors not until 1951. **Castle Hill**, built in 1949-53 for a new housing estate of that name on the northern edge of the town, comprises a two-storey junior school, with greater areas of brick - patterned with diapers and projecting headers, and a lozenge pattern to pre-cast concrete panels between the lines of windows. These panels were repeated in secondary schools at Dovercourt, Essex and Thurleston, Ipswich, and at Hazelgrove Primary School, Hatfield, Herts, and have some similarities with the lozenge patterns he later adopted for his stained glass at Castle Hill Congregational (now United Reformed) Church across the road.[3] The infant school, the last part to be built, was designed around a central assembly hall, with a pyramidal roof, so that corridors were eliminated.

Following these schools in the new estates on the north side of Ipswich, Haward built a group of schools on the much larger Chantry Estate to the south and south west. Here he experimented with timber shell roofs and cladding in his search for simple, appropriate technology at modest cost. At this time he was working with Felix Samuely on folded plate roofs for his larger buildings, for Fisons, Ipswich Civic College (University Campus Suffolk, demolished) a hall for the independent Ipswich School, and the Castle Hill Congregational Church. After Samuely's death, Haward worked with his partner Frank Newby on smaller projects in timber.

The most striking of Haward's schools dates from this time of experimentation. This is **Sprites Lane** (now Sprites), built in 1956-59 and featuring a series of timber hyperbolic paraboloid roofs supported on concrete columns and with tie rods to restrain the horizontal outward thrust (fig. 4.203). Larger shells cover the central assembly halls, with smaller hypars over the classrooms that allow for clerestory windows to the higher parts of the roof, now shaded but with the actual glazing intact. Small decorative panels are set into the brick cladding below, and more figurative panels by Bernard Reynolds added to the entrance wall in 1964. There are some corridors to the junior school, but the infant school is entirely grouped around the hall, with a kitchen set between the two parts.

Figure 4.203: Sprites Lane Primary School, Chantry, Ipswich; Johns, Slater and Haward, 1958-60. Photograph by James O. Davies – English Heritage; DP138300.

Haward followed Sprites Lane with **Gusford School**, also for infants and juniors, in 1959-62. It was for him perhaps his most important school, for as he explained:

> 'the practice's considerable experience in the design of primary schools since 1947, continuous contacts with the A&B Branch at the Department of Education and Science and the architects at Herts and Nottingham [sic], as well as practical experience of CLASP and local variants, led now in the current school boom to our feeling the need of a method completely within our own control as well as within the day to day capacity of normal provincial builders.'[4]

The very simple system Haward devised comprised a series of timber pyramidal roofs supported on timber beams on pre-cast concrete posts. He adopted a 12' planning grid, with classrooms set in fours linked by activity areas and cloakrooms, and one large central hall. The kitchen and boiler house face the road, while the classrooms look towards large, south-facing playgrounds. Timber, brick or concrete could be used as a cladding, and at Gusford he used thick cedar panels stained black. The school won a Civic Trust Award in 1963. The system demonstrates his commitment to 'modular co-ordination', the use of a planning grid for the design of a building that extended to a common system of dimensions for fixtures and fittings. This was critical to the use of prefabricated elements in school designs, and gives Haward's work its look of precision. It also permitted a considerable amount of off-site work, which like many

of his contemporaries he regarded as more economical and resulting in better quality construction.

Twelve primary schools were built using this personal system before 1970, by no means all in Ipswich. Others included Redcar, built in 1961-65 as separate buildings around courtyards, and St Mary's Church of England Primary School, Hadleigh, in 1965. In Ipswich a variant was **Downing**, again built of timber but with a linear plan and high roof lights (rather than pyramidal roofs) designed to bring light into a slightly deeper plan around enclosed, separate courtyards for infants and juniors. Between the two halves lies a central assembly hall and the kitchen and boiler house, again facing the road. On the south side is the first example of a new innovation by Haward, a timber activities dome (see below).

The use of deeper plans reached its fullest expression at **Halifax**, where the head teacher, the Chief Education Officer Owen Alen and HMI Inspectors, encouraged an open plan. The concrete posts are set at twelve foot intervals in one direction only; on the other steel trusses permit longer spans and thereby a deep plan. Carpeted areas, part for quiet study, were set on one side; messy activities, with a space dedicated to pottery making, were set on the other. Halifax was followed by Handford Hall Primary School in 1973-74, and by Broke Hall, the latter designed for Ipswich CB but built for Suffolk County Council after local government reorganisation to a modified design, its scale reduced by rising inflation and considered cramped by *Building* magazine. New features included a nursery area and consideration for heat loss and fuel economy.[5]

Haward also designed a number of secondary schools, but these are less innovative. The most substantial is **Chantry**, designed from 1952 onwards and built in phases in 1960-62, 1964 and later has two three-storey blocks, for the upper and lower schools, with a later single-storey sixth-form block planned from 1964, now a library (fig. 4.204). The early phases were built in CLASP. To cope with his busy schedule around 1960 Haward also used CLASP for smaller secondary schools at March, for the Isle of Ely, and at Gorleston for the Roman Catholic Diocese of St Edmunds.[6] Ironically, Haward had already built a secondary school on a site at Leeds affected by mining subsidence, where he used a concrete frame with deep foundations clad in timber. This was Cow Close/ Farnley Park (demolished), which had a similar end profile to that he used at his own

Figure 4.204: Chantry Secondary School, Mallard Way, Ipswich; Johns, Slater and Haward, c.1960-64. Photograph © Elain Harwood.

house, The Spinney, on a massive scale. On a corner of the Chantry site Haward also designed a small, single-storey special school, **Birkfield**, in 1959.

Haward's interest in light-weight, economic construction is also evident in the use of varied materials in his own house. The Spinney was also built on a 12' grid, and it shows his emerging interest in deep plans; the relationship between it and the schools is unusual in suggesting a cross-fertilisation of ideas between building types.

More innovative still was Haward's development of timber shell domes as school sports halls or 'activity domes', of which he was particularly proud. He evolved the idea out of Buckminster Fuller's geodesic domes, and small experiments from 1963 evolved into a small activity dome built at **Dale Hall School** in 1967, which survives. It was followed by a larger dome at Landseer Road Secondary School, an inter-war school which closed in 1987 and which has been demolished. The next dome was a 60' sphere erected at Downing Primary School in 1969 where a lighter construction was realised. The difficulties of using a round structure for games courts and the reverberant acoustics led Haward to then modify his dome to a square plan, as realised at Halifax Primary School in 1971. Still larger domes followed at sports clubs and secondary schools using this rectangular plan, including Priory Heath, c.1972, Thurleston and at Woodbridge School (in Woodbridge, both from 1974-75.[7] **Handford Hall** is a very late example, seemingly dating from the rebuilding of the school in 1983-84.

Haward also made additions to Ipswich School, the major independent school founded by Cardinal Wolsey in 1528. He built an assembly hall in 1957, with a folded plate roof engineered by Samuely and appliqué decorated curtains by Gerald Holtom, and in 1978-82 adding a new library, art department and classrooms, with glass by John Piper.

Gazetteer

Primary Schools

¶ **Rushmere Hall School**, Lanark Road, Ipswich; Johns and Slater, (job architect Birkin Haward - partner from 1949, assistant J. C. Butters), designed 1946, built 1948-49 (in two phases).

Haward's first school, on a generous site with a loose, linear plan, for 240 infants and 360 juniors, on a new housing estate (there is a good group of surviving prefabs nearby). It is a clever rationalisation of the most economic features of Hills' 8'3" steel frame with classroom blocks devised on a low-cost 7' grid, combined with traditional brick construction for 'one off' elements such as the two assembly halls. The classrooms are set in long lines, each with a small courtyard for outdoor classes linked by folding windows, either side of a central spine that contains the brick elements. The school won a Festival of Britain Merit Award in 1951. A nursery was also originally intended.[8]

¶ **White House School**, formerly Whitton White House, Shakespeare Road, Ipswich; Johns, Slater and Haward (job architect A. Diaz), designed 1947, built 1949-51 in two phases.

Built to the same pattern as Rushmere Hall, with a steel frame and 7' grid.[9]

¶ **Castle Hill Primary School**, Dryden Road, Ipswich; Johns, Slater and Haward (job architect I. M. Barne; assistants: Bill Kretchmer, G. Nugent, B. Grayling and others), designed 1949, built 1949-51 (juniors), 1952-53 (infants).

Separate schools with shared kitchen facilities. The junior school has a two-storey classroom wing, approached by staircases between pairs of classrooms just as Haward had produced in his second premiated design for the *News Chronicle* competition in 1937. The single-storey infant school comprised six classrooms around a steel-framed octagonal hall. There were originally stage curtains by Gerald Holtom, and the entrance has a large moulded concrete relief panel depicting 'the Castle on the Hill' in the main entrance by Bernard Reynolds. The exterior survives well, with the startling contrast

Figure 4.204: Rushmere Hall School soon after completion.

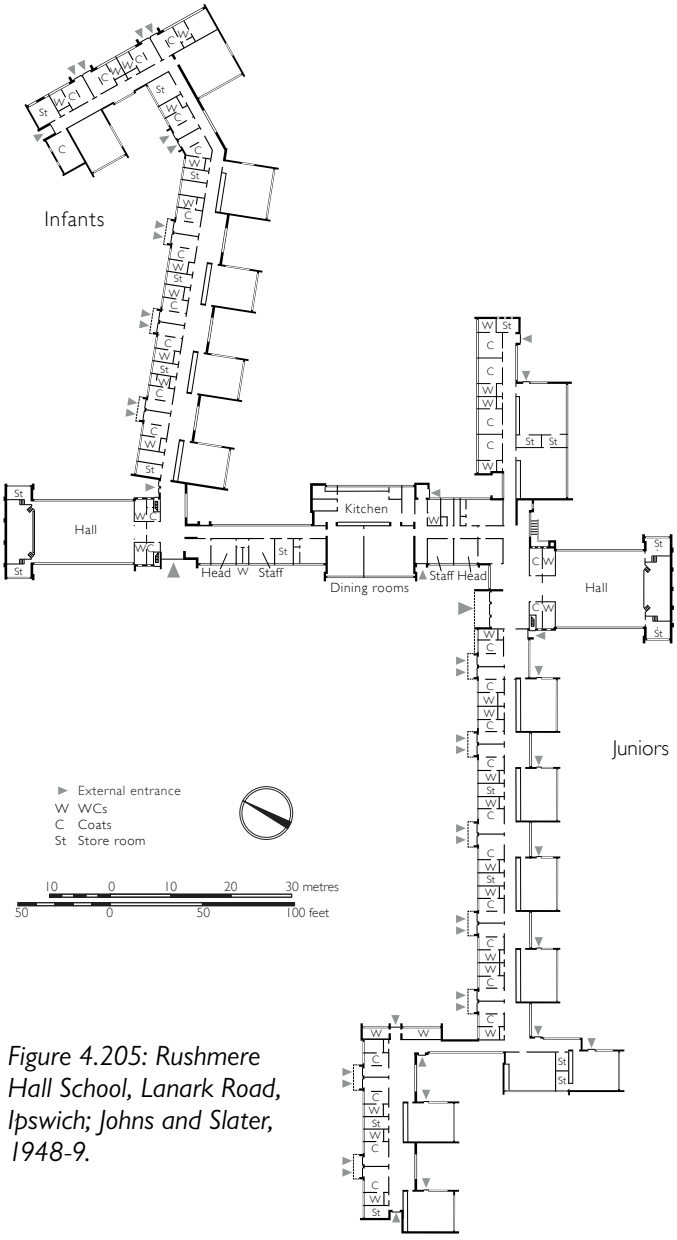


Figure 4.205: Rushmere Hall School, Lanark Road, Ipswich; Johns and Slater, 1948-9.

between the juniors, a development of the Rushmere Hall idiom with two storeys and decoration, and the low infant school with its striking hall.

¶ **Chantry Infant and Junior Schools**, Aster Road, Ipswich; Johns, Slater and Haward (job architects A. J. H. Field, Assistant: R. Mason), designed 1951, built 1951-54.

Two separate schools on a shared site, a single-storey primary school around a central hall, with a two-storey junior school of load-bearing brick on a 10' bay grid, with decorative finishes as shown in Haward's sketches of 1951. There is a single-storey range containing the assembly hall, dining hall and staff rooms. The infant school is single storey, with workrooms attached to each classroom, all grouped round a central cloakroom and circulation space that acts also as a foyer to the adjoining assembly hall; these central areas are all largely lit by clerestories.

Figure 4.206: Chantry Infant School. Photograph © Elain Harwood.

Figure 4.207: Chantry Junior School, Aster Road, Ipswich; Johns, Slater and Haward, built 1951-4. Photograph © Elain Harwood.

Figure 4.208: Low-relief panel at Sprites Lane. Photograph by James O. Davies – English Heritage; DP138293.

Figure 4.209: Assembly hall at Sprites Lane. Photograph © Elain Harwood.

¶ **Sprites Primary** (formerly Sprites Lane), Sprites Lane, Chantry, Ipswich; Johns, Slater and Haward (job architect H. F. Fleck; assistants: J. Earwaker, K. Dowse), designed 1956, begun on site June 1958, infants completed 1959 and juniors in Spring 1960.

In-situ concrete columns carry laminated timber hyperbolic paraboloid roofs over classrooms and assembly halls, with twelve shells in all. Infilling below these is of brick, or timber-framed glazed walls with aluminium sash windows, the clerestory windows in the angles of the roofs now screened. Other areas – cloakrooms, staff and service rooms – have load-bearing brick walls and timber roofs. The undersides of the roofs are of exposed timber, clear varnished and well seen in the halls.

There are no corridors to either school. In the infant school, pairs of classrooms are set at

the corners of the hall linked by cloakrooms, which give access to the outer classroom of the pair. The junior classrooms are also paired, but some are set in a line, reached again through the cloakrooms but also through practical areas.

Four concrete panels on a wall at the entrance to the school, installed in 1964, are by Bernard Reynolds (1915-97), a Norwich-born artist who taught sculpture at the local School of Art (Ipswich Civic College from 1959), while on the school itself are abstract panels by Birkin Haward and his team that are integral to the original building. The school received a Civic Trust Award in 1960.[10]

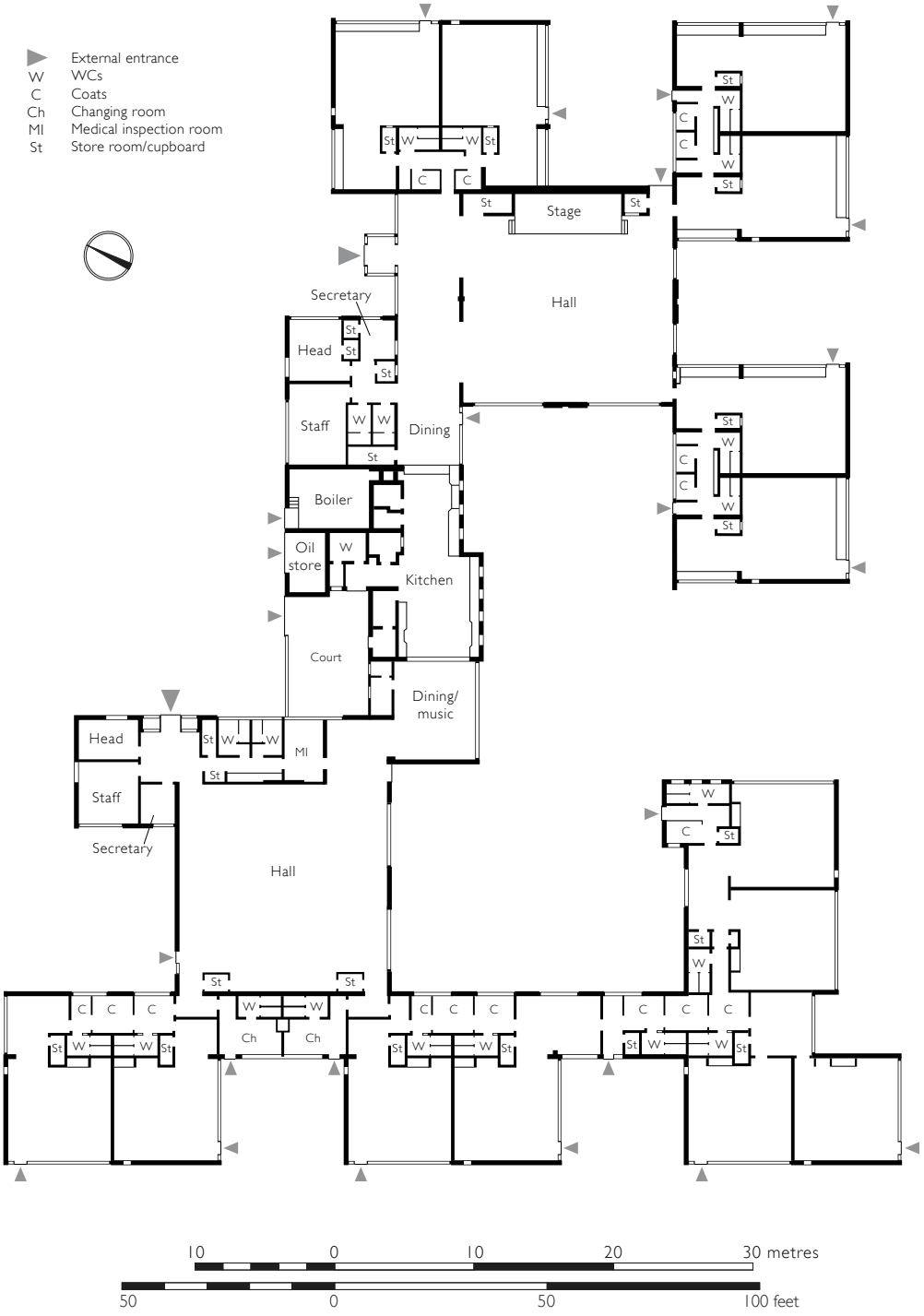


Figure 4.210: Sprites Lane Primary School, Chantry, Ipswich; Johns, Slater and Haward, 1958-60.

¶ **Gusford School**, Sheldrake Drive, Ipswich; Johns, Slater and Haward (job architect H. F. Fleck; assistants: G. S. Page, M. Gooderham and others) designed 1959, built 1960-62.

Built on a sloping, open site with views to the south, Haward seems to have considered this to be his most important school, for it saw the refinement of his simple personal system of pyramidal timber roofs supported on concrete posts, on a 12' grid. The grid and the pyramidal roof structure are the key ingredients; the cladding could be timber, brick or concrete block and not important. It became the model for later schools by the practice. Here the classrooms are grouped in fours, each with

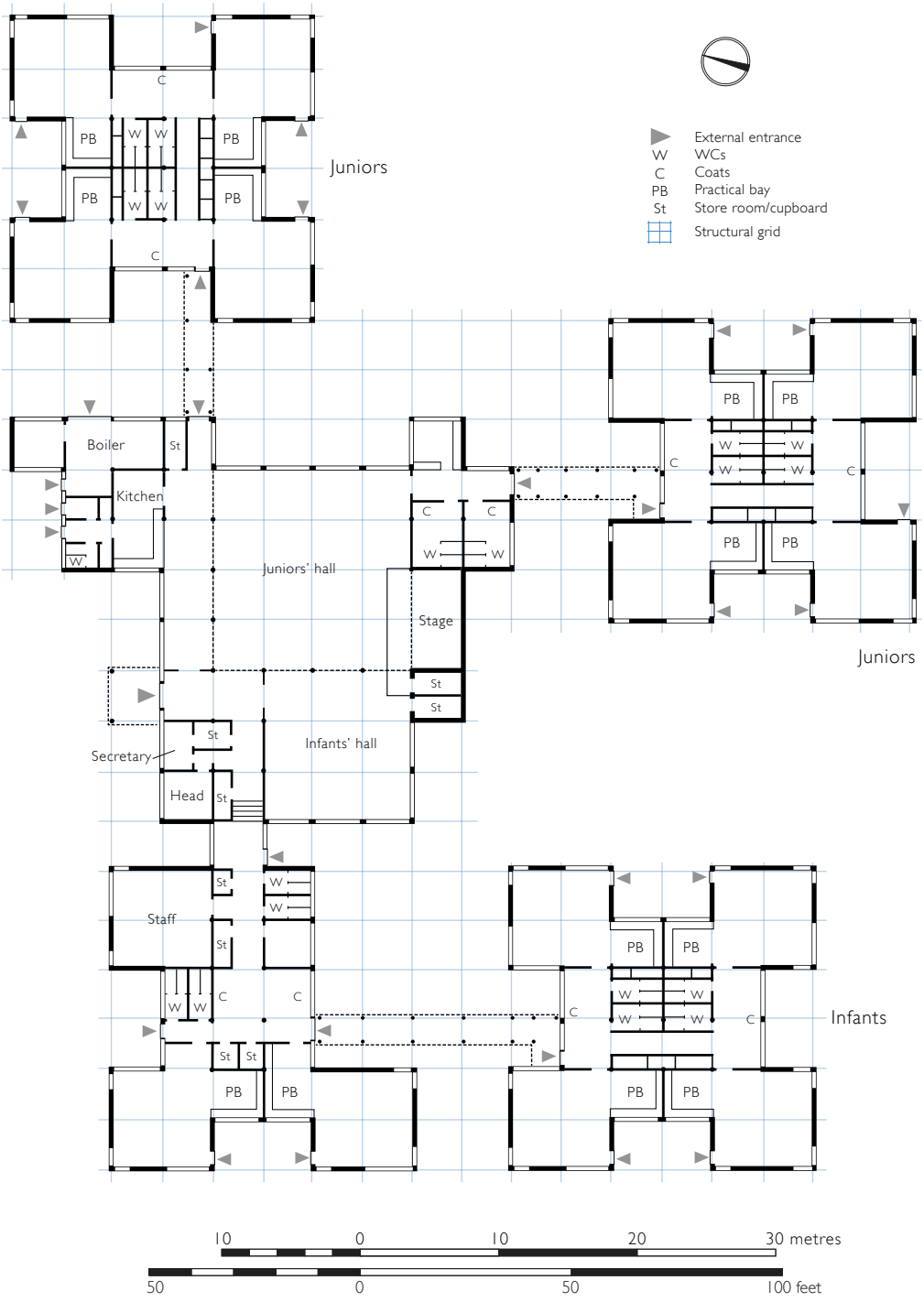


Figure 4.211: Gusford School, Sheldrake Drive, Ipswich; Johns, Slater and Haward, 1960-62.

their own preparation or activity area and with a shared central cloakroom. The school is clad in thick cedar boarding stained black, with varnished boarding inside, notably to the hall. The basic form - built in a single contract - survives well, but more classrooms have been added, spoiling the playground elevations, and there has been some reglazing. The school received a Civic Trust Award in 1963.

¶ **Dale Hall Primary School**, Dale Hall Lane, Ipswich; Johns, Slater and Haward, 1960 onwards.

The original school was always modest and has been altered and extended, and it was not included in Haward's selection of his schools. However, it does retain the earliest of Haward's activity domes, from 1967.[11]

¶ **Downing Primary School**, Downing Close, Ipswich; Johns, Slater and Haward (job architect R. F. Westlake; assistants: G. Gillings, C. R. Pulham and others), designed 1966, built 1966-68.

Downing differs from Sprites Lane and Gusford in being designed as a single block, with two internal courtyards and high rooflights bringing natural light into the deep plan. The main entrance, assembly hall, staff room, kitchen and services are planned in the centre, with the infants and juniors to either side, each set around their own courtyard. The construction is the same as that for Gusford, but with flat roofs to permit the introduction of roof lights into the deep plan, and cedar boarding is again used externally. Economies in construction permitted the building of a timber activities dome, which survives.

¶ **Halifax Primary School**, Prince of Wales Drive, Ipswich; Johns, Slater and Haward (job architect H. F. Fleck; assistants B. Topple, I. Haste, P. Hemmingway) designed 1968, built 1968-71, 1972 in two phases.

Haward considered Halifax, known as Prince of Wales Primary at design stage, as his most innovative school in planning terms. An open plan was developed with the incoming head, Owen Alen - the Chief Education Officer for Ipswich and H. M. Inspectors, that owed much to new ideas in team teaching. Circulation areas were eliminated in favour of a line of spaces for messy activities to the front and quiet,

Figure 4.212: Halifax School. Photograph © Elain Harwood.

Figure 4.213: A view of the open-plan interior at Halifax School before alterations. Photograph © Elain Harwood.

Figure 4.214: Sports dome at Halifax School. Photograph © Elain Harwood.

carpeted spaces to the rear, set around central library and assembly areas. The class spaces to the front and rear have been partitioned into eight classrooms but the tripartite section of light, dark, light remains. The construction is a development of that used at Downing and earlier, but is a rectangular rather than square bays, with concrete posts 12' apart on the long

access, but steel lattice roof beams permitting the deep, tripartite section. Clerestories and roof lights bring natural light into the central area. To the rear is an activities dome, much larger than that at Downing and with its arched roof based on a rectangular plan as more practical. Part of the hall contains a swimming pool. Since the building was originally inspected in 2001 it has been substantially reglazed and the interior remodelled as eight discrete classrooms, three support rooms, a studio for music and drama, a resources room and an open-plan library.[12] Original details survive, but the fundamental principle of the building has been lost. The school received a Civic Trust Commendation in 1972

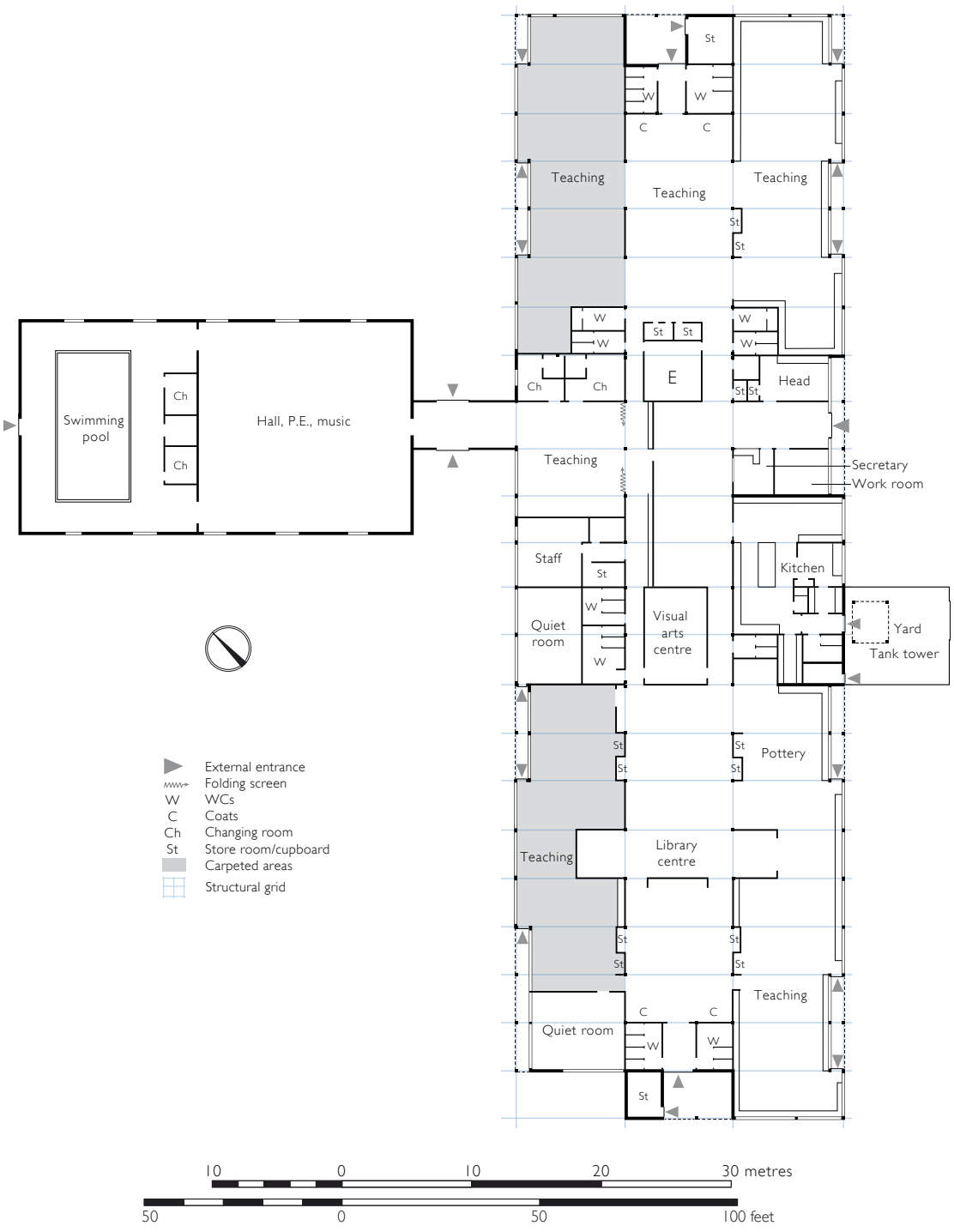


Figure 4.215: Halifax School, Prince of Wales Drive, Ipswich; Johns, Slater and Haward, 1968-72.

¶ **Handford Hall Primary**, Gatacre Road; Johns, Slater and Haward, built 1973-74.

The school was burnt down in 1982 and rebuilt, reopening in 1984. Its sports dome is the most distinctive feature.

¶ **Broke Hall Primary**, Chatsworth Drive, Ipswich; Johns, Slater and Haward (job architect Raymond Westlake, assistant Margaret Michael) 1975-78.

This was built for Suffolk County Council to a new brief after reorganisation, after a scheme had been prepared for Ipswich. It was built on a system of reinforced concrete columns with brick cladding. It has been much extended to south and west, and remodelled internally.[13]

Secondary School

¶ **Chantry Secondary School**, Mallard Way, Ipswich; Johns, Slater and Haward (job architect K. E. Dowse, assisted by D. Palmer, M. Cox and others), designed from 1952 onwards, built in phases from c.1960-64 and later.

This is a complex school, with two three-storey teaching blocks, lower house blocks and a later sixth-form range (now a library), all built in CLASP (Ipswich was an associate member of the consortium in the early 1960s). It is a large school, most striking for having two teaching blocks of near-equal size, and a house system as pioneered in Coventry comprehensives in the early 1950s. However, it is in his primary schools that Haward is most innovative. The blocks were reglazed in the 1980s, and a programme to rebuild the school is on hold – there is differential movement between the CLASP construction and later building with deep foundations.

Special School

¶ **Birkfield ESN School**, now Beacon Hill Special School, Birkfield Drive, Ipswich; Johns, Slater and Haward (job architect I. M. Barne, assistant E. Doe), designed 1959.

A single-storey school to a 3'4" and 6'8" alternating grid, with a central hall and five classrooms in two rows. These appear little altered but there is a large extension from the 1990s to the south, sensitive in style but with pronounced monopitch roofs.

ENDNOTES

1. Haward, B. 1993 Johns, Slater and Haward, Ipswich, Selection of Schools Designed 1946-1980', unpublished memoir, 1993, p.6: 70026, class number qS 727, at Suffolk County Council Local Studies Library at Ipswich.
2. *Architects' Journal*, vol.111, no.2867, 19 January 1950, p.80.
3. *Concrete Quarterly*, no.38, July/September 1958, pp.29-33.
4. Haward, *op.cit.*, p.116.
5. *Building*, vol.235, no.17055 (38), 22 September 1978, p.91.
6. Haward, B. 1996 Architectural Career and Autobiography, unpublished memoir, pp.65-9.
7. *Building Design*, no.316, 24 September 1976, pp.18-19; Haward 1977.
8. *Architects' Journal*, vol.110, no.2840, 14 July 1950, pp.41-5; Richards, J. M. 1950 'Buildings of the Year: 1949', *Architects' Journal*, vol.111, no.2867, 19 Jan 1950, p.80; F.B.A (50) 7, Special Meeting of the Council for Architecture, 12 April 1951, in WORK 25/49, National Archives.
9. *Architects' Journal*, vol.110, no.2840, 14 July 1950 pp.46-9, published when only the infants' was built.
10. *Architectural Review*, vol.125, no.744, January 1959; *Architect and Building News*, vol.216, no.7, 19 August 1959, pp.45-8; *Wood*, vol.24, no.3, March 1959, p.83; *RIBA Journal*, vol.68, no.11, September 1961, p.440; *Ipswich Society Newsletter*, no.179, April 2010, unpag.
11. http://www.dalehall.suffolk.sch.uk/tourdome.htm, accessed 6 April 2012.
12. http://www.onesuffolk.co.uk/HalifaxPrimarySchool, assessed 18 July 2012.
13. *Building*, vol.235, no.7055 (38), 22 September 1978, pp.91-8.

LANCASHIRE

Figure 4.216: Lancashire: location of gazetteer entries.

Lancashire

Like the West Riding, with whom it shared a border, the pre-1974 administrative country of Lancashire comprised an extensive and varied geographical area, peppered with seventeen county boroughs. It stretched from the Mersey and urban conurbations in the south to the Lake District in the North, and from a western coastline to the Pennines in the East. The geographical county embraced two of England's core cities—Liverpool and Manchester—many large towns, rural areas of different characters and a post-war economy dominated by the contraction and transformation of the mining and manufacturing industries and the growth of the service sector. The designation of new or expanded towns in Skelmersdale (1961), Warrington (1968) and Central Lancashire (1970, in the Chorley-Leyland area) brought into focus the social and educational needs of new communities, but the social problems of the inner cities from which many of their residents had come were no less pressing.

School design in Conservative-controlled Lancashire differed from that of the West Riding in that no strong educational lead was discernable, particularly under Percy Lord, the Chief Education Officer between 1957 and 1969. In its absence, the priorities and processes of school building were set by a large and powerful Architect's Department, headed by Roger Booth. A sizable building programme—in March 1973, 80 schools were at design stage, 128 at tender stage and 348 in construction—was tackled by a combination of prefabrication and standardisation.[1] Booth's interest in reforming school design was not unprecedented in Lancashire. G. Noel Hill, appointed Architect in 1945 (and formerly the Architect to Manchester City), implemented a standardised yet composite method of building based on bays of brick piers, steel joists and full-width glazing. Although economical to build, planning was circumscribed and standard designs were adopted. From 1954 a variety of proprietary systems such as BAC (aluminium), A75 (brick and timber), Derwent (timber) and Intergrid (pre-stressed concrete) were sampled.[2] Booth had little truck with 'thin dreary lightweight stuff' and wished to bypass specialist firms, which could be large, remote and expensive.[3]

At the centre of the new strategy was the establishment in late 1965 of the Organisation of North Western Authorities for Rationalised Design (ONWARD), a consortium that encompassed the county councils of Lancashire, Westmoreland and Cumberland, and many of the county boroughs and diocesan school authorities within their boundaries. Its geographical reach extended from the Mersey and Solway Firth, but a key absence from this agglomeration of authorities was the City of Manchester, under Architect S. G. Beasant Roberts, which already belonged to CLASP. The delegation of much development work to an autonomous consortium freed up Booth's designers to devote more time to architecturally ambitious 'one-offs'. 'I am sure that it is necessary for the architect to have a fling now and again—to flex his creative muscles in an uninhibited way', Booth wrote in 1963.[4] A stream of imaginative civic buildings, amongst them police stations and headquarters, magistrate's courts, libraries and further education institutions represent the highlights of the Department under Booth. During the decade from *c*.1965-75, the signature of the Lancashire office was pre-cast concrete, employed in an assertive, Brutalist idiom reckoned to be 'aesthetically sympathetic to the rugged

Figure 4.217: 'Concrete will be marvellous'. The newly-completed Castle School in 1966. Reproduced by kind permission of Lancashire County Council.

Northern scene' (fig. 4.217). 'In combination with an imaginative use of aluminium, glass and plastic, concrete will be marvellous', enthused the *County Architect's Report* of 1973.[5]

The Architect's Department under Roger Booth

Roger Booth, Architect to Lancashire County Council between 1962 and 1983 dominates any account of Lancashire schools. Born in Huddersfield in 1920, his training at the Leeds School of Architecture was interrupted by wartime service with the Royal Artillery and supplemented by a spell after the war studying 'advanced forms of construction' in Sweden.[6] On graduating in 1949 Booth spent three years with Harrison and Seel, where he designed one of the first Hertfordshire schools to be 'farmed out' to a private firm.[7] It was a formative experience, as Dex Harrison was one of the foremost authorities on prefabrication (page 74). Booth then joined the Architect's Department of Shropshire County Council, and when in 1959 the County Architect Charles H. Simmons took up the equivalent post in Lancashire, he brought Booth with him as Assistant County Architect, soon promoting him to Deputy.[8] On Simmons' death in 1962, Booth, at the age of 42, found himself in charge of a major architectural office, and one gearing up for a substantial building programme.

'Roger was just the man for the job' comments a former college.[9] Booth brought a rare combination of

architectural imagination with the discipline necessary to manage a large office. A veteran of Dunkirk and a member of a generation whose outlook was forged in wartime, he quickly became a powerful and autocratic figure at Lancashire. 'Booth believed the architect was "king" in terms of the building team and conveyed this message to the Education Department and Committees', a former colleague comments.[10] To this end he built up the Architect's Department into one of the largest in the country, totalling 650 staff and 106 architects at its early 1970s peak.[11] It comprised two divisions, General and Schools, each run by an Assistant County Architect, with smaller teams of quantity surveyors, mechanical and electrical engineers, clerks of works and a maintenance group. The designers, as at most large post-war offices, were organised into groups, each headed by a Principal Architect and containing around four or five architects and a similar number of technicians. Each team specialised in a building type.[12]

The scale of the public building programme increased rapidly from *c.*1960, and Lancashire came under pressure from the Ministry of Education to establish a consortium in the North West. A consortium, with a quasi-autonomous administration and staff, offered Booth a happy medium between overall control and the delegation of development work. Any system had to be capable of being employed by the smallest county boroughs through conventional competitive tender processes.[13] 'We want to simplify the system so that the ordinary firm can attempt a scheme without too much hesitation', Booth explained in 1962. 'We want to shift the emphasis so that we can stay independent.'[14]

The development of ONWARD

ONWARD was founded in November 1965 and thus one of the last English initiatives in prefabricated educational building. As chairman, Booth retained overall control but shifted the burden of development and liaison away from the Department itself, seconding administrative, architectural and technical staff to a Preston office which functioned as an adjunct to the Architect's Department. Additional staff were seconded from other member authorities—largely small country boroughs. An ONWARD General Council was made up of two representatives from every authority enrolled, and below the executive level were a Committee of General Officers and a Technical Committee.

ONWARD was not a closed system like CLASP but a package of three contrasting constructional techniques, two of which were adapted from pre-existing systems. These were based on rationalised traditional construction, pre-cast concrete panels and timber framing, and a number of pilot schemes were in construction by 1967-68. Unlike Hertfordshire, which adopted a broadly similar approach in the development of SEAC (page 314), the various ONWARD construction methods were devised in isolation and were never intended to be inter-compatible: 'we were all quite compartmentalised' recalls David Davis. What they did have in common was that within each system everything from working detail sheets to entire building designs was standardised.[15] Graham Turner joined the group responsible for primary schools in 1972:

> What I hadn't realised when I came was the schools had already been designed. They were 'standard' designs covering one-form entry junior and infant schools, two-form entry junior schools and two-form entry infant schools. Each had a right hand and a left hand version as well as versions for 'mining' areas.[16]

The rationalised traditional method of construction was developed by the department *c.*1962 at **Whiston Willis County Primary School** near Prescot. RATRAD, as it was known, was based on a combination of storey-height stained softwood window-walling and grey brick cross-walls on a 4" module. Prefabricated timber trusses carried a copper-felt roof, and pitched or mono-pitched roofs were thought to best suit Lancashire's climate and present an appropriately domestic environment.[17] Adopted by Ray Swift into ONWARD Mark I, it was widely used at primary schools across Lancashire, including its small urban authorities. The Mark II prototype was **Brunshaw Infants' School**, Burney of 1971. This combined brick panels with full-height aluminium frames and doors on a 1200mm planning grid. Services were integrated into a 'utilideck' roof, available in pitched or flat versions (fig. 4.218).[18]

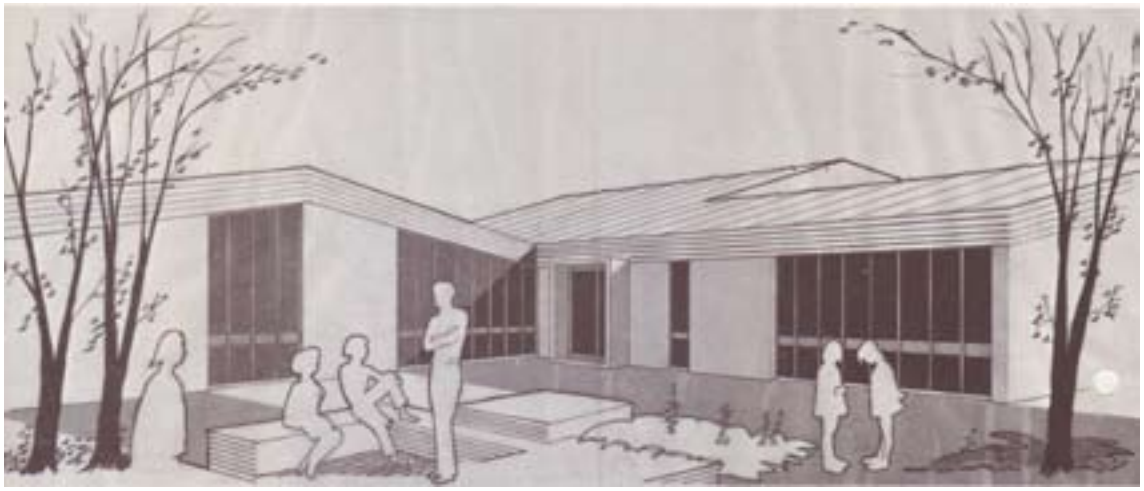


Figure 4.218: Perspective of an ONWARD Mark II school. Reproduced by kind permission of Lancashire County Council.

For secondary schools, further education colleges and divisional police headquarters, a proprietary concrete panel system was modified, examined in further detail below. The final ONWARD initiative was standardised ROSLA units, required in large numbers across the county with the raising of the school leaving age in 1972/73. Joe Riding produced two designs for timber-framed units clad in PVC weatherboarding and on a 4 foot module. One and two storey versions of either 60 or 180 places were added to secondary sites, their construction being overseen by Houston & Forbes, a local firm of private architects.[19]

The Lancashire 'Heavy Concrete Method'

Booth, seeking alternatives to frame construction, had long been intrigued by large panel systems developed by French and Scandinavian companies such as Camas, Coignet, Skarne, along with Bison in the UK.[20] An existing proprietary system, devised by Sam Morrison and Partners of Derbyshire and named by them 'the Grid method', was modified between 1962 and 1964 by a development group which included Doug Holloway, David Davis, Jack Taylor and structural engineer Bill Sharpe.[21] A prototype,

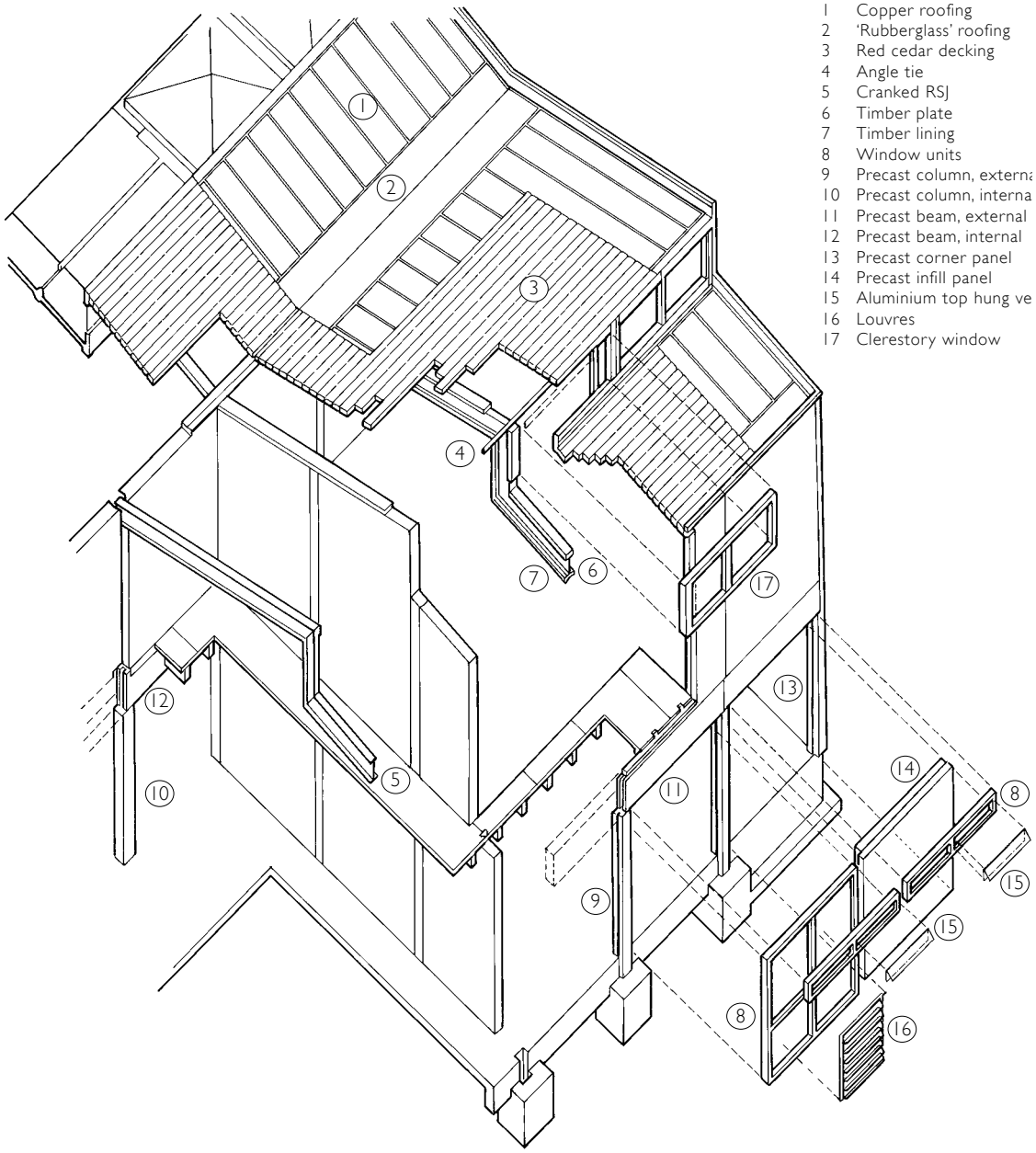


Figure 4.219: Cutaway view of the Lancashire Heavy Concrete system and its components.

the **Castle School** in Lancaster, was included in the 1963/64 programme, and Heavy Concrete was soon extended to police stations and other building types.[22]

The system was based on storey-height precast concrete wall and floor units combined with steel roof beams (fig. 4.219). The load-bearing envelope allowed the omission of internal columns for flexible interior planning, and the amount of glazing was reduced. The pre-cast panels, on an 8ft structural grid, incorporated doorways, windows and electric heating elements. The panels were 8" thick and of a 'sandwich' construction, with concrete layers wrapped around a central polystyrene core. The panels were hoisted into position with a crane, eliminating the need for scaffolding. Unusually, the

Figure 4.220: A more restrained use of concrete panels at Bridgefield High School, Halewood, opened in 1973.Reproduced by kind permission of Lancashire County Council.

roof was a single, 3" skin with services and structure exposed. The upper tier of wall panels incorporated a distinctive roofline profile comprising a series of double monopitched or 'butterfly' roofs. These incorporated a central spine of clearstory windows.

Unsurprisingly, the downfall of the 'Heavy Concrete Method' was its inflexibility. It demanded the co-ordination of whole programmes to bring prices down to feasible levels, yet, although available to ONWARD members, it proved too unwieldy to be taken up by the small urban authorities. The casting, carriage and assembly of such large components were expensive and problematic, and architects discovered they could not revise minor details on site. Before long, it was found necessary to adulterate the system (fig. 4.220). 'Every year we had a programme of concrete schools', David Davies recalls, 'and as it developed, we were slowly taking out the concrete'.[23]

Experiments with GRP

Another Booth brainchild was the development of glassfibre-reinforced plastics (GRP). The nature of the material demanded self-supporting forms with inherent rigidity, and Booth became interested in polygonal geometries such as icosahedra which, formed of components of equal size, lent themselves to prefabrication. Their centrally-planned, cellular layouts, seemed to suit primary teaching 'in the round'. Writing in 1963, Booth envisaged 'a basic teaching unit consisting of a control unit or nuclei with five, six or eight adjoining classrooms.'[24] A prototype classroom extension at **Kennington Primary School**, Fulwood, was developed by Ben Stevenson and Mike Bracewell, but further projects, and ambitious plans to market the system internationally under the name of 'Lancon', were stymied by the rocketing price of plastics after the 1973 oil crisis.[25]

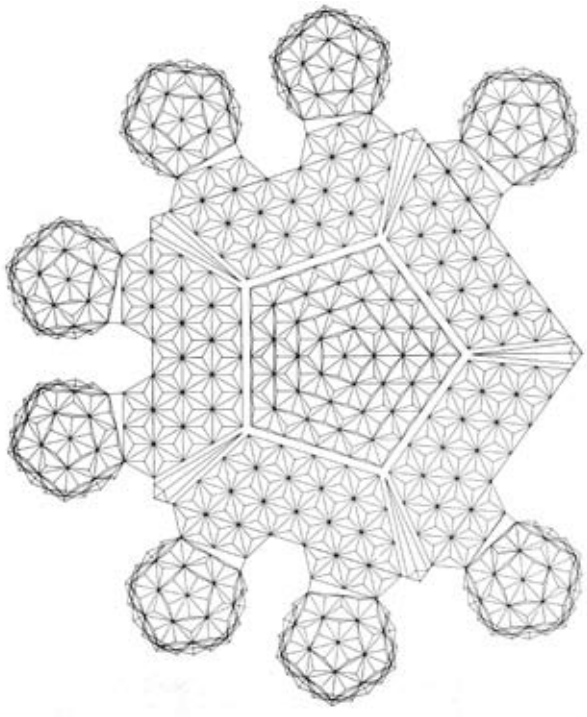


Figure 4.221: Unbuilt, mid-1970s design for a junior school at Thornton Cleveleys, composed of prefabricated GRP panels. Reproduced by kind permission of Lancashire County Council.

Figure 4.222: Pitched slate roofs were encouraged in scenic locations. Reproduced by kind permission of Lancashire County Council.

Later years in Lancashire

The 1970s were difficult years for school design in Lancashire. Contracts often ran late due to local materials and labour shortages and at specific times, copper pipes, cement and steelwork were the subject of national shortages. Boundary changes on local government reorganisation in 1974 transferred rural and urban areas to Greater Manchester, Merseyside and Cheshire in the south and Cumbria in the north. The new Lancashire was smaller in area and population and this, together with cuts in local government expenditure severely curtailed the Lancashire capital building programme. Booth restructured his department in April 1978 with the loss of around a third of all posts.[26] The ONWARD consortium also folded around this time, although standard ONWARD constructional details continued to be used for some time after. On Booth's retirement in 1983 the Architect's Department was merged with the County Estates Department and became the Property Services Department.[27] It was organised not according to building types but covering regional areas, namely North, East and Central/ South Lancashire. Individuals were no longer responsible to the head of department but to their client departments.

Private practices and the voluntary sector

The diocesan schools commissions, especially that of the Roman Catholic Church, were also significant clients of new school buildings in the north west. Perhaps the most significant development was the prefabricated EDCON system, established *c.*1965 by W. & J.B. Ellis, Desmond Williams & Associates and Burles Newton & Partners largely for use in voluntary primary schools. Developed within the Ellis's Liverpool office under M.H. Otton with manufacturer Cubitts Construction Systems Ltd, construction was based on a frame of castellated joists and steel stanchions on a 8ft structural grid, clad with a mixture of brick panels and softwood window-walling incorporating coloured asbestos spandrel panels.[28] The prototype, St Joseph's Infant School in Huyton outside Liverpool, was completed in 1965 for a significantly lower cost than the DES allocation (fig. 4.223).[29] Around 30 EDCON schools were built, all of them single-storey primaries.[30]

Desmond Williams of the Ellis-Williams Partnership was a leading light in school design in the North West. The firm was exceptional amongst private architectural practices

Figure 4.223: St Joseph's Infant School in Huyton, the ONWARD prototype. Institute of Education Archives: ABB/B/1/36/12.

for implementing collaborative working processes and design practices developed in the public sector. Their **St Thomas of Canterbury RC Primary School** in the Broughton area of the City of Salford, an experimental project of the Salford Diocesan Schools Commission, which reflected the influence of DES architects and educationists and the Plowden committee on primary education (page 31).[31] In the late 1970s the Partnership turned their attention to secondary school commissions from the newly-constituted Metropolitan Boroughs of Wigan and St Helens, **Lowton High School** and Sutton High School respectively. These combined neo-vernacular details with a sensitive site layout which laid much attention to the spaces between buildings. Such layouts demonstrate an unashamed reaction to standardisation, orthogonal layouts and the stylistic tenets of modernism so evident in the schools designed under Booth.

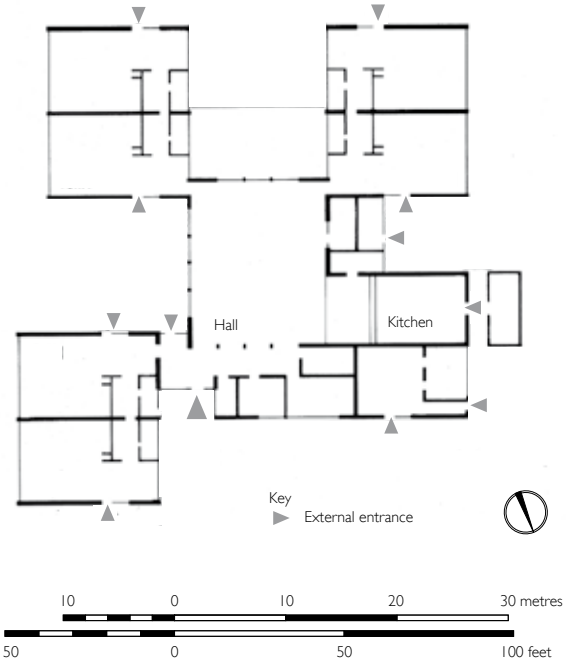
The **William Temple School** in Preston by the locally-based Building Design Partnership garnered much appreciation from their highly monumental design of separately articulated blocks across a sloping site with a *tour de force* technical block topped with a 40ft tower and with rich timber detailing used liberally throughout all the interiors. The 'farming out' of school design to private practices under G. Noel Hill and C.H. Simmons produced some high quality and individual results. Lyons Israel Ellis were commissioned at **Upholland** and **Urmston** where Tom Ellis's favoured Corbusian aesthetic of exposed shuttered concrete frame with brick infill was employed in two compact schemes that sought to maximise the accommodation available in innovative ways.

Gazetteer

Primary Schools

¶ **Whiston Willis County Primary School** near Prescot; Lancashire County Council Architect's Department, 1962-63.

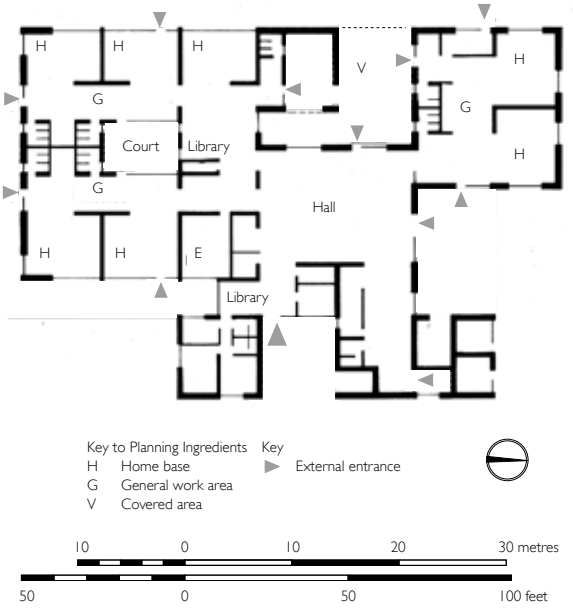
The prototype of a rationalised traditional form of construction which later was adapted into ONWARD Mark I. A typical plan of the early 1960s with pairs of classrooms loosely grouped around the hall.



Figures 4.224 (above) and 4.225: Whiston Willis County Primary School near Prescot; Lancashire County Council Architect's Department, 1962-63. Reproduced by kind permission of Lancashire County Council.

¶ **Ravenmeols Primary School**, Formby; Lancashire County Council Architect's Department, c.1968.

A deeper plan was adopted from the mid 1960s, with internal courtyards for ventilation.



Figures 4.226 (above) and 4.227: Ravenmeols Primary School, an ONWARD Mark I design. Reproduced by kind permission of Lancashire County Council.

¶ **St Thomas of Canterbury RC Primary School,** Barrow Hill Road, Salford, Greater Manchester; Ellis-Williams Partnership (partners in charge Desmond Williams and Peter Walker) designed 1968, built 1969-70, demolished.

The brief for this single form-entry nursery and primary school was developed in consultation with an advisory panel which included the Salford Diocesan Schools Commission, Salford City Council administrators, teachers, and inspectors, and DES educationists. The influence of the primary school designed by David and Mary Medd shows in the series of interconnected spaces for different age groups, each with a domestic character appropriate for the age of the children using them.

A parents' room, and other spaces for parents to assist with tasks such as reading, reflected the Plowden aspiration of stronger school–parental links. An audio-visual room, blacked out at the centre of the plan, provided access to teaching resources as well doubling as shared space for music and drama. The distinctive geodesic dome was intended for music, PE and dance and separated from the main plan and accessible directly from the main entrance in order to minimise noise transmission to teaching areas. The dome was also intended for out of hours use by local community groups. The structural system employed was by Architects' EDCON Consortium of Liverpool (page 355). The geodesic dome, meanwhile, was straightforwardly timber framed with a plywood skin.[32]

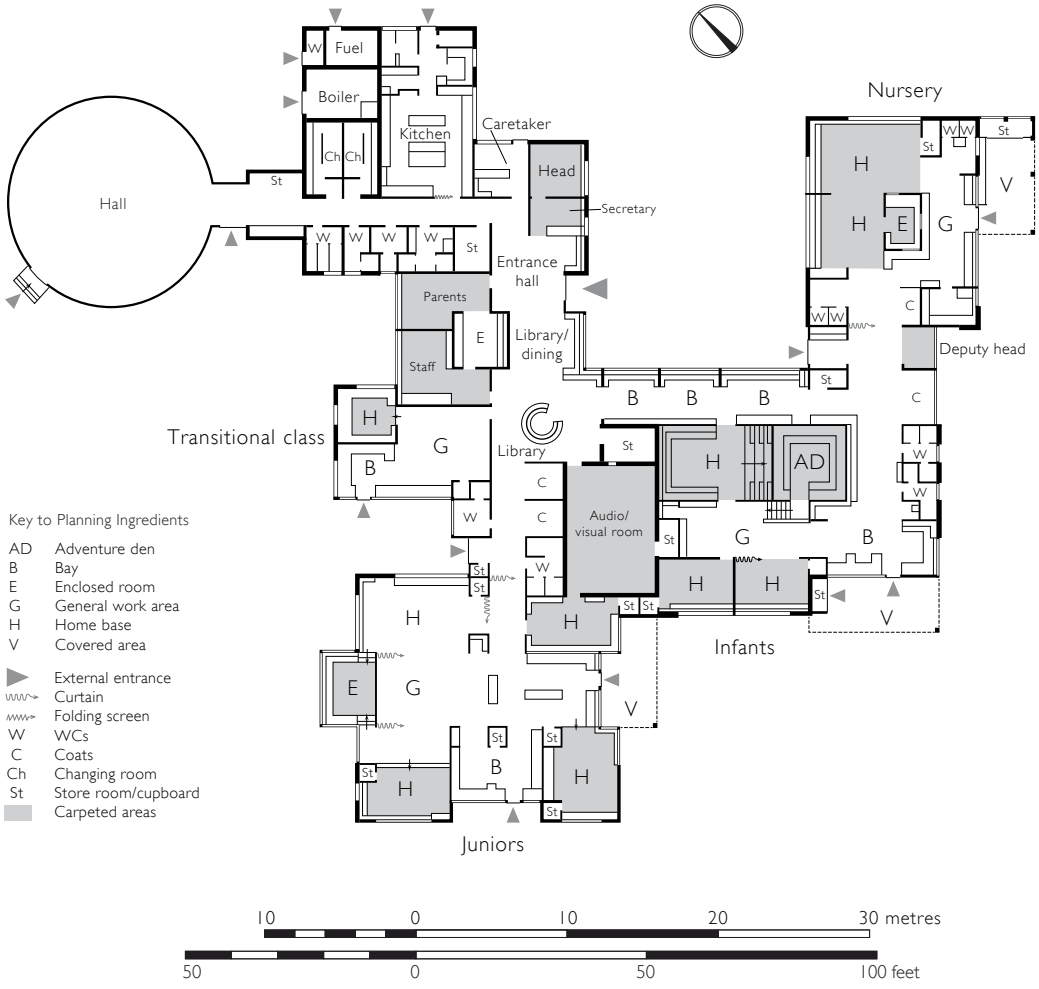


Figure 4.228: St Thomas of Canterbury RC Primary School, Greater Manchester; Ellis-Williams Partnership, 1969-70.

¶ **St. Anne's Roman Catholic Primary School,** Feilden Street Blackburn; Desmond Williams & Associates, 1970-71

Another scheme using the EDCON modular steel system with load bearing exterior timber wall panels faced with coloured asbestos and brick flank walls. A small attached nursery group unit was added to infant and juniors from an earlier phase with a relatively open plan with alcoves and a storey telling den etc. Flexibility of use was the key to the design, with even the staff room available for teaching activities if required.[33]

¶ **St. Patrick's Junior School,** Hardybutts, Wigan; Anthony Grimshaw Associates (job architect: Anthony. J. Grimshaw) opened 1971

The school formed part of a new parish precinct grouped around a piazza with bell tower (including a new parish club and church hall, church and presbytery) developed by Fr J. Lappin and the Liverpool Archdiocesan Trustees. The internal plan was focussed on individual tuition, small and medium groups, with only occasional larger groups. External walls were of grey fawn brick and internally sound absorbent ceilings and large areas of carpet are used. Externally, paved teaching areas were provided, being enclosed at the sides by the building and partly above by a glass roof, with an adjacent grassed area surrounded by a ramped earthwork.[34]

¶ **Brunshaw Infants' School**, Morse Street, Burnley: ONWARD Consortium for the Corporation of Burley (job architects T. N. Burrows, J. J. Gribbin and E. N. Haslam), designed 1970, built 1971-72

Brunshaw, the ONWARD Mark II prototype, featured a deep and open plan, largely artificially ventilated and lit. Such was the reaction against the overglazing of post-war schools that even rooflights and internal courts were excluded from the design.[35]

¶ Extension to **Kennington Primary School**, Kennington Road, Fulwood, Preston; Lancashire County Council Architect's Department (job architects Ben Stevenson and Mike Bracewell), 1973-74

This 'space age addition' as the *Guardian* described it, was a prototype for a system

Figures 4.229 and 4.230: GRP classroom extension to Kennington Primary School, Fulwood, Preston; Lancashire County Council Architect's Department, 1973-74. A prototype of a prefabricated system in plastics, foiled by the oil crisis. Reproduced by kind permission of Lancashire County Council.

conceived based on self-supporting glass-reinforced plastic (GRP) panels (page 354). The 16-feet high, centrally planned structure was composed of 35 tetrahedral panels arranged into a modified icosahedron. Lighting and ventilation were controlled from a panel in the central resource area. The classroom extension, nicknamed 'the bubble' by the children, was built for £28,400 on a minor works allocation, and assembled in four days once the foundation had been laid.[36]

¶ **Buckshaw Primary School**, Chancery Road, Astley, Chorley; Lancashire County Council Architect's Department, 1978

The prototype of a new standard brief developed from 1974, Buckshaw has a compact plan with a central hall. The teaching spaces become increasingly enclosed with each year group. The building is in loadboarding brickwork with a hipped and tiled roof, exposed laminated timber purlins and timber boarded ceilings.

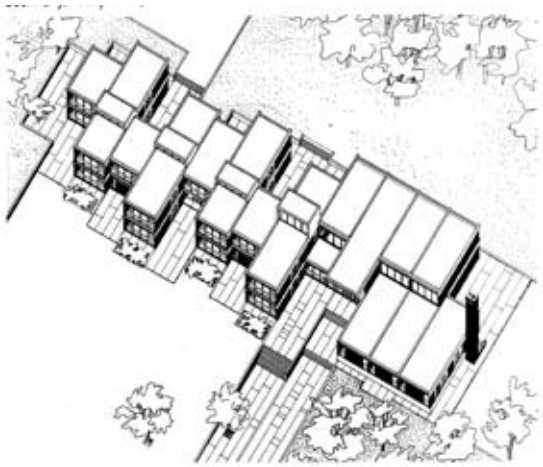


Figure 4.231: Axonometric projection of Upholland Mixed Secondary School; Lyons Israel Ellis, opened 1962 and listed at grade II in 1993. Reproduced from Lyons Israel Ellis Gray: Buildings and Projects 1932-83 *by kind permission of AA Publications.*

Secondary schools

¶ **Upholland Mixed Secondary School** (Up Holland High School), Sandbrook Road, Upholland; Lyons Israel Ellis (job architects A. Barbar, Neave Brown, Christopher Dean), opened 1962, listed at grade II in 1993

Upholland was designed on a bay system in order to facilitate future expansion, each bay being offset so that additions could be made without causing too much disruption to the main structure. The system of construction and aesthetic tone of the school was a continuation of numerous Lyons Israel Ellis schemes seen elsewhere, including West Yorkshire, with a Brutalist approach taken of an exposed reinforced concrete frame, board-marked and cast in situ. White painted door and window frames were used as a contrast to the concrete and dark brick – a typical approach of the firm. The compact plan was structured around a single east-west spine corridor, the only circulation space, with classroom and other functional volumes expressed separately, articulated to the north and south in an irregular rhythm that extracted a sculptural sense from a relatively small building over just two storeys.

¶ **Urmston Grammar School**, Newton Road, Urmston, Manchester; Lyons Israel Ellis (job architects A. Barbar, Neave Brown and Christopher Dean), 1962-66, demolished

Sharing much in common with **Upholland** in aesthetic terms, the plan of Urmston differed in that it consisted of five blocks or pavilions set amongst the mature trees found on the site, with a hall set at the centre of the plan. Corridors were kept to a minimum with circulation mainly via glazed promenades surrounding the central hall.[37]

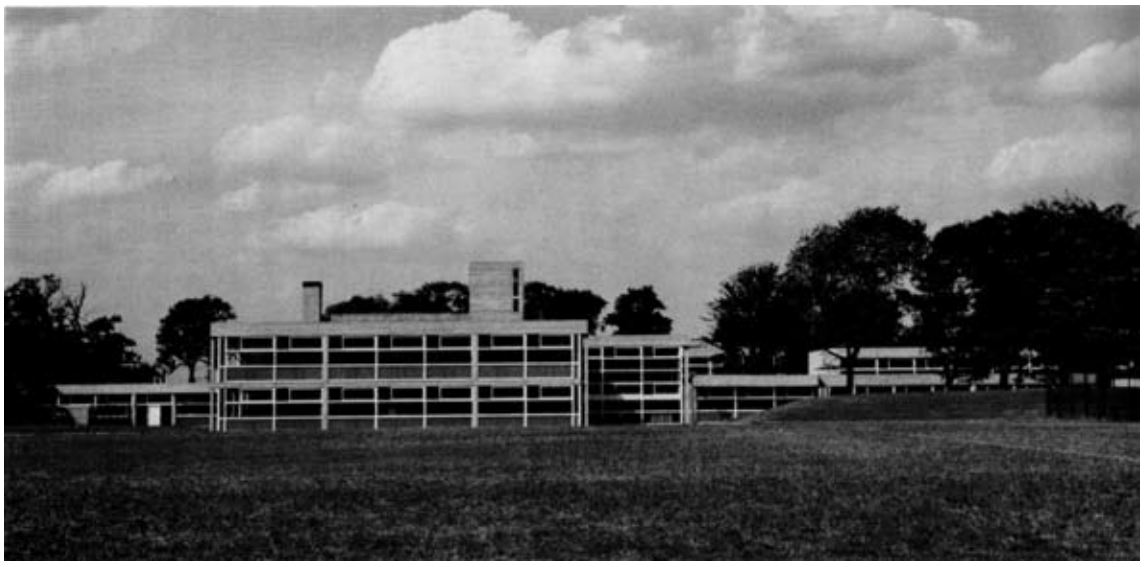


Figure 4.232: The now-demolished Urmston Grammar School, Manchester; Lyons Israel Ellis, 1962-66. Reproduced from Lyons Israel Ellis Gray: Buildings and Projects 1932-83 *by kind permission of AA Publications.*

¶ **William Temple School** (now Archbishop Temple School), Saint Vincent's Road, Preston; Building Design Partnership (partner in charge N. Keith Scott) 1964-66

William Temple was originally conceived as a County Secondary school with three main departments – basic, technical and commerce – and a small academic department. The Local Authority wanted to express different functions separately with smaller buildings scattered across sloping site considered to be more economical than single large building requiring considerable earthwork. The assembly hall, the distinctive tower to technical block and separately-articulated oval dining room were all given rich and detailed timber structures internally. The assembly hall ceiling was clad in yellow cedar, the primary roof members are inclined and their apices inverted to create highly distinctive sculptural effect. The technical block, meanwhile, had the plan of a three pronged 'star' containing six rectangular classrooms and a range of ancillary and circulation spaces; the landmark 40ft triangular plan tower was an exhibition space at ground level for the display of students' work.[38]

Figure 4.233: The circular dining hall at William Temple school. Photograph © Elain Harwood.

Figure 4.234: William Temple school. Photograph © Elain Harwood.

Figure 4.235: An early 1990s photograph of Castle School. .

¶ **Castle School** (now Central Lancaster High School), Crag Road, Lancaster; Lancashire County Council Architect's Department (job architects Doug Holloway, David Davis and Jack Taylor) designed 1962-63, built 1964-66.

Castle School was the first major prototype of the Lancashire Heavy Concrete Method (pages 352-54). The planting of trees on steep banks, the placement of a few 'glacial erratic' boulders excavated in the course of laying the foundations, and artworks by students of the Lancashire College of Art all acted as a counterpoint to the concrete.[39]

¶ **Skelmersdale Comprehensive School** (now Glenburn Sports College) Yewdale, Skelmersdale; Lancashire County Council Architect's Department (group leader Mike Stockdale) designed 1966-67, built 1968-69

The upper and lower schools on the site, Glenburn and Westbank, were planned as a series of detached pavilions with shared facilities including swimming pool, gym, squash courts, service core and playing fields. The campus was intended to be used as an evening community and leisure centre for the wider population of the new town. Community facilities were provided through joint provision, with Skelmersdale and Upholland Urban Distict Councils providing funding the recreational facilities and Lancashire County Council additionally funding a youth club and Further Education services. The 2,100 place Skelmersdale was the second project after the Castle School to employ the 'Lancashire Heavy Concrete Method'. This was limited to the multi-storey

Figure 4.236: Skelmersdale Comprehensive School; Lancashire County Council Architect's Department, 1968-69. Reproduced by kind permission of Lancashire County Council.

teaching blocks, with steel-framed structures for workshops, gymnasia and other single-storey buildings. The load-bearing perimeter allowed interior replanning, with the concrete staircases, some columns and ground-floor kitchens offering any obstacle.[40]

¶ **Culcheth High School,** Warrington Road, Culcheth, Warrington, Cheshire; Lancashire County Council Architect's Department, completed 1969

The scheme at Culcheth involved the expansion of an existing inter-war school to accommodate the additional year resulting from the raising the school leaving age. Additions included a multi-storey teaching block of Heavy Concrete construction, single storey workshop, arts and sports centre. The arts and sport centres were of a cheaper steel-framed design with grey Galsbestos cladding.[41]

¶ **Parrs Wood Secondary Comprehensive School** (now Parrs Wood High School) Wilmslow Road, Manchester; Manchester

City Architect's Department, opened 1972, demolished 2001

The original school was built in the CLASP Mark III system, with phased extensions in CLASP Mark IV. The teaching accommodation was grouped around courts and the sixth form area was designed as joint teaching/social space with dual purpose furniture.[42]

¶ **Lowton High School**, Newton Rd, Lowton, Warrington, Cheshire; Ellis Williams Partnership (partner in charge Desmond Williams); phases one and two 1975-80

A series of detached teaching blocks irregularly grouped around a sheltered, informally-planned 'village street', carefully landscaped in brick paviors and planters by consultant landscape architect Maurice Lee.[43] The domestic pretensions extended to the massing, silhouette and detailing of the group, with a mixture of heights and roof pitches providing a varied roofline. The use of red brick, pantiles and bay windows reflected contemporary neo-Vernacular trends in housing.[44]

¶ **Sutton High School** (now Sutton Academy) Elton Head Road, St Helens; Ellis Williams Partnership (partner in charge Desmond Williams), opened 1979

A similar domestically-scaled approach was taken by Williams at Sutton, with three teaching blocks connected by covered ways and arranged around fully or partly enclosed courts. The inspiration was evidently drawn from the traditional collegiate quadrangle though the intention, as at Lowton, was to break up monolithic blocks and introduce a sense of variety.[45]

Special school

¶ **Palmerston Special School,** Beaconsfield Road, Liverpool; Foster Associates (job architect: Spencer De Gray), 1974-75, demolished 1989

This special needs school was a second Foster commission from the Spastics Society, the first being built in Hackney in 1970-72 (now altered). The Liverpool school was built for 60 children, 20 of whom in a special unit for severely handicapped children. The deep-plan structure was divided into five portal-framed bays with wrap-around cladding and a glass end wall. Four service cores separated an equal number of open-plan 'teaching zones': senior, junior, nursery and special care, further distinguished by colour coding. In the centre a top-lit general purpose space was provided for meals and other communal activity. A theme of technologically-led versatility recurred throughout the scheme, with areas and components (fixed and mobile) often serving more than one purpose wherever possible.[46]

Figure 4.237: Lowton High School, Warrington; Ellis Williams Partnership, 1975-80

ENDNOTES

1. Lancashire County Council Architect's Department, *County Architect's Report, April 1971 to March 1973*, p.203.
2. Lancashire County Council Architect's Department, *County Architect's Report, April 1971 to March 1973*, p.23.
3. Lancashire County Council Architect's Department, *County Architect's Report, April 1971 to March 1973*, p.168.
4. Booth 1963, 1094.
5. Lancashire County Council Architect's Department, *County Architect's Report, April 1971 to March 1973*, p.169; Brook 2012.
6. RIBA biographical file, *Huddersfield Daily Examiner*, 1 November 1962.
7. South Hill School, Hamel Hempstead of 1949-50 (Saint 1987, 76-77).
8. RIBA biographical file, *Huddersfield Daily Examiner*, 1 November 1962.
9. Ben Stevenson, pers.comm., 15 August 2012.
10. Graham Turner, pers.comm., 21 August 2012.
11. Ben Stevenson, pers.comm., 15 August 2012.
12. Ben Stevenson, pers.comm., 15 August 2012; Graham Turner, pers.comm., 21 August 2012.
13. *The Guardian*; 28 June 1962; p.16; Ben Stevenson, pers.comm., 15 August 2012; Maclure 1984, 111-112.
14. *The Guardian*; 28 June 1962; p.16
15. Ben Stevenson, pers.comm., 15 August 2012.
16. Graham Turner, pers.comm., 21 August 2012.
17. Lancashire County Council Architect's Department, *County Architect's Report, April 1962 to March 1963*, p.13.
18. *Architects' Journal*, vol.155, no.16, 19 April 1972, pp.839-52.
19. *Building*, vol.223, no.6738, 14 July 1972, p.77-78.
20. Booth 1963, 1092; Lancashire County Council Architect's Department, *County Architect's Report, April 1971 to March 1973*, p.168.
21. *Industrialised Building Systems & Components*, February 1966, pp.73-80; *System Building and Design*, November 1967, pp.13-22,19; David Davies, pers. comm., 20 August 2012.
22. Booth 1963, 1098; Lancashire County Council Architect's Department, *County Architect's Report, April 1971 to March 1973*, p.113-123.
23. David Davies, pers.comm., 20 August 2012.
24. Booth 1963, 1101.
25. Ben Stevenson, pers.comm., 15 August 2012; *Lancon: Lancashire Construction*, promotional brochure of 1977, issued by Lancashire County Council; 'In the Round', Education supplement of the *Guardian*, 26 November 1974, p.21.
26. Lancashire County Council Architect's Department, *County Architect's Report, April 1977 to March 1979*, p.10.
27. David Davies, pers.comm., 20 August 2012; Graham Turner, pers.comm., 21 August 2012.
28. *Industrialised Building Systems and Components*, vol.3, no.11, November 1966, pp.95-103.
29. Its cost was £44,274 as compared with DES cost limits of £48,450 for a two-form entry infant school (*Industrialised Building Systems and Components*, vol.3, no.11, November 1966, p.95).
30. *Surveyor*, 20 November 1970, p.14.
31. Franklin 2012b.
32. *Architects' Journal*, vol.153, no.17, 28 April 1971, pp. 941-54
33. *Architects' Journal*, vol. 157, no. 7, 14 February 1973, pp. 380-81
34. *Architects' Journa*l, vol.154, no.47, 24 November 1971, p. 1167
35. *Architects' Journal*, vol.155, no.16, 19 April 1972, pp.839-52.
36. *Lancon: Lancashire Construction*, promotional brochure of 1977, issued by Lancashire County Council; 'In the Round', Education supplement of the *Guardian*, 26 November 1974, p.21.
37. *Interbuild*, vol.10, no.3, March 1963, pp. 12-14
38. *Wood*, vol.32, no.2, February 1967, pp. 25-30
39. David Davies, pers.comm., 20 August 2012.
40. *Architects' Journal*, vol.152, no.31, 5 August 1970, pp. 301-20
41. *Interior Design*, June 1972, p. 418
42. *Interior Design*, June 1972, p. 416
43. *Education*, vol. 154, no. 22, 30 November 1979, supplement, pp. iii-xv; *Architects' Journal*, vol. 172, no. 46, 12 November 1980, pp. 935-48.
44. *Architects' Journal*, vol.172, no.46, 12 November 1980, pp.935-48
45. *'Education*, vol. 154, no. 13, 28 September 1979, p. 341
46. *Architectural Review*, vol. 160, November 1976, pp. 270-75

VOLUNTARY AND INDEPENDENT SCHOOLS

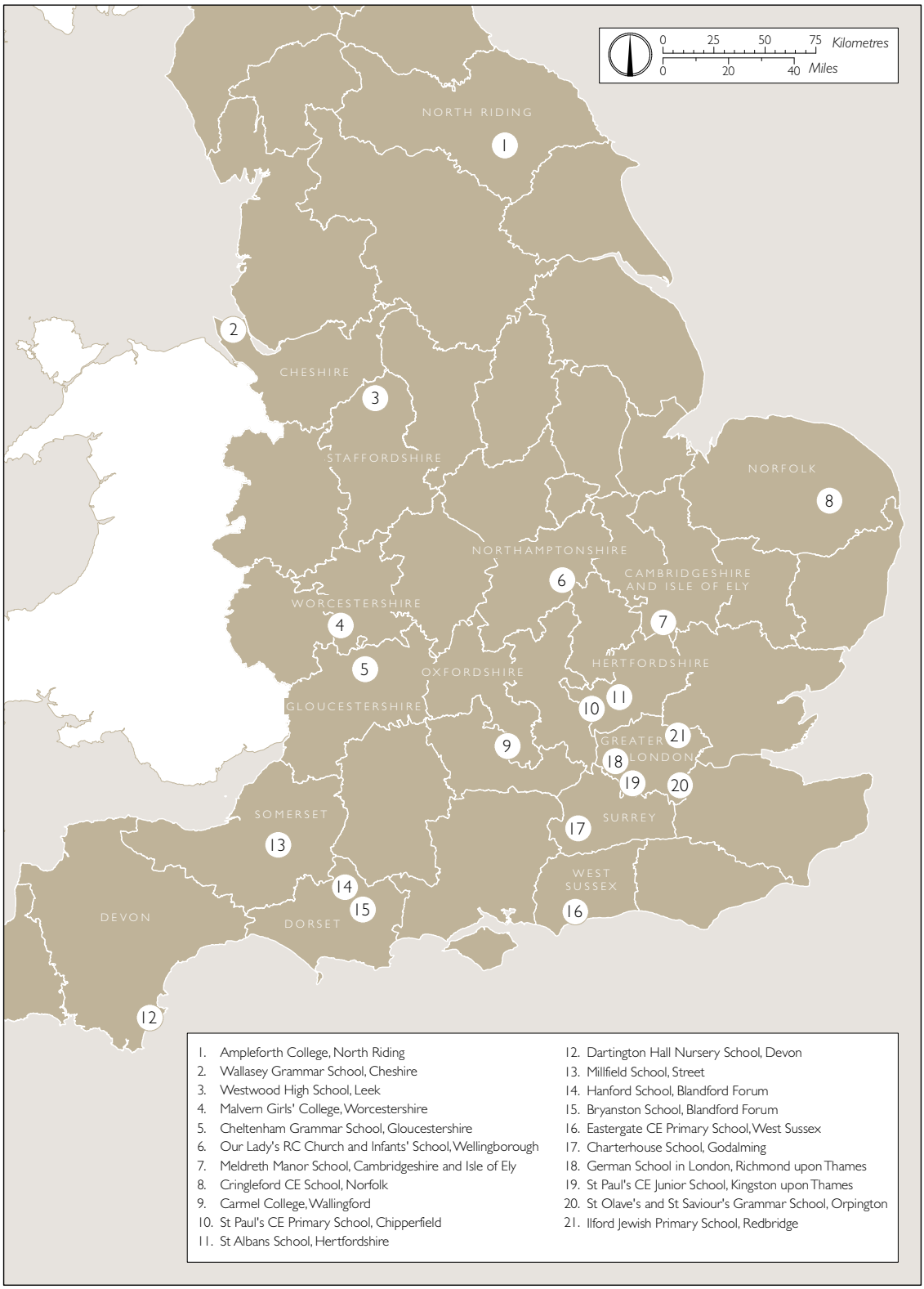


Figure 4.238: Voluntary and independent schools: location of gazetteer entries.

Voluntary and independent schools

The 1944 Education Act retained and reformed a 'dual system' which accommodated both state-aided voluntary and maintained schools.[1] Outside the ambit of the state, the parallel system of independent schools was perpetuated, albeit subject to a regime of registration and inspection.[2] Aspects of the relationship between the independent and maintained sectors were considered in 1944 by the Fleming committee, and the Public Schools Commission chaired by John Newsom, which reported in 1968 and 1970. Implementation of the Fleming report was thwarted by the rapid post-war expansion of state schools, and the Newsom commission's recommendations were limited to LEA-funded places in boarding and day schools rather than the wholesale reorganisation of the independent sector.[3] Most of the projects examined in this chapter—independent and voluntary sectors alike—were necessarily off-one designs which stood apart from the large and often industrialised programmes of school buildings pursued by many educational authorities.[4]

Voluntary and Direct Grant Schools

In England, voluntary schools were provided by church or other voluntary bodies but maintained by the local education authority. They accounted for about a third of the schools in the public sector and about a quarter of the pupils.[5] The majority of the providers were Church of England, Roman Catholic, Methodist or Jewish bodies. The 1944 Education Act granted new powers to provide financial assistance to the voluntary bodies, in which financial responsibly was related to the degree of independence they enjoyed, especially in relation to religious instruction. Assistance would become increasingly necessary in an age of dwindling church attendance dwindled and soaring building costs. In the case of 'voluntary aided' schools, the providing body bore the cost of building with the help of a DES grant covering 50% (increased to 75% in 1959) of capital costs. The small numbers of school premises wholly provided by the LEA were known as 'special arrangement' schools. At 'controlled' schools (mostly Church of England schools) the providing body opted to cede all financial responsibility to the LEA. All voluntary schools had to be included in the building programmes prepared by the LEA and in all cases sketch and final designs were submitted to the DES for approval after consultation with the local authority.[6]

Certain grammar schools also enjoyed a similarly 'arms length' relationship with the state. After the 1902 Education Act, many of the endowed grammar schools qualified for public monies and thus formed the basis of a national system of secondary education. The 1918 Education Act obliged grammar schools to choose funding through LEAS or from central government. The 200 which chose the latter became known as 'direct-grant' grammar schools. When the direct grant list was terminated in 1975, most of the schools became fully independent.[7]

What were the implications on the organisation and teaching practice of these schools and, in turn, school building? The majority of the denominational sector comprised primary schools with comparatively large catchment areas. The planning requirements of

voluntary schools were comparable to their maintained counterparts, as the curriculum differed only in respect of religious instruction. The exception was the small number of Roman Catholic churches built with integrated primary schools (eg the Roman Catholic Church and Infant School at **Wellingborough**, Northants).[8] Some of the larger voluntary commissioning bodies, such as the diocesan schools commissions, joined consortia as associate members. In the north west, three private practices including the Ellis Williams Partnership formed the Edcon consortium, employed for the most part at Roman Catholic primary schools.[9]

Most 'voluntary' pupils were later absorbed into mainstream secondary schools. Denominational secondary schools were usually small and designed for phased construction, sometimes sharing facilities with maintained secondary schools on the same site. An example is Saint Francis Xavier Roman Catholic School, initially a one-form entry secondary school for 180 pupils, built in 1964-65 to the designs of Denis Clarke Hall and Partners and demolished in 2003. It completed a 'campus' of secondary schools also designed by Clarke Hall that included the famous Richmond Girls' High School of 1940 and a County Secondary Modern of 1960.[10] Extending urban schools meant 'back of pavement' architecture indistinguishable in some cases from offices, such as the 1960-61 teaching and gym block designed by A.J. Middleton and N. Willson of Richard Sheppard, Robson & Partners for St Anne's Convent School in Southampton.[11]

Figure 4.239: A 1993 view of Cheltenham Grammar School, Cheltenham, Gloucestershire; Chamberlin Powell & Bon, 1962-65, demolished 1996.

The brief and design processes for voluntary schools varied widely, as did the composition and procedures of the commissioning bodies. In general, those funding the building chose the architect. The architectural fact-finding mission by Dr A.E. Bell, the headmaster of Cheltenham Grammar School (fig. 4.239) indicates that the choice of architect, and the visual identity of an institution, could be taken very seriously. Bell visited a number of recent schools suggested by the RIBA and interviewed their architects.[12] In other cases, the local authority architect supplied a list of 'recommended' private architects.[13] Church architects built the occasional denominational school, such as N.F. Cachemaille-Day's School of St John of Jerusalem in Hackney, London of 1957 or George Pace's Ingleby Arncliff Church of England Primary School of 1974. A local architect was often preferred, as in the case of the Gollins Melvin Ward Partnership at **St Paul's Primary School** in Chipperfield, Hertfordshire, or Jeremy and Caroline Gould at **Millfield School** in Street, Somerset (fig. 4.240). The brief could be devised by local clergy, school managers, diocesan committees or the local education authority, sometimes

with the co-operation of the architect. Both clergy and laity were represented on diocesan building committees, and there was considerable variation in the degree of educational and building experience. In the absence of educational input from the client, the architect went elsewhere, and at least one architect employed the services of an educational consultant.[14]

Fig: 4.240: The Scandinavian-inflected north elevation of the Library and resource centre at Millfield School, Somerset, of 1978-80 by Jeremy & Caroline Gould. Photograph by Jillian Wallis, reproduced by kind permission of Millfield School.

Briefing and initial design was usually in close co-operation with the LEA and sometimes with the territorial architects of the DES. In most cases, architects were permitted, and in some cases encouraged, to consult senior teaching staff and parents in the design of schools. This was equally common at voluntary and independent schools, although at variance with normal LEA practice. This, together with comparatively low rates of staff turnover, often contributed to a more direct and 'bespoke' briefing process that anticipates present-day practice. St Andrew's Church of England Junior school in Hitchin, Hertfordshire, rebuilt in 1968-69, was described as a typical product of close collaboration between architect Simon de C. Bennett and the head teacher, Robert Price, who visited primary schools in Oxfordshire and spent three or four months 'continually in Mr Bennett's office'. Over 60 parents were consulted also.[15] As a result, it was not unusual for the architect to enjoy more latitude and a less formal procurement process than LEA practice. This had a polarising effect, as observed by Desmond Williams, an architect who designed many Catholic churches and schools:

> 'This gave rise to some innovation but not always to the betterment of the design. Some projects were more architectural statements rather than educational in spirit. […] I suspect that some projects very much depended on the architect's knowledge and enthusiasm for the educational ingredients and a thorough understanding of the learning process'.[16]

Funds were often tight for the denominational schools, especially for the rebuilding of village schools. In the late 1940s the Ministry of Education devised the so-called 'Barchester scheme', through which aided status could be financed through the partnership of the diocese and the parish.[17] **Cringleford Church of England School** near Norwich was designed to be built in discrete phases to qualify for two 'minor works' grants from the Department of Education and Science (page 18).

Voluntary schools could scarcely afford architectural fireworks but sometimes provided the right circumstances for experiments in planning, environmental design or construction. It is no co-incidence that some of the most innovative primary school designs of the period were denominational. Church schools were polarised between a flexible open plan (qv **Ilford Jewish Primary School** in LB Redbirdge, **Eastergate Primary School** in West Sussex and St Paul with St Luke Primary School in east London) and the semi-enclosed approach of the Ellis Williams Partnership, seen at including St Thomas of Canterbury RC Primary School in Manchester of 1969 (page 358), St. Vincent's RC Infant School, Altrincham, Cheshire of 1972-73, and the Good Shepherd Lower School, Kingsthorpe, Northampton of 1973-74. Teachers or educational committees often specified a combination of communal space and some form of enclosed class base. The Norwich Diocesan Council for Education, briefing Tayler and Green on **Cringleford School**, expressed a preference for a layout 'along the lines of an "open" system which provides for more than one classroom opening out into a common work area' (fig. 4.241).[18]

Figure 4.241: Classroom interior at Cringleford Church of England School, Norfolk; Tayler and Green, built in two stages, 1969-70 and 1973-74. Note the sloped and boarded ceiling, cut away at the dormer to expose scissor trusses. Beyond the glass partition is a shared practical area (P5925032).

Independent Schools

The private sector comprised a mixture of religious foundations, old charities that became fee-paying in the nineteenth century and younger, progressive institutions. A substantial

number of independent schools enjoyed their own financial means and were run by autonomous governing bodies. Post-war reform included the establishment of a supervisory body to maintain the standards of privately-financed independent schools. The independent primary sector included nursery schools (ages 3-5), 'pre-preparatory' schools (the infant age range of 5-8), and 'preparatory' schools (8-13). The principal task of the latter, as implied by the name, was to provide a grounding either for '12 plus' entrance examinations for grammar and day schools or the 'Common Entrance' examination for public schools, taken at age 13 plus for boys and 11 plus for girls. The independent secondary sector included the so-called 'public' schools, independent grammar schools, and members of the Girls' Day School Trust and similar organisations. The other crucial distinction was between day schools and full and partial boarding schools. The independent sector was also a significant provider of residential special schools (page 56). The independent sector doubled between 1962 and 1988, partly swollen by the influx of around 320 ex-'direct grant' grammar schools.[19] From 1957 the government implemented a system of compulsory registration and inspection of all independent schools, given effect in the 1944 Education Act.

Independent secondary schools differed widely in terms of their curricula (more individual teaching, better pupil-teacher ratios, longer teaching hours, shorter terms and greater emphasis on academic subjects or sports. In the first half of the twentieth century, a few 'progressive' independent schools such as Bedales, Bryanston and Dartington were noted for their liberal regimes and broader curricula. The most important distinction, however, was between day and boarding schools; many of the latter accepted a 'day' pupils. Boarding Schools varied in size from fifty to a thousand pupils. The house system usually formed the basis of pastoral care, accommodation and sometimes teaching, in the collegiate tradition.
They often took the form of the semi-detached 'double house', as at **Ampleforth College**, North Yorkshire. Houses were supervised by a resident house master or matron (their accommodation is traditionally known as the 'private side') and senior pupils were traditionally afforded a degree of responsibility. As boarding schools were home to children for about eight months a year, they needed to balance privacy and homeliness with a communal mode of living. At larger schools there was a tension between the identity of each house and the practicality of, for example, separate dining arrangements; Richard Scott's ingenious communal dining hall for **Charterhouse School** in Goldalming, Surrey comprised seven separate dining rooms equipped so that 'folding doors can be closed, guards can be posted and tactics for the next inter-house cricket match can be discussed without fear of interruption' (fig. 4.242).[20] Dormitories, either open or divided into 'cubes', were traditional at preparatory and junior schools; separate study

Figure 4.242: One of the seven dining rooms at Charterhouse (P5925033).

Fig: 4.243: The art school at Charterhouse School, Godalming, Surrey, of 1958 by James Dartford of G.A. Jellicoe & Partners. Institute of Education Archives: ME/Z/5/5/3

bedrooms were provided for pupils of secondary age or, as was the custom at Eton, for the whole age range. Day rooms, common rooms, libraries and recreational and sports facilities were often integrated with living accommodation to maintain community spirit.

Independent schools of old foundation, often with historic sites, were faithful patrons to architects practising in traditional styles, such as Oswald Brakspear at Sherborne School, Dorset (1954-55); Vincent Harris at the Chard School in Somerset; Seely & Paget at Uppingham School in Rutland and Donald McMorran at the King's School, Chester (*c.*1956-66) and the Cranbrook School, Kent (1959-74). The majority of clients, however, opted for practices identified with a Modernist architectural idiom, following the inter-war precedent of 'progressive' patrons such as Leonard and Dorothy Elmhirst at Dartington Hall School, Devon.[21] A bold post-war example is the art school at Charterhouse School of 1958 by James Dartford of G.A. Jellicoe & Partners (fig. 4.243). The budgets that public schools could afford were closer to those of the University Grants Committee than the DES cost limits and attracted architects noted for their higher education buildings. Of the independent schools that remained in London, post-war rebuilding on any scale was limited to the exceptional cases of St Paul's Cathedral Choir School of 1962-7 by the Architects' Co-Partnership (grade II*; fig. 4.245) and the City of London School for Girls of 1963-69 by Chamberlin Powell and Bon (listed at grade II as part of the Barbican complex).

Figure 4.244: Hugh Casson's International House for the Pestalozzi Children's Village, Sedlescombe, East Sussex. Photograph of 1962 by Henk Snoek, reproduced by kind permission of the Pestalozzi International Village Trust and RIBA Library Photographs Collection.

Figure 4.245 (left) : Current dining hall at of St Paul's Cathedral Choir School, City of London, of 1962-7 by the Architects Co-Partnership. Photograph by James O. Davies – English Heritage; DP059404.

Figure 4.246 (below): Trevor Dannatt's 1965-66 Assembly Hall at Bootham School, York, listed at grade II in 2007. Photograph by James O. Davies – English Heritage; DP148473.

Figure 4.247: The chapel at St Olave's and St Saviour's Grammar School, Orpington, London Borough of Bromley; Robert Matthew Johnson-Marshall & Partners, c.1966-67. Photograph by James O. Davies – English Heritage; DP138466.

Few independent schools were built *de novo* to a single plan: exceptions being St Paul's School which moved to a CLASP-built complex by Feilden & Mawson on a new site in Barnes and Homefield Preparatory School in the London Borough of Sutton, built in 1966-67 to the designs of Team 4.[22] The majority of new buildings were additions varying in scale and programme to institutions long established on semi-rural and often historic sites, although the density, grain and coherence of large school campuses varied considerably. The most prestigious and lavish commissions were detached, semi-public cultural or religious buildings which could represent the focal point of an amorphous campus and welcome parents and alumni. The public school place of worship is a subcategory in its own right: late-twentieth-century examples include Thomas

Hancock's synagogue at **Carmel College,** Wallingford, Oxfordshire and Green Lloyd & Adams' chapel at St Mary's School, Wiltshire of *c.*1974.[23] The academic credentials of an institution could be boosted with a new library: that by Jeremy and Caroline Gould at **Millfield School** reflects a contemporary trend towards multi-media 'learning resource centres'.[24]. Buildings for the arts—the term 'arts centre' emerges during the period—came into their own at large educational complexes where the integration of public exhibition or performance space with specialised teaching provision repaid the initial investment. Originating at the new universities of the 1960s, the trend is seen at the music school and arts centre for Christ's Hospital in Sussex by university specialists Howell Killick Partridge & Amis and the exhibition gallery at Carmel College, designed in 1968 by Sir Basil Spence, Bonnington and Collins, are both listed at grade II*. At Bootham School in York, Trevor Dannatt skilfully combined a small assembly hall, theatre and meeting hall in a strong form of shuttered concrete (fig. 4.246). The contemporary New Hall at Eton College, a theatre of 1966-67 designed by A.M. Gear and Associates, which exploited the fashionable finish of pick -hammered shuttered concrete.[25]

In the choice of architect, personal connections were usually favoured over competitions: old boys could be employed by their alma mater (Richard Scott at **Charterhouse**) or an influential governor could sway the decision, in the case of Lord Jim Forrester, who as chairman of the governors at Bryanston School in Dorset was responsible for a series of commissions to the Architects' Co-Partnership (ACP), after giving the firm their first major job at the Brynmawr Rubber Factory in South Wales.[26]

Figure 4.248: A general view of the new school houses and central dinning room at Charterhouse School, Godalming, Surrey; Sir Giles Scott, Son & Partner, 1971-75 (P5925034).

Figure 4.249: Ampleforth Centre at Ampleforth College; the Ellis Williams Partnership, 1986-88 (P5925035).

A single partner within an architectural practice might specialise in independent schools: Michael Powers oversaw much of the ACP's work in this field, including several projects at Bryanston, residential special schools for the Spastics Society, a chunky music school at Lancing College in West Sussex and a dormitory at **Hanford School** in Dorset.[27] The combination of private architects and the greater autonomy of clients resulted in a diversity not seen in state schools.

In the 1970s stylistic polarities became less marked as contextual and vernacular approaches were absorbed into the mainstream of architecture practice (pages 81-82). Representative of a new sensitivity to site and history are Luxmoore and Mitchinson's Houses at King's School, Canterbury by Maguire and Murray of 1979-80 and the Ellis/ Williams Partnership's **Ampleforth Centre** of 1986-88 (fig. 4.249).[28] Notwithstanding style, one off projects also allowed a greater freedom of architectural expression and generous budgets of some independent schools resulted in generous finishes not seen in maintained schools.

Gazetteer

Voluntary schools

¶ **Westwood High School** (now the New Hall of Westwood College), Westwood Park Avenue, Leek, Staffordshire; Yorke Rosenberg Mardall (YRM), designed *c*.1963, built 1964-66.

YRM built a number of schools in Staffordshire, and the trustees of Westwood High School chose the firm after visiting their Manifold Church of England Primary School on the edge of the Peak District in nearby Warslow. Its long, low profile, rubble-faced walling and pitched roof was in compliance with the requirements of the Peak Park Planning Board, and contrasted with the white 'twintiles' that became a hallmark of YRM's work in the 1960s. Westwood also bordered the Peak District and a similar design was specified.[29]

The T plan of Westwood, initially intended for 450 boys, has the main entrance at the junction of three wings: a single storey hall and gym block, a craft block ranged around a courtyard and a two storey teaching block. The latter has a split-pitch slate roof draining into a central gutter, a profile which allows clerestory lighting to the upper floor of classrooms. The craft block has patent glazed clerestory windows of an appropriately industrial character. The walling is of Davie blocks, a locally produced rubble-faced concrete block.[30] The architects' interest in surface texture also shows in the chunky edge beams, entrance canopies and blocky rainwater heads, which are of shuttered reinforced concrete.

The project won a Civic Trust Commendation in 1968. In 1970 the *Architectural Review* reported 'inside the Leek Secondary School there is for secondary education a refreshing freedom—painted feet cross the ceiling of the girls' common room, walls are decked out with pictures and paintings. The school is alive and the architecture is robust.'[31] Recent work includes the installation of suspended ceilings and UPVC windows.

¶ **Cringleford Church of England School**, Cantley Lane, Cringleford, Norfolk; Tayler and Green (partner in charge Herbert Tayler, job architects Peter Woods, Ian Barnard and Brian Mobbs), designed 1968-69, built 1969-70 (first phase) and 1973-74 (second phase).

The East Anglian practice of Tayler and Green are noted for their sensitive and contextual rural housing schemes which capture the *genius loci* of their landscape settings. Cringleford is the practice's only school: a modest commission, coming late in their careers, yet tackled with great care and meticulous research. The

Figure 4.250: Westwood High School, Leek, Staffordshire; Yorke Rosenberg Mardall, 1964-66 (P5925036).

Figure 4.251: South east elevation of the Cringleford Church of England School. The main entrance is visible to the right. On the left, an infilled veranda, replicating the original glazing pattern (P5925037).

scheme, for the Norwich Diocesan Council for Education, required an extension to a village school centred on a Georgian house. The school was designed to be implemented in two phases under 'minor works' allocations from the DES (page 18): the teaching space was the first to be completed in 1970, and the hall, kitchen and staff accommodation followed in 1973-74.

The layout is a linear sequence of alternating classrooms and quiet rooms—expressed by a mixture of pitched and flat roofs—opening onto a wide corridor. The south gables of the classrooms extend to form a south-facing veranda supported on pin-jointed posts (a similar arrangement could be found at Tayler and Green's Imhof Factory). To the east lies the hall, kitchen and staff accommodation.[32] The higgledy-piggledy layout and the varied pitch of the roofs gives a pleasing irregularity to the design which contrasts with the long terraces of housing for which Tayler and Green are best known. The building is detailed in smooth white facing bricks and dark pantiles with white-painted wooden barge boards, weatherboarding and window frames.[33] The full-width glazing of the classrooms, with their prominent mullions and triangular window heads, lends an appropriately ecclesiastical air.

Pupil numbers soon rose and Peter Woods was called back as early as 1981 to complete extensions. Further modifications were made in 2007 and 2009.[34] Today all three verandas are enclosed, the school hall is extended to the south and a new entrance porch has been built out. The additions are well executed in the same white brick and original joinery is replicated or reused. In 2013 the school plans to move to a new site off Brambling Lane.

¶ **Ilford Jewish Primary School**, Carlton Drive, Barkingside, Ilford, London Borough of Redbridge; Scott, Brownrigg & Turner (partner in charge Robert Duncan Scott, job architect John Wright), designed 1968, built 1968-69.

The Stepney Jewish Primary School was founded in 1863 and from 1870 housed in a typical 'triple decker' board school. The school's move reflects the Jewish diaspora from the east end to suburbs north west and east of the city. Described as 'a radically new approach to primary school design', Ilford closely followed the 'schools without walls' concept popularised in the United States in the 1960s (page 50). A main school building, square on plan, accommodates infants, juniors and a central assembly hall with a raised roof. To this is attached a youth centre, also square, and a nursery unit. The structure is steel framed with full-height brick facing panels and a flat roof.[35]

The architects set out their interpretation of the school's educational philosophy:

> Flexibility was the fundamental design philosophy: modern educational techniques such as team teaching often involve constant change from large group instruction to small group discussion and individual study, thus teaching spaces clearly need to match these requirements at a moment's notice with accommodation of appropriate scale without compromising the environment.'[36]

They accordingly provided a fully open plan teaching space capable of subdivision by a 'moving wall'—64 full-height partitions on a 1.83m ceiling grid and mobile storage units.[37] It was described by the *Architectural Review* as 'Britain's first all-carpeted, air-conditioned school'.[38] The design was notable also for its reliance on artificial lighting; narrow windows were provided for views only.

It is not clear that Ilford ever operated as envisaged: the position of the partitions nor the storage units was not changed by teachers and as early as 1970 it was reported that the partitions were used to divide the space into a conventional layout of four classrooms. The school was extended and modified by Rosenfelder Associates in the 1980s.[39] The school intends to move to the nearby King Solomon Campus, and a competition for the redevelopment of the site has been won by the Hindu 1-Foundation, who plan to open a Hindu school in 2013.[40]

Figure 4.252: A 1970 photograph of Ilford Jewish Primary School. Note the office-like interior and 'moving wall', with its ceiling rails. Institute of Education Archives: ABB/B/1/25/2.

Figure 4.253: A 1971 photograph of open-plan teaching at the Eastergate Church of England Primary School, Chichester; West Sussex County Council Architect's Department, 1969-70. Institute of Education Archives: ME/2/5/2/179

¶ **Eastergate Church of England Primary School**, Church Lane, Eastergate, Chichester, West Sussex; West Sussex County Council Architect's Department (job architects J.W. Paterson and C. Isaacs), 1969-70.

This school for 99 pupils opened in 1970 and replaced a nineteenth-century village school. At the request of the headteacher Doreen Brisland, the rectangular building was entirely open plan and carpeted, apart from a tiled practical bay and enclosed group room. She requested 'one big, large area, nothing wasted on corridors, nothing wasted on little poky rooms. One big space.'[41] The architects collaborated with the Electricity Council and the Building Science Department of Newcastle University on the electrically heated and ventilated interior.

Construction was in the SCOLA Mark II system with additional insulation and brick cladding. The design process was explained in *A New School for Eastergate* (1970), a short documentary film produced by the Electricity Council.[42] The school was reconstructed in 1984 after a fire but the open plan layout survived until 1997, when it was partitioned into two rows of classrooms leading off a corridor. Today around 140 children are on the roll, necessitating various additions including, in 2007, a large assembly hall.

¶ **Our Lady's Roman Catholic Church and Infant School**, Henshaw Road, Wellingborough, Northamptonshire; Ellis/Williams Partnership (job architects Jack Edmondson and Kenneth H. Milton), built 1971-72.

Unusually, and probably for economic reasons, the Diocese of Northampton called for the integration of a church and infant school into a single L plan, with an assembly hall at the junction. The school was organised centres of 80 younger and 160 older children, with a shared resource area. The larger centre recalls Finmere and Eynsham Primary Schools in Oxfordshire: two pairs of home bases with sliding doors flank a general teaching area with art and craft bays at either end. The acoustics were muted by carpeting and acoustic tiles and attempts were made to introduce colour, texture and domesticity into the interiors. Construction is of fairfaced external brickwork with some exposed blockwork and castelled beams to the interiors.[43]

¶ **St Paul's Church of England Junior School**, Princes Road, Royal Borough of Kingston upon Thames; Kenneth Wood Associates, *c.*1971-72.

St Paul's was planned as two clusters of four hexagonal classrooms around a central 'workbay'. The workbays were higher, clerestorey lit and quarry tiled for art and crafts. The classroom interiors were domestically scaled, with pyramidal slate roofs and access to outside terraces.[44] Exteriors are of fairfaced brickwork, white-painted timber joinery and stained shiplap facia and spandrel panels. The central hall has clerestory lighting and a central lantern with sculptural weathervane. The result is a highly articulated building, although the combination of the hexagonal geometry, a complex roof plan and different eaves levels caused problems of drainage and detailing.

The 'honeycomb' layout of hexagonal teaching areas around a central resource area

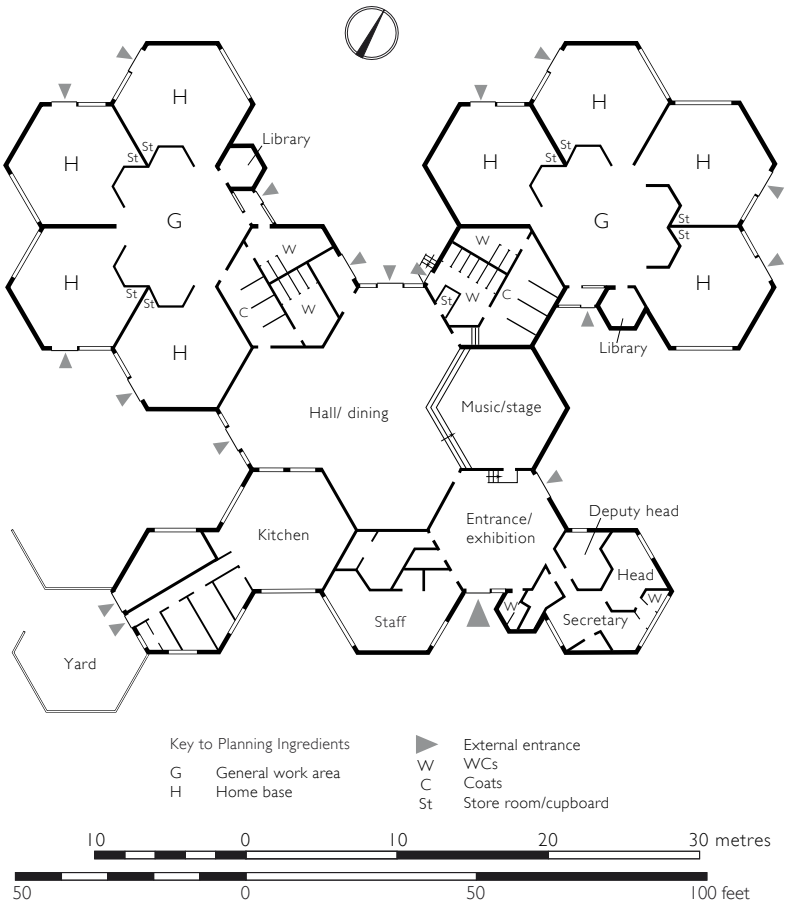


Figure 4.254: St Paul's Church of England Junior School, Kingston.

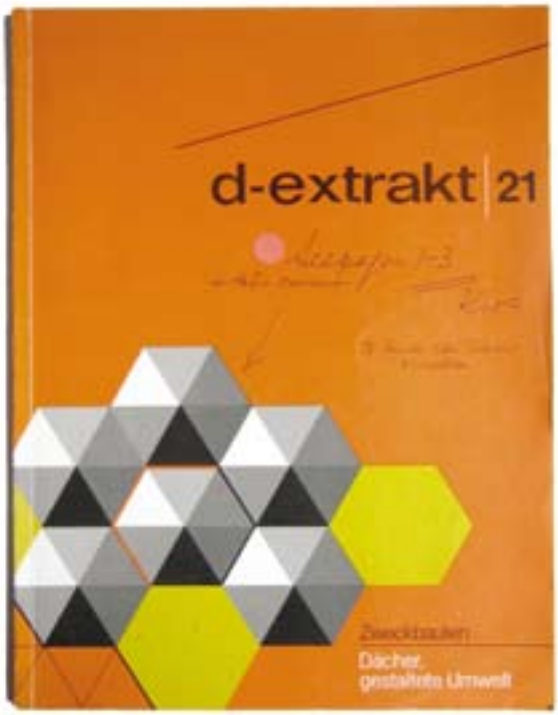


Fig 4.255: St Paul's Junior School, Kingston, here featured in schematic form on the cover of a German architectural journal. Image kindly supplied by Fiona Fisher.

reflects school building trends in the United States, although the extension to Hallfield Primary School, Paddington of 1957-58 by George Malion of Drake and Lasdun is also comparable.[45] Another American influence was the specification of demountable walls between the classrooms for long-term flexibility. Kenneth Wood was a local architect who went on to design the neighbouring Alexandra Infant and Nursery School (1975), which has a more conventional plan. Remodelling work has recently been completed at St Paul's.[46]

¶ **St Paul's Church of England Primary School**, the Common, Chipperfield, Kings Langley, Hertfordshire; Gollins Melvin Ward Partnership, *c.*1973.

A replacement for a Victorian village school in the small village of Chipperfield. The brief was devised by the LEA but it was the governing board who chose the architects, who had an office in nearby Berkhamstead. Two linked pairs of infant and junior classrooms are each equipped with their own external entrance, toilets, resource area and quiet room. The classrooms step down to a central hall, top lit and polygonal in plan, and with an exposed steel frame. The classrooms can be absorbed into the hall by means of a sliding folding door and the three steps can be used as seating. Another segment of the circle shelters an outdoor covered play area. Brick panels and full-height steel framed glazing units dominate the exterior.[47] St Paul's relates to GMWP's earlier schools in Leicestershire (page 224). The school has been refenestrated and extended, with classroom extensions, a new gymnasium and nursery unit.

Direct grant grammar schools

¶ **St Olave's and St Saviour's Grammar School**, Goddington Lane, Orpington, London Borough of Bromley; Robert Matthew Johnson-Marshall & Partners (partner in charge Maurice Lee, job architects F. Feakes, R. Grierson, S. Natarajan, M. Moodie, D. Wicks), *c.*1966-67.

The grammar schools of St Olave and St Saviour were both founded in Southwark in the 1560s. St Olave's, the boys school, was housed in a school building of 1892-93 by E.W. Mountford, but even before it was built the headmaster remarked on the limitations on the existing site on Tooley Street: 'how severely we are handicapped by our locality: with the river at our back, and a ring of modernised Endowed Schools admirably equipped for secondary teaching, intercepting the pupils who used to come to us from a distance.'[48] It was not until 1957 that it was resolved, against the wishes of the LCC, to move the boys' school to the rapidly developing area of Orpington in Kent; the assent of the Minister of Education followed in 1962. By the time the school was built the chosen site lay within the newly-created London Borough of Bromley. The school was officially opened in March 1968 and the chapel was dedicated the following month by the Bishop of Rochester. About 65% of the £646,300 cost of the buildings was raised by the governors from endowments and the sale of the former building to the Inner London Education Authority; the rest was contributed by the DES and the Bromley Education Authority.

The governors chose the firm of Robert Matthew Johnson-Marshall & Partners (RMJM), whose southern office was then busy at work on

Figure 4.256: An Eric de Mare' photograph of the galleried hall at Orpington. © English Heritage.

the Universities of York and Bath. Maurice Lee, the partner in charge, was, like Johnson-Marshall himself, a former Hertfordshire schools architect. A main quadrangle of two storeys with a cloistered walk is disposed around three clumps of mature trees. The planning is sufficiently informal to allow semi-enclosed courts between the blocks. The north walk contains the main entrance and access to the galleried Great Hall, small hall and music room. The 65 feet square timber-lined hall was planned to allow proscenium, apron or arena stage arrangements, and contained stained glass windows by Yvonne Martin, a student at the Royal College of Art (RCA) under the tutelage of Lawrence Lee.[49] Beyond to the north east is the sports block with swimming baths and gymnasium, a two storeyed science block and a detached single-storeyed arts and crafts block. The buildings are plain yet the finishes generous. Most of the teaching accommodation is of two storeys with concrete edge beams between full-height window and brick panels, whose asymmetric disposition reflects room planning. The chalk excavated to make the foundations was used to make an open-air theatre on the Greek plan, sited next to a monopitched block for squash and fives.

The most conspicuous element of the design is the chapter house-like chapel, sited in front of the main entrance. This was raised on piers creating a covered foyer to the entrance. The copper roof, with its lantern and spire, is a successful visual focus. The piers hug the corners of the chapel in the manner of angled buttresses, separating central panels of blind brick from full-height traceried windows at the angles. The altar is moveable and can be placed under the yellow window or in the centre of the chapel according to liturgical preference.[50] The windows were filled with five stained-glass windows by RCA student Susan.[51] Later additions, such as the science block and the enclosure of the Second Court to create a sixth form block, are detailed in the same red-brown brick and reference the original design. The internal courts to the crafts block and to the headmaster's accommodation have been infilled and some windows have been replaced in recent years.

Figure 4.257: Stained-glass in the chapel at St Olave's and St Saviour's by Susan Ashworth, a student at the Royal College of Art under the supervision of tutor Lawrence Lee. The four windows symbolise the triumph of the Christian spirit (yellow) over the four elements of the classical world: earth (green), air (white), fire (red) and water (blue). The glass is in the dalle de verre *technique: thick slabs of glass, sometimes chipped or facetted, set in reinforced concrete. Photograph kindly supplied by Stephen Lee.*

Figure 4.258: A 1993 photograph of the 1966-68 assembly hall at St Albans School, Hertfordshire.

¶ Additions to **St Albans School**, Abbey Gateway, St Albans, Hertfordshire; Sheppard Robinson (partner in charge Gordon Taylor), 1966-88.

St Alban's school is a cluster of buildings west of the Cathedral and Abbey Church of St Alban, with which its foundation is associated. The expansion of the school from a two to a three form entry necessitated a new assembly hall, dining room, classrooms and gym. Taylor's compact building employs a restrained palette of red-brown brick—harmonising with the neighbouring Edwardian school building—copper monopitched roofs and dark stained softwood joinery. The hall boasts a full-height window with strong, dark verticals. Inside the restrained but robust detailing continues, with exposed bolted trusses, boarded softwood ceilings and hardwood doors. It is also exemplary in its sensitivity to its site. Resourceful use of the fall of the land has minimised the bulk whilst creating some interesting internal spaces. A technical centre and laboratories followed in 1973-74 and a further extension of 1981 added sixth-form facilities, including seminar rooms and a common room.[52] The school is currently considering relocating the dining facilities, allowing the building to be re-planned as a performance venue.

¶ **Wallasey Grammar School** (now Wallasey School), Birket Avenue, Leasowe, Cheshire; Richard Sheppard, 1967-68.

This compact and formal plan was praised by the architect John Killick as 'an impeccable and masculine stronghold'.[53] An assembly hall and courtyard are enclosed by outward-facing teaching space. Between these elements is the main entrance, foyer, dining area and staircases to a first-floor gallery. To the south of the courtyard the teaching space is raised on stilts, giving a view of the River Birkett beyond. The double-height hall is entirely top lit. Its stage was designed so it could be closed off with sliding doors to form a separate teaching room. The vertical accents of the cross-wall construction are offset by horizontal strips of red Accrington bricks and dark weatherboarding which separates bay-width glazing. The interior makes much use of natural materials including pine fittings, timber slatted ceilings and parquet floors.

Independent day schools

¶ **Dartington Hall Nursery School** (now Dartington Nursery), Brimhay, Gidleys Meadow, Dartington, Totnes, Devon; Michael J. Leonard, *c.*1970.

The nursery at Brimhay is a rare example of cooperation between a progressive independent school, in this case the trustees of Dartington Hall, and a local education authority, to whom half the total number of school places were allocated. Instead of a fixed brief, a sketch scheme by the architect Michael Leonard formed the basis of subsequent discussions with the trustees. The building was dug lengthways into a slope, so was given a split section with a lower hall entered from the down slope side and the main entrance and upper hall entered from a courtyard. The fall of the land, together with a rising monopitched roof, permitted a first-floor hall, accessed from external stairs on the gable end. Like many early-twentieth-century nurseries, the building is timber framed, with exposed twinned beams bearing on posts; the exterior is weatherboarded (now stained dark) with black strip windows and doors painted white for contrast. The original landscape works were implemented by sixth-formers from Dartington School.[54] The nursery school is amongst the best of the generally unpromising post-war additions to the medieval Dartington Hall and the pioneer modernism commissioned in the 1930s by the Elmhursts. It was later run entirely by Dartington Church of England Primary School, reverting to the indpendent sector in 2010.

Figure 4.259: Dartington Hall Nursery School, Totnes, Devon; Michael J. Leonard, c.1970. Institute of Education Archives: ABB/F/29

¶ **German School in London**, Douglas House, Petersham Road, London Borough of Richmond upon Thames; Executive architect Kersten, Martinoff and Struhk, joint executive architects W H Marmorek and Clifford Culpin & Partners (job architects Dr Walter Marmorek, Colin Bennett, Martin Arnold with George Jelinek, Michael Paul, Tony Donald and Colin Hobart), designed in 1972, built in 1978-81.

The Deutsche Schule London was established at the listed Douglas House in 1971 by the Federal Republic of Germany to offer German-speaking education for the children of diplomats and businessmen temporarily working in London.[55] The expansion of the school from 450 to 650 places at primary and secondary level required a large and prestigious extension for which a limited competition was held. It was won by the partnership of Volker Kersten, Erich Martinoff and Hans Struhk of Braunschweig in Lower Saxony. The German firm of W.H. Marmorek and the UK-based Clifford Culpin and Partners was appointed to undertake the contract drawings, obtain the necessary planning permissions and supervise construction, stages, which required minor changes to the design.

The winning entry of 1972 recognised that the school's sensitive location in riparian parkland next to Ham House necessitated two low and spreading structures, both dominated by a massive roof.[56] The main school building is organised around circulation routes leading north to the sports hall and east to Douglas House. Around an L plan of teaching accommodation is wrapped a 'forum' of semi-public facilities which might be used by the wider community: a ground floor entrance, 700-seater hall, dining room and kitchen, library and conference room. The ground-floor primary school has paired classrooms with intervening group space. Here also are science laboratories and arts and crafts workshops for the whole school. The secondary school above comprises two axes of classrooms, with open-plan space at the intersection.[57]

The complex design required two contrasting constructional techniques. An insitu frame of reinforced concrete with a waffle slab was employed for the two storey classrooms. A tubular space frame roof was found more suitable for the single-storey wide spans of the 'forum' to the main building and the gym and swimming pool of the sports centre.[58] Services

are exposed in both cases. The dominant expression of the roofs is contrasted with a restrained colour scheme of brown shades.[59]

The value of the contract–£5.5m in 1978–was three times that of a British state secondary school, and permitted a finesse of detailing and finishes more characteristic of university building than schools. This can be seen in the bronze anodised glazing units, handmade facing bricks and the elegant junctions of the concrete posts and the steel heads of the space frame. The handling of space in the deep plan foyer is equally luxurious.

Independent boarding schools

¶ Fan's House, **Hanford School**, Child Okeford, Blandford Forum, Dorset; Architects' Co-Partnership (principal in charge Michael Powers), *c.*1967.

A girls' preparatory school was established at the early-seventeenth-century Hanford House in 1947 by the Rev. Clifford Canning and his wife Enid. Their daughter Sarah Canning took over the running of the school in 1959, by which time growing numbers justified additional dormitories. The benefactor for the building project was Ingram Spencer in memory of his late daughter Francis Ann (known as Fan).[60]

Powers' single storey building is unassuming and low in deference to its historical surroundings, especially the tiny Parish Church to the south west. The vocabulary is sober: brown brick walls with the ACP trademark of slit windows, pyramidal copper roofs. The entrance foyer is indicated by a glass wall. The plan, with its staggered dormitories and square playroom, echoes ACP's 1950-51 Oakland Infant School for Hertfordshire County Council. The sloping site is exploited so that the house mistress' accommodation is accessed from the higher level with steps down to the dormitories.

Figure 4.260: Fan's House at Hanford School. The far building with the curved roof is a recent addition. (5925038).

¶ School houses and central dinning room at **Charterhouse School**, Godalming, Surrey; Sir Giles Scott, Son & Partner (partner-in-charge Richard Gilbert Scott), 1971-75. `

By the late 1960s Charterhouse was approaching its centenary at Godalming. Philip Hardwick's gothic buildings of the 1870s were justly feted but accommodation was primitive. 'The private side accommodation [housemaster's quarters] was dark, cold but spacious. The boys' side was barbaric' a former housemaster recalled.[61] The governing body approved a plan for five new houses each for 60 boarders with a common dining hall seating 500 in December 1967; in 1969 it was decided to rebuild rather than upgrade a further two houses. A building committee comprising the headmaster, five housemasters, four wives and the bursar prepared a brief. The choice of Scott was no surprise: he was an old boy, and his father Sir Giles designed the imposing chapel of 1922-27.

In Scott's initial proposal the houses were closely grouped around the refectory, creating small courtyards with covered ways between the buildings. The building committee rejected the scheme in favour of isolated houses loosely grouped amid-trees and bordering the playing fields. The pair of linked houses east of the dining hall is closest to the architect's original intentions; it was with some reluctance that the remaining five were strung out to the south east along the Queen's Drive.[62] The design of the houses subtly varies but each is divided into three stubby wings, linked by a central, top lit stair core. A two storeyed 'private side' of housemaster's and matron's accommodation is joined by two further wings of between one and four storeys of study bedrooms, washrooms, toilets and tea rooms.[63] Communal areas—common rooms, games room, hobbies room—are situated on the ground floor along with a small staff flat.

Scott's houses, in their solidity, picturesque massing and asymmetrical, jagged silhouette, are an effective foil to Hardwick's school. The apparent bulk of the houses are reduced by massing and carefully composed tower-like elements are enlivened by angled parapets and canted corners, into which aluminium-framed corner windows are set. The houses are of

Figure 4.261: An informal composition of houses at Charterhouse, rising to the nine storey 'bachelors' tower' (P5925039).

composite construction: the ground floors are of load-bearing brickwork whereas upper floors employ the Bison precast concrete slab system, clad in handmade, yellow-brown facing bricks. The deep first floor edge beam has a bush-hammered, exposed aggregate finish and incorporates shallow arches after the manner of Basil Spence's buildings for Sussex University.

The dining hall followed. Reservations over the noisy and barnlike appearance of large central dining rooms at, for example, Marlborough College prompted the innovation of seven dining rooms divided by folding screens and served by a central washing up area and kitchen.[64] Each dining room is open to a massive roof which rises sharply to a top light. Externally the roofs recall Erich Mendelsohn's Herrmann hat factory, Luckenwalde, Germany of 1919-1920 and, closer to home, the Bromley Hall School in east London of 1967-68 (pages 209-10). The roofs rise over a vaulted ground floor portico, expressed externally by concrete panels incorporating segmental arches and supported on hexagonal brick pillars. A pool with paved 'stepping stones' was installed to the north. The dining room was extended by Design Engine in 2010-11. Replacement of the ceilings and rooflights is planned.

Gilbert Scott's later commissions for the school— John Derry Technology Centre (1979-80), Ralph Vaughan-Williams Music Centre (1979-83), and the Ben Travers Theatre (1980-83)—are dispersed and inconspicuous.

¶ St Dunstan's and St Osward's houses and classroom block at **Ampleforth College**, Ampleforth, North Yorkshire; Arup Associates (Group Three, principal job architect Richard Frewer), *c.*1971-75.

Ampleforth is a Benedictine community and independent boarding school established at its valley site in 1802. Its buildings, including Sir George Gilbert Scotts' monastery, were sited along a raised terrace. By 1968, with 800 boys in predominantly nineteenth-century boarding accommodation, it was apparent that modernisation was required. Headmaster Father Patrick Barry and Abbot Basil Hume approached Arup Associates, who suggested a number of new buildings in a feasibility study of 1970. The architects stressed the importance of roofs (as new buildings would be viewed from the surrounding slopes), the perceived weightiness of the materials and the continuation of the 'cliff-like formation' of buildings and their setting. The budget was pegged between the DES cost limits for maintained schools and the more generous levels of the University Grants Committee, and a phased approach to building was agreed.

Figure 4.263: Arup Associates's teaching block at Ampleforth College (P5925040).

In the event, only the first phase—a pair of houses and a classroom block—was completed to the original plan and subsequent development was piecemeal, with an assortment of architects involved. The double house takes the form of a snaking linear block which connects twin service cores. Three dormitories for younger boys are at each end, and the rows of seniors' bedrooms are separated by the central matrons' flat. The workshop of Robert Thompson provided oak furniture and panelling, continuing the school's

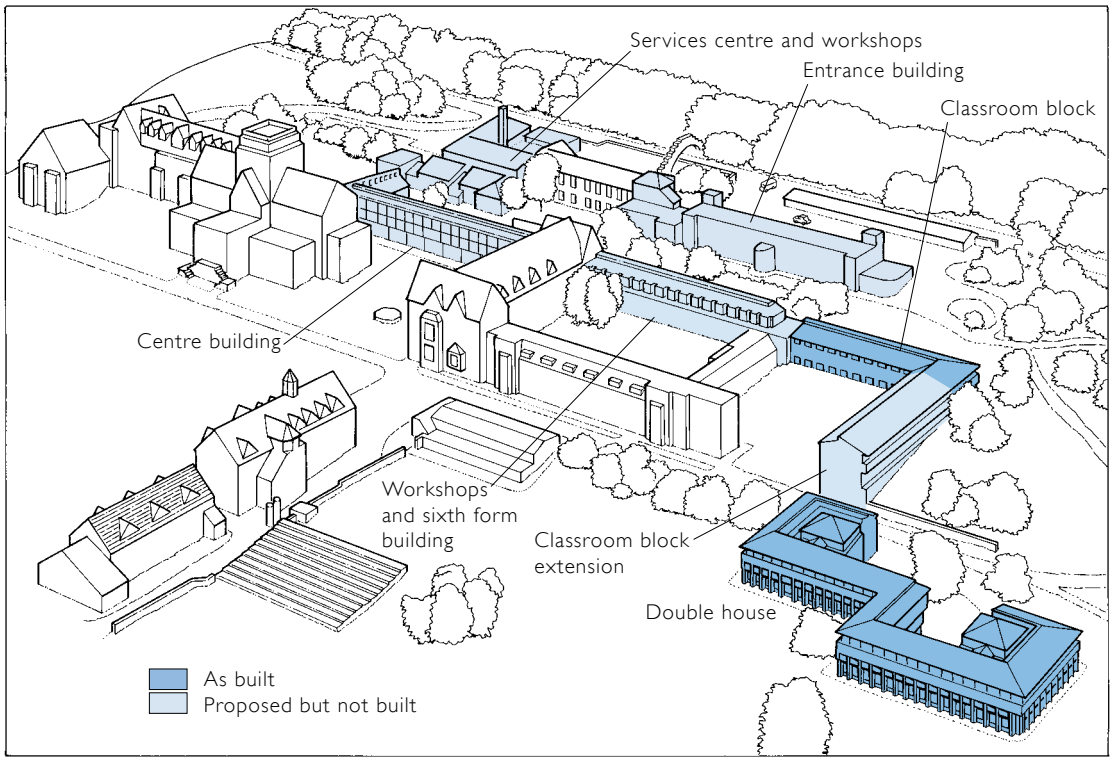


Figure 4.262: An aerial perspective of Arup Associates's proposals at Ampleforth College. Only the double house and classroom block were realised, shown here in darker blue.

Figure 4.264: St Dunstan's and St Osward's houses at Ampleforth College (P5925041).

patronage of the well-known Yorkshire firm. The classroom block, too, is linear.

Exteriors are strongly articulated into bays with deep piers carrying a long band of masonry. The effect resembles Leslie Martin and Colin St. John Wilson's Harvey Court for Gonville and Caius College at Cambridge of 1960-62—Frewer was at that time a student of Wilson and based at that college.[65] The horizontal division into base, middle and top is a counterpart to the bay rhythm. The slate pitched roofs read as a 'floating plane' or 'hat' over the blockwork, visually separated by a recessed glazing strip.[66] The architect's preferred cladding material, limestone, was too expensive, so Arup Associates developed a concrete block used at their Sports Hall at Surrey University in Guildford.[67] Its striated surface and deeply chamfered edges gave a rusticated appearance; texture and colour was carefully matched to the Scotts' buildings.[68]

¶ Ampleforth Centre at **Ampleforth College**; the Ellis Williams Partnership (job architects Desmond Williams, Roger Banks and Jim Buxton), designed 1984-85, built 1986-88.

Arup Associates' 1970 plan recommended the replacement of the late-eighteenth-century double-pile house which formed the basis of the 1802 bequest to the Benedictine Community. The building was listed but was pronounced structurally unsound due to severe subsidence. A replacement building was discussed in a 1984 meeting between the abbot, headmaster, architect and a consultant, Dr Patrick Nuttgens.[69] It was agreed that the replacement building should relate to Scott's abbey church and Hansom's study block, whilst reflecting something of the domestic character of the house it replaced. The trustees wanted a formal entrance to the College, providing a route between existing buildings and semi-public space to meet and receive visitors. The replacement building, shoehorned into a sensitive site beside the Abbey, had to accommodate an extensive range of accommodation, including meeting rooms, shop, large kitchen, two refectories, an administrative suite, lecture theatre, staff work and common rooms and sixth form study bedrooms.

The Ampleforth Centre is a compact building of five storeys. The sloping site is negotiated

by building out a broad terrace which includes an undercroft. An elaborate semi-circular configuration of steps and ramps provides access to the entrance portico, over which is a headmasters' study. Light is introduced into the deep plan by means of a central atrium lit by a lantern tower, which echoes the crossing tower of Scott's Abbey. The steeply-pitched and dormered roof accommodated two storeys of study bedrooms. The façade is elaborately modelled with oriel windows and clad in the local Dunstone with reconstituted stone dressings.

¶ Dining hall and kitchens at **Carmel College**, Mongewell, Wallingford, Oxfordshire; Group Architects DRG (job architect Graham Brown), designed 1972-73, built 1973-74.

Carmel College was an independent Jewish boarding school, founded in 1948 by Rabbi Dr Kopul Rosen and established at Mongewell in 1953. A house of 1890-91 by R.S. Wornum was joined by several new buildings, mostly additions of the early 1960s to the designs of Thomas Hancock who prepared a master plan in 1960. The major buildings on the site are Hancock's synagogue (1963) and amphitheatre (1965), both listed grade II in 1999 and the Julius Gottlieb exhibition gallery and boathouse of 1969-70, a late work by Sir Basil Spence, Bonnington and Collins, for which John Urwin Spence was the job architect. This was listed at grade II* in 1999, following the closure of the college in June 1997.

The dining hall and kitchens was the last major addition. After considering at least one other firm, the school governors appointed the Bristol-based Group Architects DRG in 1972.[70] This practice developed from the in-house architect's department of the Dickenson Robinson Group, an international packaging concern, and is best known for their Bristol headquarters Robinson House of 1961-63. They were recommended to the college by the bursar of Harrow College, for whom they had completed a Physics Laboratory.[71]

Graham Brown originally conceived a steel-framed pavilion but his colleague Colin Beales suggested he translate his Miesian design into structural timber, having discovered a Somerset firm manufacturing laminated beams.[72] The result is an elegant single storey dining hall, open from floor to ceiling on three sides. It costed £200,000.[73] The structure comprises a series of portal framed trusses of glue-laminated Redwood spanning about 70 feet (21.3m) and supporting a flat roof. It is raised about 6 feet (1.8m) above ground level on a plinth to prevent flooding from the nearby Thames. A mixture of full-width glazing and GRP panels are set into timber frames, and the end two bays

Figure 4.265: Long-span dining hall at Carmel College (P5925042).

have diagonal steel bracing. The timber trusses project beyond the cladding, forming triglyph-like elements on the bay.

The entrance and prominent basins for *ntillat yadayim*, the Hebrew ritual hand washing are contained in a rounded cornered-'pod', its fair-faced brown brick contrasting with the main structure. A brick pod containing a staff lounge was added later, in an apparent afterthought.[74] About 400 pupils were served on a 'cafeteria' basis, and the kitchens were planned to allow the dietary separation of meat and milk. Large sliding doors open onto a terrace where meals where eaten during the week-long Jewish festival of *Sukkot*. The site is currently (2012) the subject of a major redevelopment proposal.

¶ Sports hall (now Edinburgh Dome) for **Malvern Girls' College** (now Malvern St James), Avenue Road, Malvern, Worcestershire; Godwin & Cowper (job architect Michael Godwin), engineer John Faber of Oscar Faber, 1977-78, listed grade II in 2009.

A remarkable feat of construction, and proof that independent schools included bold clients. The Edinburgh Dome was one of the first pneumatically-inflated concrete structures in Britain and takes the distinctive form of a parabolic dome. The architect Michael Godwin had visited Italy in 1974 and seen several such domes invented by the engineer Dante Bini. The Bini Dome constructional method was licensed in England by NorWest Holst Construction under the trade name 'Parashell'; the Edinburgh Dome is not the sole Bini Dome in England—a sports dome at Mildenhall Upper School in Suffolk was erected weeks after Malvern—but it has the distinction of being the earliest surviving example.[75]

Godwin felt that the form of a dome was particularly suitable to the parabolic arch of a ball in flight and he went with a group from the school to view several examples in Italy. An informal committee was formed of girls, teachers and governors to discuss options with the architect. Two of the most emphatic suggestions

Figure 4.266: Sports hall at Malvern Girls' College. Photograph by James O. Davies – English Heritage; DP138179.

to emerge were that the building should be lit by natural light and also that it should be capable of being used in the evenings and for a variety of social uses. The perimeter windows cut out of the dome at ground level and the balcony, used as social space, to the north side were the results. The dome sits in an irregularly-shaped moat; again influenced by Godwin's experience in Italy, where he had been struck by the reflection of light into a newly completed dome from a pool of water. The dome was opened on May 4th 1978 by the Duke of Edinburgh.[76]

¶ Library and resource centre for **Millfield School**, Street, Somerset; Jeremy & Caroline Gould, built 1978-80.

Millfield School, after Eton the largest public school in the country, is a amorphous campus in the grounds of Edward Skipper's Millfield House of 1899. In 1977 the school held an RIBA regional competition for a new library, previously housed in temporary classrooms. The brief comprised of three main elements: a library with generous study space, an audio-visual suite complete with TV studio, three viewing/ teaching spaces and a generous entrance foyer with adjoining bookshop. Video recording and transmission were viewed as key educational resources: a weekly average of 200 programmes was broadcast to 24 classrooms. The prominent site next to the main entrance suggested a focal building.[77] The competition was won by Jeremy and Caroline Gould, a small and newly-founded local practice.[78]

The library hall is the principal space, praised in the *Architects' Journal* for its 'imaginative interplay of space, light and colour'. A slight fall in ground level to the north allows a split section, with steps down to an intimate lower ground floor and up to a gallery which overlooks an airy double-height hall with exposed green-stained timber trusses. On plan, the splayed north walls and angled book stacks are based on radiating sight lines from the central issue desk. Daylight filters in from a variety of directions and a primary colour scheme incorporates red control desks, yellow light fittings and green trusses and carpets.

To the south, the building is long and low with an entrance canopy and the utilitarian forms of the TV centre to the west. The south elevation, conceived to screen a haphazard combination of temporary classrooms, today faces a landscaped square. To the north, the monopitch roof of the library rises to a series of brick masses, seen through a belt of mature pines. Each bay is further articulated with a deeply recessed and angled window. A plain red brick and pantile was chosen to harmonise with the buildings of Street.

¶ Computer Design Technology Block (now the Gough Building) at **Bryanston School**, Blandford Forum, Dorset; Campbell Zogolovitch Wilkinson & Gough (CZWG, partner in charge Piers Gough, job architects David Brown and Mary Weguelin), 1986-88.

'Norman Shaw's Bryanston was being swamped by a dissipated campus of weak buildings', wrote Jonathan Meades in a thinly-veiled reference to the post-war additions by the Architects' Co-Partnership. 'This stops the rot'.[79] Four architects had been interviewed for the commission of this two-storey CDT block but only Gough suggested that the school consider an entirely different site adjoining the east wing of Shaw's 1889-94 house and making an eastern courtyard.[80] Gough's design is simple, with the upper floors open to a double pile, barrel-vaulted roof. The curving end walls, taking their cue from the wide segmental pediment and ashlar quoins of the Shaw building, express the double-barrelled section before sweeping down to screen the rear service areas. In a reference to the building's function the entrance façade is decorated with screw columns of reconstituted stone (nicknamed 'the twists of Shaw' by the architects).[81] These support windows with deeply projecting circular surrounds, paraphrasing hooded computer monitors.[82] A use life of a century was specified for the exteriors, but the interiors are conventionally planned and plainly finished with exposed services, acknowledging the need for periodic reconfiguration and the workmanlike activities within. The entrance foyer and spiral staircase with its chrome handrails are the sole set pieces.

This is a building of considerable exuberance and wit and a seminal example of English post-modernism. CZWG returned to Bryanston *c.*1996 to design Dorset House and Cranborne House, a pair of boarding houses in a single butterfly

plan block.[83] In 2007, the Gough building was joined by Michael Hopkins' crescent-shaped Sanger Building for Science and Mathematics. Rear extensions and internal remodelling to the Gough building have recently been proposed.[84]

Independent special schools

¶ **Meldreth Manor School**, Fenny Lane, Meldreth, Royston, Hertfordshire; Architects' Co-Partnership (ACP; partner in charge Michael Powers), built 1964-66.

Meldreth Manor School was the Spastics Society's first residential school for children between the ages of 5 and 16. The National Spastics Society (today Scope) was established in 1952 with aims that included the specialised education and treatment of children with cerebral palsy. In the summer of 1955 it opened its first schools, Craig y Parc School in Cardiff and the residential Wilfred Pickles School near Stamford in Lincolnshire. The Society commissioned Michael Powers of ACP to design the Thomas Delarue School in Tonbridge, Kent of 1961-63 (now demolished). As the Delarue School was nearing completion on site, the Society invited Powers to design a second residential and day school for 120 children.[85] His early involvement meant that he was consulted in choosing the site, in the grounds of an old manor house on the Hertfordshire and Cambridgeshire border. The mature landscaping of the grounds and the rural surroundings required sensitive handling and compact planning to fit the extensive accommodation schedule into six acres.

Meldreth was an all-age school for 120 children that pioneered the integration of teaching, 'training', care and therapy for children with combined physical and learning difficulties and additional sensory impairments.[86] It was also intended to function as a centre of research and staff training. The architects wrote that 'during the later stages of sketch designing the whole bias of thinking changed from a predominantly medical approach to an educational one'.[87] The Spastics Society then believed it to be 'the first school of its kind in the world'.[88] The complex was conceived as a self-contained village woven into a mature landscape of orchards, with a village hall at the centre. It was agreed that the character and scale should be friendly, familiar and domestic, to reflect the local vernacular in 'a natural extension of the village'.[89] A palette of load-bearing white-painted brick, roofs of Welsh slate and wooden windows was chosen to reassure the children and parents and to prepare them for everyday life. Powers took every

Figure 4.267: A general view of Meldreth Manor School, Royston, Hertfordshire; Architects Co-Partnership, 1964-66. The jettied central hall is visible to the left (P5925041).

Figure 4.268: Meldreth Manor School. The school has ceiled some of the exposed trusses are being ceiled to improve thermal comfort (P5925042).

opportunity to remove institutional associations, slightly rotating the houses off the planning grid to avoid right angles and create interestingly shaped spaces.[90]

Four two-storey houses were grouped around a central hall, linked by covered ways at the corners. Each house accommodated thirty children, subdivided into family groups of five. The pinwheeling plan has dining, accommodation and teaching and care wings radiating from a central and partially full height recreation room. The central pavilion included a hydrotherapy pool, dental surgery and treatment rooms wrapped around a full height assembly hall. Additional treatment and staff rooms were reached from a first floor gallery. Patent glazing strips (now replaced) and a central lantern were incorporated into the pyramidal roof of the hall. The intensive nature of the care, and the staff to pupil ratio of almost one to one, meant that over three quarters of staff needed to be resident on site. A wide range of staff accommodation included staggered terraces of houses, flats, a three-storey staff hostel and the conversion of the manor house for the headmaster.

The houses and staff accommodation present a consistent and Scandinavian inflected vocabulary of white-painted brickwork and split-pitch roofs of Welsh slate. The timber-framed central building is dominant; over a brick ground floor is an upper floor clad in the black-painted horizontal weatherboarding so familiar in the surrounding area. The interiors combine laminated Douglas fir beams and trusses with stained timber boarding and a subtle handling of natural light.[91] Meldreth was praised in Powers' *Times* obituary as 'his most achieved piece of architecture'.[92] In a contemporary appraisal of the school in the *Architect and Building News* the architect Michael Manser wrote 'It makes some of the more extrovert modern building further up the road in Cambridge seem one hell of a bore.'[93] The complex is now divided between Meldreth Manor School and Orchard Manor, a new Scope transition service for young people aged 18 to 25. The four houses and hall have been altered in recent years in response to changing practices and support needs; recent interventions include the insertion of suspended ceilings in some areas and partial refenestration in UPVC.

ENDNOTES

1. Earliest located reference to the phrase 'dual system': *Hansard*, House of Common debate on 9 May 1871, vol, 206, cc. 474-575.
2. A 1943 White Paper proposing a system of compulsory registration and inspection formed the basis of Part III of the 1944 Act (Pile 1979, 114).
3. Pile 1979, 115-16.
4. The exception being St Paul's School in west London, designed by Feilden & Mawson in CLASP (*Building*, vol.216, no.6567, 28 March 1969, pp. 75-88).
5. Pile 1979, 65.
6. Department of Education and Science 1964.
7. Pile 1979, 65-69.
8. See also the Iver Village Infant School in Buckinhamshire (page 239).
9. *Industrialised Building Systems & Components*, vol.3 no.11, November 1966, pp.95-103; Institute of Education Archives: ABB/E/75: M.H. Otton, 'Private architects' consortia in school building', undated clipping.
10. *Architectural Review*, vol.139, no.830, April 1966, pp. 278-80. Saint Francis Xavier was demolished in 2003.
11. *Architect & Building News*, vol.222, no.21, 21 November 1962, pp. 761-66.
12. Harwood 2011, 55.
13. Harwood forthcoming.
14. Desmond Williams, pers.comm., 20 October 2011.
15. *The Architect*, vol. 3, no. 4, April 1973, pp.46-47.
16. Desmond Williams, pers.comm., 20 October 2011.
17. Bulley 2004, 165.
18. Suffolk Record Office: HG3/3/2/68/4/13, letter of 6 June 1968 from Canon Gillion to Herbert Tayler.
19. Direct-grant schools received public funding to provide a proportion of free places. Many such schools moved to the independent sector after direct-grant status was abolished in 1975 (Lowe 1997, 9).
20. *Building,* vol.229, no.6892, 18 July 1975, p.59.
21. The Elmhursts and their headmaster William Curry commissioned several buildings from the American architect William Lescaze and thus became the first independent school to commission modern movement architecture (Bonham-Carter and Curry 1958).
22. *Building*, vol.216, no.6567, 28 March 1969, pp. 75-88; *Architectural Review*, vol.141, no.839, January 1967, p.55.
23. *Architects' Journal*, vol. 160, no. 37, 11 September 1974, pp. 588-90.
24. *Paul Hamlyn Centre, Slough by Richard Rogers Partnership, 1993-96*, report of 2010 by Geraint Franklin, English Heritage London Region historians' files, ref. OUT916.
25. *Building*, vol.216, no.6564, 7 March 1969, pp. 91-95.
26. Alan Powers, pers.comm., 17 October 2011.
27. It may be significant that a boarding school was the subject of Powers' final year project at the Architectural Association (Alan Powers, pers. comm., 17 October 2011).
28. *Architectural Review*, vol. 174, no. 1039, September 1983, p. 52-58.
29. *Building*, vol.215, no.6535, 16 August 1968, pp. 77-82.
30. Yorke Rosenberg Mardall 1972, 69.
31. *Architectural Review*, vol. 147, no. 875, August 1970, p.41.
32. The architects seem to have mirrored the plan to allow the second phase to be sited on the existing playground to avoid building on the precious playing fields. Suffolk Record Office: HG3/3/2/68/4/15, Peter Woods memo of 4 September 1968 meeting with G.C. Haydon.
33. Flint block panels, used at Tayler and Green's Loddon housing, were originally specified but eventually cut to meet the cost limits (Suffolk Record Office: HG3/3/2/68/4/10).
34. Suffolk Record Office: HG3/3/2/68/4/18.
35. *Building*, vol.215, no.6552, 13 December 1968, pp. 87-88.
36. John Wright, quoted in Russell 1981, 611.
37. Russell 1981, 616.
38. *Architectural Review*, vol. 147, no. 875, August 1970, p.32.
39. Maclure 1984, 176-78. Russell 1981, 611; *Architect & Building News*, vol.1, no.6, 20 November 1968, pp. 49-51.
40. Jennifer Singer, pers.comm., 19 November 2011; 'Barkingside primary will relocate to make way for Hindu school', *Ilford Recorder*, August 1 2011.
41. Screen Archive South East: *A New School for Eastergate*, 1970 (ID no. 1273; accession no. S 000119).
42. Screen Archive South East: *A New School for Eastergate*, 1970 (ID no. 1273; accession no. S 000119).
43. *Architects' Journal*, vol. 156, no. 45, 8 November 1972, pp. 1061-63.
44. *Interior Design*, April 1974, p. 230-31.

45. See, for example, the Heathcote Elementary School, Scarsdale, NY of 1952-53 by Perkins and Wills; Emil A Schmidlin's design for Stockton Elementary School, East Orange, NY published in 1952, Clinton Place Junior High School, Newark, NY of *c.*1955 by Kelly and Gruzen and Granada elementary school, California by Callister and Rosse, opened 1964 and Shaver & Co's American School in north London of 1969-71 (pages 205-06). Hallfield School: *Architectural Design*, vol.28, February 1958, p.60. In a wider educational context see also the 'beehives' of St John's College, Oxford (1958–60), designed by Michael Powers of ACP. The layout was repeated at the Royal Wanstead Junior School by Bryan Westwood and several schools designed by T.H. Thorpe and Partners (Manning 1967, 39; *Architect*, vol. 4, no. 3, March 1974, pp. 32-33).

46. *Architects' Journal*, vol. 158, no. 47, 21 November 1973, p. 1222-25; *D-extrakt*, no. 21, January 1978, p. 1-3. The architectural drawings for the school are held by the RIBA.

47. *Bauen & Wohnen*, vol. 32, no. 9, September 1977, pp. 328-29; *Design (London)*, no. 337, January 1977, pp. 52-53;
Deutsche Bauzeitschrift, vol. 25, no. 5, May 1977, pp. 581-82; *Building design*, no. 381, 3 February 1978, p. 21.

48. Carrington 1971.

49. Lawrence Lee (no relation) was head of the Department of Stained Glass at the Royal College of Art.

50. *St Olave's and St Saviour's Grammar School, Orpington, Kent*. Privately printed ceremonial brochure for the opening of the school on 27 March 1968, copy held at Bromley Local Studies Library.

51. Dalle de verre was developed in France in the late 1920s by Jean Gaudin and notably employed in 1949-51 by Fernand Léger at Sacré Coeur d'Audincourt in north east France (Chou 2008, 355).

52. Hitchens 1983, 147.

53. Killick 1968.

54. *Architects' Journal*, vol.154, no.35, 1 September 1971, pp.468-69.

55. 'The origins of the German School in London' by Jürgen Sudhoff, at http://www.london.diplo.de/Vertretung/london/en/02/Kanzlei__und__Residenz/An__Embassy__in__Belgrave__Square/German__School__Seite.html, , accessed 15 August 2012.

56. *Baumeister*, vol. 70, no. 2, February 1973, pp. 174-75.

57. *Building*, vol. 243, no. 7252 (31), 30 July 1982, pp. 31-40.

58. Space frame roofs were used by Denis Clarke Hall for the hall, entrance foyer, gym and workshops of Woodfield Secondary Modern School at Cranfield, Middlesex of 1953-54 and the assembly hall of Powell and Moya's Mayfield School of 1953-56 (*Architects' Journal*, vol.119, no.3093, 10 June 1954, pp.709-14; *Architects' Journal*, vol.122, no.3155, 18 August 1955, pp.229-37). A space frame covers the whole of the Great Waldingfield Primary School, West Suffolk of 1969-70 (pages 323-24); they were not uncommon by the late 1970s.

59. *New Civil Engineer*, no. 344, 17 May 1979, pp. 40-42.

60. Fan was the nickname of Francis Ann Spencer, who was killed in a car crash in 1962 (Sarah Canning, pers.comm., 12 December 2011).

61. Quoted in Zillekens 2010, 84.

62. *Building*, vol. 229, no. 6892 (29), 18 July 1975, p. 55-62.

63. Accommodation at Charterhouse had been in dormitories divided with wooden cubicles but the housemasters requested separate study bedrooms in the new houses.

64. Quick 1990.

65. Richard Frewer, pers.comm., 18 October 2011.

66. The hat metaphor came from Arup colleague Ulrick Plesner (Richard Frewer, pers.comm., 18 October 2011). A similar approach can be seen in Arup Associates' Clare College Library in Cambridge, completed in 1986.

67. *Concrete Quarterly*, no. 109, April/June 1976, p. 33-40. The blocks were later used at the Central Electricity Generating Board offices in Bristol.

68. *Building*, vol. 228, no. 6886(23), 6 June 1975, p. 778; *Arup Journal*, vol. 10, no. 4, December 1975, p. 2-7; *Baumeister*, vol. 74, no. 11, November 1977, pp. 1027-29.

69. Institute of Education Archives:ME/M/3/1: undated booklet entitled 'Ampleforth Centre'.

70. Designs prepared by the Buckinghamshire firm of Carless and Adams were submitted to the planning authority in 1972 but progressed no further.

71. Colin Beales, pers.comm., 13 February 2012.

72. Colin Beales, pers.comm., 13 February 2012. For constructional context, see Sutherland 2010.

73. *Interior Design*, April 1975, p.212; *Architects' Journal*, vol.160, no.50, 11 December 1974, pp.1364-65.

74. A separate planning application was made in October 1973.

75. The construction of the Malvern parashall commenced 9 February 1977, but it was not until April that the ground slab was laid at Mildenhall

Upper School (*Building Design*, no. 345, 6 May 1977, p. 3).
76. This gazetteer entry is based on the listed building description.
77. *Architects' Journal*, vol. 173, no 17, 29 April 1981, pp. 791-806; *Interior Design*, April 1981, pp. 25-28; *RIBA Journal*, vol. 90, no. 8, August 1983, p. 67.
78. The Goulds returned to Millfield in 1990-92 to design the CRMA Fine Arts Centre (*Architects' Journal*, vol. 196, no. 5, 29 July 1992, pp. 20-23).
79. Meades 1988, 95.
80. *RIBA Journal*, vol.95, no.10, October 1988, p.33.
81. The columns later reappeared at the offices of the practice in Farrington, London of 1988-89.
82. *Concrete Quarterly*, no.188, Autumn 1998, p.4.
83. Partner in charge Piers Gough, job architect Luigi Beltrani (*Architecture Today*, no. 76, 3.1997, pp. 18-23).
84. http://www.hopkins.co.uk/projects/2/163/, accessed 15 August 2012.
85. ACP also designed a large training centre for the Spastics Society in Birmingham: *Architect's Journal*, vol.143, no.26, 29 June 1966, p.1587.
86. Loring 1966.
87. *Era: Journal of the Eastern Region of the Royal Institute of British Architects*, vol.1 no.1, February 1968, pp. 23-27. This anonymous account is almost identical to those published in the *Architect and Building News* and *Wood* and was probably contributed by ACP.
88. *Meldreth Training School*, Pamphlet privately published for the opening ceremony on 25 October 1967, held by the school.
89. *Meldreth Training School*, Pamphlet privately published for the opening ceremony on 25 October 1967, held by the school.
90. *Era: Journal of the Eastern Region of the Royal Institute of British Architects*, vol.1 no.1, February 1968, pp. 23-27.
91. *Wood*, vol.33, no.7, July 1968, pp. 15-19.
92. Undated cutting of *c.* September 1994, held by the school.
93. *Architect & Building News*, vol.233, 3 January 1968, pp.10-19.

CONCLUSION

Schools are a multi-facetted building type, combining unique challenges and characteristics. There needs to be considered the balance between community and the development of the individual, the close and reciprocal relationship between spatial form and activity, the role of architecture in a 'visual education' and the physical and emotional diversity of any cohort of children. Post-war school design was a crucible for ideas drawn from the Modern Movement, early twentieth century reforms of health, hygiene, social care and 'child centred' education, and the co-operation and discipline developed during formative wartime operations. But if there are continuities with earlier pioneers in educational building, it is equally crucial to understand the evolution of schools down to the present day.

How is it that school building played such a central role in the development of public architecture in post-war England? Schools were prioritised in public funding in circumstances of urgent demand and economic consensus that obtained for three post-war decades. The planning and co-ordination of whole programmes of school building brought to bear continuity of experience and economies of scale, yet the best designs of the period are palpably 'one-off' responses to local circumstances of brief or site. Distinctive building programmes were developed in London, Coventry, Nottinghamshire, Leicestershire and Hampshire, but some small or rural authorities and the diocesan schools commissions proved equally progressive clients. Independent schools continued to represent a source of creative licence and generous budgets to private architects of traditional and modernist persuasion alike.

It was only through prefabrication that the exceptional demand for places was met and the gains of technology shared equitably. The pragmatist approach of adapting proprietary systems in partnership with a manufacturer, initiated by C.G. Stillman in pre-war West Sussex, was taken up after 1945 by a team of young architects based first at Hertfordshire and later at the Architects and Building Branch of the Ministry of Education. Authorities later banded together into 'consortia', jointly developing commonly-owned systems, most based on a light steel frame. The best systems combined a unified technical vocabulary with a flexible approach to services and versatility in interior planning and lighting. In the 1960s systems were 'opened up' to commercially-available components and a wide range of cladding materials including brick. The same rigour and reforms achieved in prefabricated building were demanded of 'rationalised traditional' construction, which became prevalent from c.1970. Deeper plans demanded a mix of natural and artificial light in deeper plans, and the energy crisis of the 1970s found a response in the 'passive solar' and 'selective' approaches to environmental design pioneered at schools in Essex, Hampshire and Cornwall.

One of the greatest achievements of post-war school design was to bring buildings into scale with their occupants. Designed from the 'inside-out', interiors were enriched with colour schemes, natural light, bespoke fittings, child-sized furniture and sometimes works of art. Rational construction was tempered by humanist tendencies, drawing on

vernacular, Scandinavian or Arts & Crafts influences and characterised by warm surfaces, natural finishes and the tactile and visual pleasure of hand-crafted details. In primary schools, complex patterns of movement and activity were facilitated by an array of interconnected spaces of diverse character but consistently domestic scale. Although often planned with specific educational philosophies in mind, such layouts have been successfully adapted to very different teaching approaches and resources. Very open plans, popular in the early 1970s, have fared less well. The most interesting schools, in Leicestershire and Hampshire, were set around a library or resource centre, sometimes featuring complex sections to maximise space under large pitched roofs or a sloping site. Sheltered outdoor areas such as verandas or courts were conceived as an extension of interior teaching space and some sites boasted sensitive landscaping.

Secondary schools posed unique organisational challenges arising from the consideration of scale, curriculum, streaming, pastoral needs, and in many cases the integration of existing buildings. A tripartite division of grammar, secondary modern and technical schools on the basis of pupil selection at age eleven plus was implicit in the 1944 Education Act and accompanying government guidance. Alternatives to tripartistism were offered in a fraught but ineluctable national move towards non-selective schemes of comprehensive education, a field where London, Middlesex, the West Riding and Coventry led the way. Alternatives to very large 'through schools' for 11-18 year olds were provided under the 'Leicestershire Plan' implemented in that country from 1957, and in the middle schools pioneered by Alec Clegg of the West Riding of Yorkshire.

Large comprehensives, necessary to secure a lively sixth-form, were broken down into 'houses' or year groups, and 1960s curricular reform led to the replacement of a classroom-based approach with multi-disciplinary and often open-planned 'centres'. Some innovative secondaries were centrally planned around a central library, resource area or sports facility, and dispersed, campus layouts proved particularly adaptable. Both suggest emphasis on self-motivated study in a more adult environment and the influence of the new colleges and universities. The greater scale and budget of secondary schools invited freedom of architectural expression and, on occasions, drama or monumentality.

The 1960s and '70s saw a revival of interest in the community school, inspired by Henry Morris's village colleges in inter-war Cambridgeshire. Improved sports and social facilities were jointly funded by district councils and made available for community use out of school hours. Bolder still were the inner-city 'centres' which combined comprehensive schools, higher or adult education facilities and cultural and social provision in a single, mixed-use complex. The period also saw a sea-change in provision for children with disabilities, moving from special schools equipped for specific categories of disability—including, from 1970, severe and multiple disabilities—to the provision of special units or facilities in mainstream schools.

The early post-war period, say from c.1944-60, is well documented. The aim of this report is to take up the story, to show that the needs of the child continued to be considered and refined into the 1980s and that schools continued to be at the forefront of innovation.

BIBLIOGRAPHY

Unauthored articles and unpublished material are cited in the endnotes

Adams, E. 1995 'Learning Through Landscapes', in Hale, M. *Ecology in Education*. Cambridge: Cambridge University Press

Addis, W. and Walker, D. 1997 *Happold: the Confidence to Build*. London: Taylor & Francis

Ahrends Burton and Koralek 1991 *Ahrends Burton and Koralek*. London: Academy Editions

Aldous, T. 1974 *Architecture of the Gollins Melvin Ward Partnership*. London: Lund Humphries

Alexander, W. 1977 'Lord Alexander Remembers' in *Education*, vol.140, 3 June 1977, pp.380-81

Allen, M.G. 1968 *Planning for Play*. London: Thames & Hudson

Bailey, B. 1990 'Technical Education and Secondary Schooling 1905-1945' in Summerfield, P. and Evans, E.J. (eds) *Technical Education and the State Since 1850: Historical and Contemporary Perspectives*. Manchester: Manchester University Press

Bancroft, J. 1973 'Architect's Approach to Architecture' in *RIBA Journal*, vol. 80, no. 4, April 1973, pp.190-98

Banham, R. 1961 'A Gong for the Welfare State', *New Statesman*, 6 January 1961, pp. 26-27

Banham, R. 1969 *The Architecture of the Well-Tempered Environment*. London: Architectural Press

Banham, R. 1976 *Megastructure: Urban Futures of the Recent Past*. New York: Harper and Row

Banham, R. 1981 'The Architecture of the English School', in *History of Education Quarterly*, vol. 21, no. 2, pp.189-93

Banham, R. 1999 *A Critic Writes: Selected Essays by Reyner Banham*. Berkeley: University of California Press

Beattie, S. 1972 *The Schools of the London School Board (1872-1904) and the London County Council Education Department (1904-10)*. Unpublished report for the Historic Buildings Board of the Greater London Council

Bendixson, T. 1992 *Milton Keynes: Image and Reality.* Cambridge: Granta Editions

Benjamin, J. 1966 *In Search of Adventure: a Study in Play Leadership*. London: National Council of Social Service

Benn, C. 1973 'The Experiment of Middle Schools', in *New Society*, vol.24 no.553, 10 May 1973, pp.294-26

Benn, C. 1980 'Comprehensive School Reform and the 1945 Labour Government', in *History Workshop Journal*, vol. 10, pp.197-204

Bennett, N 1976 *Teaching Styles and Pupil Progress*. London: Open Books

Bennett, N *et al* 1980 *Open Plan Schools.* Windsor: NFER Publishing Company Ltd

Benson Ansell, H. 1963 'Post-War School Building 2: Hampshire' in *Education*, vol.121, 28 March 1963, pp.611-16

Birks, T. 2005 *Hans Coper*. Yeovil: Marston House

Blackstone, T. 1971 *A Fair Start: the Provision of Pre-School Education.* London: Allen Lane

Blyth, A 1965 in 'Three Traditions in English Primary Education' in Richards *et* al 1984 *The Study of Primary Education: a Source Book*. London: Routledge

Board of Education 1926 *The Education of the Adolescent* ('Hadow report'). London: HMSO

Board of Education 1931 *The Primary School.* London: HMSO

Board of Education 1933 *Infant and Nursery Schools*. London: HMSO

Board of Education 1938 *Secondary Education with Special Reference to Grammar Schools and Technical High Schools* ('Spens report'). London: HMSO

Board of Education 1943a *Curriculum and Examinations in Secondary Schools* (Norwood Report). London: HMSO

Board of Education 1943b *Educational Reconstruction* (White Paper). London: HMSO

Bolton, P. 2007 *Education: Historical Statistics*. London: House of Commons Library

Bonham-Carter, V and Curry, W.B. 1958 *Dartington Hall: the History of an Experiment*. London: Phoenix House

Bradburn, E 1989 *Margaret McMillan: Portrait of a Pioneer*. London: Routledge

Bridges, D. 1994 *Education and the Market Place*

Brighouse, T. in Woods, D. and Cribb, M. (eds) 2001 *Effective LEAs and School Improvement: Making a Difference*. London: Routledge

Brogden, M. 2007 'Plowden and Primary School Buildings: a Story of Innovation Without Change', *Forum*, vol. 49, nos. 1&2, pp.55-66

Brook, R. 2012 'Police Brutality', *The Modernist*, no.4, pp.15-18

Buckinghamshire County Council 1977 *Buckinghamshire: 25 Years of Architecture 1952-77.* Aylesbury: Buckinghamshire County Council

Bulley, C. 2004 *Glass of Time*. Eastbourne: Sussex Academic Press

Burke, C. and Grosvenor, I. 2008 *School*. London: Reaktion Books

Burke, C. 2009 '"Inside out": a Collaborative Approach to Designing Schools in England, 1945-1972', *Paedagogica Historica*, vol. 45, pp. 421–33

Burnaby G. (ed) 1985 *Hampshire Architecture (1974-1984)*. London: Academy Editions

Bush, T., Kogan, M and Lenney, T. 1989 *Directors of Education: Facing Reform*. London: Jessica Kingsley Publishers

Caldwell, B. and Spinks, J.M. 1988 *The Self-Managing School*. London: Falmer Press

Callaghan, D. 2006 *Conservative Party Education Policies 1976-1997*. Brighton: Sussex Academic Press

Carrington, R.C. 1971 *Two Schools: a History of the St Olave's and St Saviour's Grammar School Foundation*. London: the Governors

Cavanagh, T. and Yarrington, A. 2000 *Public Sculpture of Leicestershire and Rutland*. Liverpool, Liverpool University Press

Central Advisory Council for Education (England) 1959 *15 to 18* ['Crowther Report']. London: Her Majesty's Stationery Office

Central Advisory Council for Education (England) 1963 *Half Our Future* ['Newsom Report']. London: Her Majesty's Stationery Office

Central Advisory Council for Education (England) 1967 *Children and Their Primary Schools* ['Plowden report']. London: Her Majesty's Stationery Office

Chalk, D.J. 1990R2006 *Architecture of the Sixties and Seventies: Meeting Local Needs in Bedfordshire*. Bedford: Douglas Chalk

Cherry, B and Pevsner, N. 2002 *London 4: North*. New Haven: Yale

Cherry, M. and Chitty, G. 2009 *Heritage Protection Reform Implementation:*

Strategic Designation Review of Past and Present Thematic Programmes. Unpublished report for English Heritage. Available at http://www.english-heritage.org.uk/content/imported-docs/p-t/NHPP-draft-review-thematic-app

Chitty, C. and Dunford, J.E. 1999 *State Schools: New Labour and the Conservative Legacy*. London: Woburn Press

Chou, F. 'Dalle de Verre: Modern Stained Glass', in Heuvel, D. van den 2008 *The Challenge of Change: Dealing with the Legacy of the Modern Movement*. Amsterdam: IOS Press

Clark, A. 2010. *Transforming Childrens' Spaces: Children's and Adults' Participation in Designing Learning Environments*. London: Routledge

Clark Hall, D 2007 'School Design in the 1930s' in *Twentieth Century Architecture*, journal of the Twentieth Century Society, vol. 8, pp.69-78

Classey, E. 1998 *Fantastic Form: the Urban School. London's Comprehensive Schools 1950-1970*. Unpublished report submitted towards MSc in Architecture, University of London

Clegg, A. 1952 'The Education Act 1944 and the Post-war Building Programme'. Transcript of speech of 12 November 1952 at an Architectural Symposium on the secondary modern school, in *Architects' Association Journal*, vol.68, no.767, December 1952, pp.83-86

Clegg, A. 1966 'The Nine to Thirteen School', in *Education*, vol.127, 24 June 1966, pp. 1289-90

Clegg, A. 1980 *About Our Schools*. London: Blackwell

Committee of Enquiry into the Education of Handicapped Children and Young People 1978 *Special Educational Needs* ['Warnock Report']. London: HMSO

Construction Task Force 1998 *Rethinking Construction* ['Egan Report']. Report of the Construction Task Force, chaired by John Egan, London: HMSO

Cooke, G. and Gosden, P. 1986 *Education Committees*. Harlow: Longmans

Cowan, S. *et al* 2012 'From HORSA Huts to ROSLA Blocks: the School Leaving Age and the School Building Programme in England, 1943–1972', in History of Education, vol. 41, no. 1, pp. 361-80

Crawford, M. 'Foreword: Sir Alec Clegg' in *Education 3-13*, vol. 36, no. 2, May 2008, pp.101-02

Crook, D. 2002 'Local Authorities and Comprehensivization in England and Wales, 1944-1974' in *Oxford Review of Education*, vol. 28, issue 2 & 3, pp.247-60

Crook, D 2008 'The Middle School Cometh' . . . and Goeth: Alec Clegg and the Rise and Fall of the English Middle School' in *Education* vol. 36, no. 2. pp. 117-25

Cunningham, P. 1988 *Curriculum Change in the Primary School Since 1945: Dissemination of the Progressive Ideal*. London: the Falmer Press

Dannatt, T. 2008 *Works and Works*. London: Black Dog Publishing

Darley, G. and Davey, P. 1983 'Sense and Sensibility: the Architecture of Romantic Pragmatism' in *Architectural Review*, vol. 174, no. 1039, September 1983, pp. 22-25

Darvill, P. 2000 *Sir Alec Clegg: a Biographical Study*. Knebworth: Able Publishing

Dent, H.C. 1970 *1870-1970, A Century of Growth in English Education*. London: Longmans

Department of Education and Science *Statistics of Education*. (annual statistical digest). London: HMSO

Department of Education and Science 1964 *Building Work for Aided and Special Agreement Schools*. London: HMSO

Department of Education and Science 1972 *Open-plan Primary Schools*. Education Survey 16. London: HMSO

Department of Education and Science 1977 *A Study of School Building: Report*. London: HMSO

Department of Education and Science 1980 *Education for 16 to 19 Year Olds*. London: HMSO

Department of Education and Science 1980 *Nursery Education: Low Cost Adaptation of Spare Space in Primary Schools*. Broadsheet 1. London: HMSO

Department of Education and Science 1983 *Blackthorn: the Design of a Middle School*. Broadsheet 13. London: HMSO

Department of Education and Science 1987 *Survey of School Buildings*. London: HMSO

Department of Education and Science 1992 *Curriculum Organization and Classroom Practice in Primary Schools*. London: HMSO

Department for Education and Skills 2006 *Every Child Matters: Primary Capital Programme*. Unpublished report, reference DFES/0287/2006

Department of the Environment. 1977 *Policy for the Inner Cities*. London: HMSO

Department of Schools, Children and Families 2007 *Building Schools for the Future: First Annual Report*. Unpublished report of December 2007., reference:DCSF-RW032

Droste, M. 2006 *Bauhaus 1919-1933*. Cologne: Taschen

Douglas, J.W.B. 1964 *The Home and the School* London: MacGibbon and Kee

Dudek, M. 2000 *Architecture of Schools: the New Learning Environments*.London: Architectural Press

Dümpelmann, S. 2004 *Maria Teresa Parpagliolo Shephard (1903-1974): Ein Beitrag zur Entwicklung der Gartenkultur in Italien im 20. Jahrjundert*. Weimar: Verlag und Datenbank für Geisteswissenschaften

Educational Facilities Laboratories 1962 *British Prefabricated School Construction*. New York: EFL

Educational Facilities Laboratories 1965 *Schools Without Walls: a Report*. New York: EFL

Educational Facilities Laboratories 1967a *SCSD: the Projects and the Schools* New York: EFL

Educational Facilities Laboratories 1967b *Three High schools Revisited: Andrews, McPherson and Nova*. New York: EFL

Educational Facilities Laboratories 1968 *Open Space Elementary Schools*. New York: EFL

Educational Facilities Laboratories 1968 *Transformation of the Schoolhouse*. New York: EFL

Educational Facilities Laboratories 1970 *The Open Plan School: Report of a National Seminar*. New York: EFL

Educational Facilities Laboratories 1973 *Five Open Plan High Schools*. New York: EFL

Edwards, M. 2001 'City Design: What Went Wrong at Milton Keynes?', in

Journal of Urban Design, vol. 6, no. 1, pp.73-82.

Electricity Council 1969 *Integrated Design: a Case History*. London: Electricity Council

English Heritage 1992 *Guidance Notes on the Selection of Post-1939 Educational Buildings for Listing*. Unpublished report by Dr Diane Kay of Listing Branch of English Heritage for the Post-war Steering Group

English Heritage 2007 *Education Buildings Selection Guide*. Unpublished report by English Heritage's Heritage Protection Department, available at http://www.english-heritage.org.uk/upload/pdf/Education_Selection_Guide.pdf , accessed 15 August 2012.

Esher, L. 1981 A *Broken Wave: the Rebuilding of England 1940-80*. London: Allen Lane

Finimore, B 1989 *Houses from the Factory: System Building and the Welfare State*. London: Rivers Oram Press

Fletcher, C. 1984 *The Challenges of Community Education: a Biography of Sutton Centre*. Nottingham: Nottingham University Department of Adult Education

Floud, F. and Glynn, S. (eds) 1998 *London Higher: the Establishment of Higher Education in London*. London: Athlone Press

Forsyth, A. and Grey, D. (eds) 1988 *Lyons Israel Ellis Gray: Buildings and Projects 1932-83*. Architectural Association, London

Frampton, K. 1980R1992 *Modern Architecture: a Critical History*. London: Thames and Hudson

Francis, M 1997 *Ideas and Policies under Labour, 1945-1951: Building a New Britain*. Manchester: Manchester University Press

Franklin, G. 2009 *Inner-London Schools 1918-44: a Thematic Study*. English Heritage Research Department Report no. 43-2009

Franklin, G. 2012a '"White Wall Guys": the Return of Heroic Modernism', in *Twentieth Century Architecture 10*. London: the Twentieth Century Society, pp.89-102

Franklin, G. 2012b 'Built-in Variety': David and Mary Medd and the Child-Centred Primary School, 1944–80', in *Architectural History*, vol. 55, pp.321-67

French, C. 2006 *Prefabricated Schools*. Manchester: Lansdowne Publishing Ltd

Gardiner, S. 1973 'A Lot to Learn', *Architect (London)* vol. 3, no. 4, April 1973, pp.36-39

Garlake, M. 1993 '"A War of Taste": The London County Council as Art Patron 1948–1965', *London Journal*, vol.18, no.1, pp.45-65.

Geen, A.G. 1985 'Team teaching in Ten Secondary Schools of England and Wales', *Educational Review*, vol.37, no. 1, pp.29-38.

Gibson, T. 2011 *Brenda Colvin: A Career in Landscape*. London: Francis Lincoln Ltd

Glover, A.W. 1963 'Post-war School Building 3: West Riding', in *Education*, vol.121, 26 April 1963, pp.819-24

Goodwin, N. R. 'The Role of the Architect in CLASP', in *Builder*, vol.206, no.6305, 20 March 1964 p.621

Gold, J.R. 2007 *The Practice of Modernism: Modern Architects and Urban Transformation, 1954-1972*. London: Taylor & Francis

Goldsmith, B. 1979 *Design Data for Wheelchair Children*. London: Disabled Living Foundation

Greater London Council 1970 *GLC Architecture 1965/70: the Work of the GLC's Department of Architecture and Civic Design*. London: GLC

Greater London Council 1986 *GLC/ILEA Architecture 1976-1986*. London: Architectural Press, 1986

Hacker, M. 1971 'Comprehensive Communities', in *Architectural Review*, vol.150, no.893, July 1971, pp. 23-34

Hacker, M. 1976 'School and Community: Provision for Joint Use and Sharing in a Changing World' in *Architects' Journal*, vol. 163, no. 21, 26 May 1976, pp. 1032-58

Halsey, A.H. 1998 *British Social Trends Since 1900*. London: Office for National Statistics

Hampshire County Council 1972 *Better Design*. Winchester: Hampshire County Council

Hardcastle, J & Dunford, F. 1974 *Hampshire Architects Department 1921-1974: a Short History*. Winchester: Hampshire County Council

Harwood, E. 2010 *England's Schools: History, Architecture and Adaptation*. Swindon: English Heritage

Harwood, E. 2011 *Chamberlin, Powell & Bon*. London: RIBA Publishing

Harwood, E. (forthcoming) *Space, Hope and Brutalism*. New Haven: Yale University Press

Harwood, E. and Saint, A. 1990 *Exploring London's Heritage*. London: HMSO

Haward, B. 1977 'Timber Domes in the Ipswich Area', *ERA*, no.45, August 1977, pp.58-60

Hawkes, D. 1996 *The Environmental Tradition: Studies in the Architecture of Environment*. London: E&FN Spon

Hawkins, G. 1984 'Schools as a Resource: School Building Today' in *Architects' Journal*, vol. 180, no. 46, 14 November 1984, pp.79-90

Heller, H. and Edwards, P 1992 *Policy and Power in Education: the Rise and Fall of the* LEA. London: Routledge

Hellman, L. 1975 'Fine Style No. Comfort' in *Built Environment Quarterly*, vol. 1, no. 2, September 1975, pp.91-93

Hellman, L. 2012 'Something is Happening But You Don't Know What it is' in *Journal of the 20th Century Society*. London: 20th Century Society, pp.51-64

Herbert, E.S. 1960 *Royal Commission on Local Government in Greater London, 1957-60.* London: HMSO

HM Inspectors of Schools 1983 *9-13 Middle Schools: An Illustrative Survey* London: HMSO

HM Inspectors of Schools 1985 *Education 8 to 12 in Combined and Middle Schools*. London: HMSO

Holland, J. 2011'Letting in the Light: the Council for Art and Industry and Oliver Hill's Pioneer Schools', *Architectural History*, vol.54, pp.275-308

Honikman, B. 1966 'Progress in Schools', in *Official Architecture and Planning*, vol. 29, no.9, September 1966, pp.1307-16

Jackson, W.E. 1965 *Achievement: a Short History of the* LCC. London: Longmans.

Jacobs, J 1961 *The Death and Life of Great American Cities*. New York: Random House

James, C. 1972 *Young Lives at Stake: the Education of Adolescents*. New York: Agathon Press

Jencks, C. *1968* 'Criticism: Adhocism on the South Bank', *Architectural Review*, vol.144, no. 857, July 1968, pp. 27-30

Jencks, C. 1973R1987 *Modern Movements in Architecture*. Harmondsworth: Penguin

Jones, D. K. 1988 *Stewart Mason: the Art of Education*. London: Lawrence and Wishart

Jones, K.P. 1967 'The Birth of a Consortium: the Anglian Standing Conference', *Perspective East Yorkshire*, no.23, July/August 1967, pp.520-523

Kay, J. 1968 'Improving old school buildings: winning designs submitted for the Plowden Competition', *RIBA Journal*, vol. 75, December 1968, pp. 560-63

Kay, W.K. and Francis, L.J. 1997 *Religion in Education:2*. Leominster: Gracewing Publishing

Killeen, J. 1968 'Component building for schools', *Official Architecture & Planning*, vol.31, no.10, October 1968, pp.1289-1304

Killick, J. 1968 'Wallasey Grammar School', *Official Architecture & Planning*, vol.31, no.10, October 1968, pp.1272-78

Kogan, M (ed) 1971 *The Politics of Education: Edward Boyle and Anthony Crosland in Conversation with Maurice Kogan*. Harmondsworth: Penguin

Kozlovsky, R. 2007 'Adventure Playgrounds and Postwar Reconstruction', in Gutman, M. and de Coninck-Smith, N. *Designing Modern Childhoods: History, Space, and the Material Culture of Children; An International Reader*. Piscataway: Rutgers University Press

Landau, R. 1968 *New Directions in British Architecture*. New York: George Braziller

Leach, P. and Pevsner, N. 2009 *Yorkshire West Riding: Leeds, Bradford and the North*. New Haven: Yale University Press

Levy, M. 1963 'Pioneering Patronage for Schools: British Art in Leicestershire', in *Studio International*, vol. 166, no. 845, September 1963, pp. 92-97

Lindstrum, D. 1982 *West Yorkshire Architects and Architecture*. London: Lund Humphries Publishers Ltd

Loring, J. 1966 'Meldreth: a Pioneer Unit for the Training of Spastic Children' in *Special Education*, vol. 55, no.1, pp.20-24

Lowe, R. 1992 *Education and the Second World War: Studies in Schooling and Social Change*. London: Taylor & Francis

Lowe, R. 1995 'School Buildings: an English Heritage', in Binney, M. *Breathing New Life into Old Schools*. London: Save Britain's Heritage

Lowe, R. 1997 *Schooling and Social Change 1964-1990*. London: Routledge

Maclure, S. 1984 *Educational Development and School Building: Aspects of Public Policy 1945-73*. London: Longman

Maclure, S. 1990 *A History of Education in London, 1870-1990.* London: Allen Lane

Maguire, M. *et al* 2006 *The Urban Primary School.* Maidenhead: Open University Press

Manchester Polytechnic, Institute of Advanced Studies 1975 *Ask the Kids: A Study of Children's Attitudes and Ideas on the Use and Layout of School Grounds*. Manchester: Planning the School Site Research Project

Manning, P 1967 *The Primary School: an Environment for Education*. Liverpool: the Pilkington Research Unit

Martin, B. 1970 'Facing the Wall' in *Official Architecture and Planning*, vol.33, no.7, July 1970, pp.611-13

Mason, S. C. 1964, *The Leicestershire Experiment and Plan*, London: Education Press

Mason, S.C. 1967, 'Introduction', in *British Sculpture and Painting from the Collection of the Leicestershire Education Authority in Collaboration with the Loughborough University of Technology.* London: Whitechapel Gallery

Mason, S.C. 1970 , 'School Buildings', in Mason, ed., *In Our Experience, the Changing Schools of Leicestershire*. London: Longman, pp.4-6

Maynard, Alan 1975 *Experiment with Choice in Education.* London: Institute of Economic Affairs, Hobart paper 64

McConnell, S. 1968 'Elements of Town and Country Planning: Schools', *Official Architecture & Planning*, vol.31, no.10, October 1968, pp.1307-10

McKean, C. 1982 *Architectural Guide to Cambridge and East Anglia Since 1920*. London: Royal Institute of British Architects

Meades, J. 1988 *English Extremists*. London: Blueprint Monographs

Medd, D. 1968 'People in Schools: an Attitude to Design', in RIBA *Journal*, vol. 75, June 1968, pp. 262-68

Medd, D. 2009 *School Design 1920s-1970s: a Personal Account.* Unpublished document.

Medd, M. 1976 *A Right To Be Children: Designing for the Education of Under Fives.* London: RIBA Publications Ltd for the Institute of Advanced Architectural Studies, University of York

Meyer-Bohe, O.&W. 1974 *Neue Schulen.* Tübingen: Verlag Ernst Wasmuth

Middleton, M. 1967 *Group Practice in Design*. London: Architectural Press

Miller, L. and Pound, L 2010 *Theories and Approaches to Learning in the Early Years*. London: Sage Publications

Mills, S. 1968 'The Developers', in *Official Architecture and Planning*, vol.29, no.9, September 1966, pp.1280-85

Ministry of Education 1945a *Memorandum on the Building Regulations Being the Regulations Dated March 24 1945 Prescribing Standards for School Premises* (Statutory Rules and Orders, 1945, no. 345). London: HMSO [revised in 1951, 1954, 1959, 1971, 1972, 1981 and 1996]

Ministry of Education 1945b *The Nation's Schools: Their Plans and Purposes* Ministry of Education Pamphlet No. 1. London: HMSO

Ministry of Education 1957 'The Story of Post-War School Building', Pamphlet no. 33. London:HMSO

Ministry of Education 1958 *Secondary Education for All: a New Drive*, Cmnd 604. London: HMSO

Ministry of Education 1960 *The Youth Service in England and Wales* ('the Albemarle report'), London: HMSO

Ministry of Housing and Local Government 1964 *The South East study.* London: HMSO

Ministry of Public Building and Works 1963 *Dimensional Co-ordination for Industrialised Building: Preferred Dimensions for Educational, Health and Crown Office Buildings*. London: HMSO

Ministry of Works 1944 *Standard Construction for Schools*. Post-War Building Studies No. 2 'the Wood report'. London: HMSO

Ministry of Works 1945 *The Lighting of Buildings*. Post-War Building Studies No. 12. London: HMSO

Mitchell, B.R. 1988 *British Historical Statistics*. Cambridge: Cambridge University Press

Mitchell, D. 1977 'Art Patronage by the London County Council (LCC) 1948-1965' in *Leonardo*, vol. 10, pp.207-12

Moore, H. and Wilkinson, A.G. 2002 *Henry Moore: Writings and Conversations*. Berkeley: University of California Press

National Society 1816 *Annual Report of the National Society for Promoting the Education of the Poor in the Principles of the Established Church*. Printed at Whitechapel

Peter Newsam 2008 'What Price Hyacinths? An Appreciation of the Work of Sir Alec Clegg' in *Education 3-13,* vol. 36, no. 2, May 2008, pp.109-16

Oddie, G. 1963 'The New English Humanism: Prefabrication in its Social Context' in *Architectural Review*, vol. 43, no.799, September 1963, pp.180-82

Office for National Statistics *Population Trends.* London: Office for National Statistics. Available at http://www.statistics.gov.uk/statbase/product.asp?vlnk=6303, accessed 15 August 2012.

Orna, B. 1964 'Anthony Hollaway: Artist for Architecture' in *Studio International*, vol. 167, no.849, January 1964, pp.58-63

Overy, P. 2007 *Light, Air and Openness*. London: Thames and Hudson

Page, P. 1982 'School Buildings—Essex County Council Architect's Department', in Hawkes, D. and Owers, J. 1982 *The Architecture of Energy.* Harlow: Construction Press, pp.195-215

Parker, D. 2005 *John Newsom: A Hertfordshire Educationist*. Hatfield: University of Hertford Press

Parry, M. and Archer, A. 1974 *Pre-School Education*. Schools Council Research Studies. London: Macmillan

Pearson, E. 1971 'Informal Learning', in *Architectural Review*, vol.150, no.893, July 1971, pp. 3-8

Pearson, E. 1972 *Trends in School Design*. London: McMillan

Pearson, L. 2004 'To Brighten the Environment: Ceramic Tile Murals in Britain, 1950-70', in *Journal of the Tiles and Architectural Ceramics Society*, vol. 10, pp.12-17

Pearson, L. 2007 'Roughcast Textures with Cosmic Overtones' in the *Decorative Arts Society Journal*, vol. 31, pp.117-37

Pedley, R. 1955 *Comprehensive Schools Today*, London: Councils and Education Press

Perkin, G. 1963 'Concrete Murals', in *Concrete* Quarterly, no.57, April/June 1963, pp.15-21

Pevsner, N. and Williamson, E. 1978 *Derbyshire*. Harmondsworth: Penguin

Pevsner, N. and Williamson, E. 1984 *Leicestershire and Rutland*. Harmondsworth: Penguin

Pevsner, N. and Williamson, E. 1994 *Buckinghamshire*. Harmondsworth: Penguin

Pile, Sir W. 1979 *The Department of Education and Science.* London: George Allen & Unwin

Platt, J. 1969 'The Development of SEAC' in *RIBA Journal*, vol. 77, May 1969, pp.200-02

Poole, D. 1982 'Low Energy Building Design--Hampshire County Architect's Department', in Hawkes, D. and Owers, J. 1982 *The Architecture of energy.* Harlow: Construction Press, pp.216-227.

Pooley, F. 1963a 'Planning the New School: a Buckinghamshire Breakthrough?' in *Education*, vol.121, 29 March 1963, pp.607-09

Pooley, F. 1963b 'Post-War School Building 5: Buckinghamshire', in *Education*, vol. 121, 28 June 1963, pp.1279-81

Pooley, F. 1968 'Architects' Approach to Architecture', in *RIBA Journal*, vol.75, March 1968, pp.104-11

Powell, K. 2012 *Ahrends, Burton and Koralek*. London: RIBA Publications

Powell, M. 1967 'New Thinking in School building', in *Building Materials*, vol.27, no.1, January 1967, pp.33-35

Powell, W. 1995 *Edward Cullinan Architects.* London: Academy editions

Powers, A. 1987 'Labour of Love', in *Country Life*, vol.181, no.18, April 30 1987, pp.120-21

Powers, A. 2009 *Aldington, Craig & Collinge*. London: RIBA Publishing

Quantrill, M. 1989 *Alvar Aalto: a Critical Study*. New York: New Amsterdam Books

Quick, A. 1990 *Charterhouse: A History of the School*. London: James and James

Radford, A. 2009 *An Enquiry into the Abolition of the Inner London Education Authority (1964 To 1988), with Particular Reference to Politics and Policy Making*. A thesis submitted for the degree of PhD, Department of Education,

University of Bath. Available at: http://opus.bath.ac.uk/18984/1/Radford-A-2009.pdf, accessed 15 August 2012.

Rée, H. 1973 *Educator Extraordinary: the Life and Achievement of Henry Morris*. London: Longman

Rimmington, G. T. 1984 'The Comprehensive School', in Rimmington, ed.,*The Comprehensive Issue in Leicester and Other Essays*. Peterborough: Iota Press

Ringshall, R., Miles, M. and Kelsall, F. 1983 *The Urban School: Buildings for Education in London 1870-1980.* London: Greater London Council

Robinson, E. 1999 *Twentieth Century Buildings in Hackney*. London: Hackney Society

Rogers, T.J.G. 1980, 'The Bosworth College: 1969-78', in Fairbairn, A. N. (ed.), *The Leicestershire Plan*. London: Heinemann

Rosenberg, E. 1992 *Architect's Choice: Art in Architect in Great Britain since 1945*. London: Thames and Hudson

Roth, A. 1966 *New School Building*. London: Thames & Hudson

Royal Institute of British Architects 1972 *Long Life, Loose Fit, Low Energy Study*. London: RIBA: Progress report on the study launched at the Institute's spring congress of May 1972.

Rubinstein, D. 1979 'Ellen Wilkinson Reconsidered', in *History Workshop Journal*, vol. 7, pp.161-69

Russell, B. 1981 *Building Systems, Industrialization, and Architecture*. London: John Wiley & Sons

Russell, B. 1984 'CLASP Reappraisal', in *Architects' Journal*, vol.179, no.20, 16 May 1984, pp.51-72

Sadler, S. 2005 *Archigram: Architecture Without Architecture*. Cambridge, Massachusetts: the MIT Press

Saint, A. 1987 *Towards a Social Architecture: the Role of School Buildings in Post-War England* .New Haven: Yale UP

Saint, A. (ed) 1989 *Politics and the People: the London County Council, 1889-1965*. London: Continuum International Publishing Group

Saint, A. 1992 'Historical Background on Post-War School Buildings' in *General Principles for the Selection of Post-1939 Education Buildings for Listing*. Unpublished report for English Heritage's Post-war Steering Group

Saint, A. 2003 'Early Days of the English Open-Air School (1907-1930)', in Châtelet, A. (et al, eds) *Open-Air Schools: an Educational and Architectural Venture in Twentieth-Century Europe*. Paris: Focales Editions Recherches

St John Wilson, C. 1961 'Open and Closed' in *Perspecta: the Yale Architectural Journal*, vol.7, December 1961, pp.97-102

St John Wilson, C. 1995 *The Other Tradition of Modern Architecture: The Uncompleted Project*. London: Academy Editions, 1995

Seaborne, M. 1968 'William Brockington, Director of Education for Leicestershire 1903-47', in Simon, E. B. (ed.), *Education in Leicestershire 1540-1940*. Leicester: Leicester University Press

Seaborne, M. 1971 *Primary School Design*. London: Routledge

Seaborne, M. and Lowe R. 1977 *The English School: its Architecture and Organisation Vol. II: 1870-1970)* London: RKP

Sheppard, R. 1977 '25 Years of British Architecture 1952-1977: Public Education' in *RIBA Journal*, vol. 84, no. 5, May 1977, pp.184-86

Silvers, A. 2009 'An Essay on Modelling: the Social Model of Disability' in Ralston, D.C. and Ho J. (eds) *Philosophical Reflections on Disability*. Dordrecht: Springer

Smith, G. 1987 'Whatever Happened to Educational Priority Areas?', in *Oxford Review of Education*, vol. 13, no.1, pp.23-38

Smithson, P. 'Reflections on Hunstanton', in *Architectural Research Quarterly*, Summer 1997, no. 8, pp.32-43

Stansfield Smith, C. 1984 'Developments in Social Architecture in Hampshire' in *Trans. RIBA*, vol. 3, no. 2, pp.39-47

Stansfield Smith, C. 1994. 'The Built Technology of the Learning Environment'. In J. Steele and J. G. Hedberg (eds), *Learning Environment Technology: Selected Papers from LETA 94*, pp.326-329. Canberra: AJET Publications

Stirling, J. 1966 'Architect's Approach to Architecture' in *Zodiac*, no.16, pp.159-68

Sutherland, J. 2010 'Revival of Structural Timber after 1945' in *Construction History*, vol. 25, pp.101-13

Swain, H. 1965, report, *Proceedings of the Institution of Civil Engineers*, vol.30, March 1965, p.499

Swain, H. 1974 'Successful Design for Mining Subsidence', *Architects' Journal*, vol.159, no.19, 8 May 1974, pp.1047-54

Tawney, R.H. 1922 *Secondary Education for All*. London: George Allen & Unwin

Temple, P. 2008 *South East Clerkenwell*. Survey of London, vol.46. New Haven: Yale University Press

Temple, P. 2008 *Northern Clerkenwell and Pentonville*. Survey of London, vol.47. New Haven: Yale University Press

Thistleton, A. 2009 'Haggerston School for Girls', in Rigg, L (ed) *Hackney: Modern, Restored, Forgotten, Ignored*. London: Hackney Society

Thompson, A. nd *From Butler to Blunkett and Beyond: School Building in England and the Role of A&B Branch*. Unpublished paper, *c.*2001, available at http://www.oecd.org/dataoecd/41/42/2675804.pdf, accessed 15 August 2012.

Van Eych, A. 1962 'Steps Towards a Configurative Discipline', in *Forum*, no. 3, pp. 81-94

Venturi, R. 1966 *Complexity and Contradiction in Architecture*. New York: The Museum of Modern Art Press

Ward, C. 1975 'The Almighty Wall' in *Bulletin of Environmental Education,* no.56, December 1975, pp.17-20

Ward, C. 1976 *British School Buildings; Designs and Appraisals 1964-74.* London: the Architectural Press

Wardall, K. 1953-4 'Some Observations on the Relationship between Time and Mining Subsidence', *Transactions of the Institute of Mining Engineering*, vol.113, part 5, 1953-4, pp.471-82

Watts, J. (ed.) 1977 *The Countesthorpe Experiment*. London: George Allen and Unwin

Webb, M 1969 *Architecture in Britain Today*. Feltham: Hamlyn for Country Life Books

Weeks, A. 1986 *Comprehensive Schools: Past, Present and Future*. London: Methuen

West Riding County Council Education Committee 1967 *Preparations for Middle Schools in Certain Areas of the West Riding*. West Riding County Council Education Committee

Weston, R. 1991 *Schools of Thought: Hampshire Architecture 1974-1991* Winchester: Hampshire County Council.

Whitbread N. 1972 *The Evolution of the Nursery-Infant School 1800-1970*. London: Routledge & Paul

Wigglesworth, G.H. *et al* 1965 'The Work of the DES Development Group', *Architectural Association Journal*, vol.80, pp.267-76

Wigglesworth, G.H. 1966 'Schools Consortia and the Future', *RIBA Journal*, vol.73, no.6, June 1966, pp.265-72

Wilson, H. 1964 *The New Britain: Labour's Plan*. Harmondsworth: Penguin Books

Wix, D. and Keil, I. 1992 *Rawlins, the First Three Hundred Years*, Quordon: Rawlins Community College

Woods, M. 2005 *Contesting Rurality: Politics in the British Countryside*. London: Ashgate Publishing Limited

Wyatt, N. 2010 *The Development of Middle Schools in England: an Historical Source Book*. Unpublished document for the National Middle Schools' Forum. http://www.middleschools.org.uk/documents/history/A%20brief%20history%20of%20middle%20school%20movement.doc, accessed 15 August 2012.

Yorke Rosenberg Mardall 1972 *The Architecture of Yorke Rosenberg Mardall 1944/1972*. London: Lund Humphries

Zillekens, E. (ed) 2010 *Charterhouse: a 400th Anniversary Portrait.* London: Third Millennium Publishing.

DES publications

(a) Building Bulletins

Written anonymously by staff of the Ministry of Education/Department of Education and Science and published by Her Majesty's Stationary Office in London; number, edition and date of publication date shown as appropriate.

1: *New Primary Schools*. 1949. 2nd ed. 1955.
2: *New Secondary Schools*. 1950. *Supplement*. 1951. 2nd ed. 1954.
3: *Supply of Building Materials in* 1951. 1950.
4: *Cost Study*. 1951. 2nd ed. 1957. 3rd ed. 1972.
5: *New Colleges of Further Education*. 1951. 3rd ed. 1959.
6: *Primary School Plans*. 1951. *for* 2nd ed. *See BB23*.
7: *Fire and the Design of Schools*. 1952. 2nd ed. 1955; 3rd ed. 1961; 4th ed. 1971; *5th ed*. 1975; *6th ed*. 1988.
8: *Development Projects: Wokingham School*. 1952. 2nd ed. 1955
9: *Colour in School Buildings*. 1953. 2nd ed. 1956. 3rd ed. 1962. 4th ed. 1969. 10: *New School Playing Fields*. 1955.
11: *The Design of School Kitchens*. 1955.
12: *Site Labour Studies in School Building*. 1955.
13: *Fuel Consumption in Schools*. 1955. *First Supplement (Test With Oil-Fired Warm Air System)* 1957; *Second Supplement (Tests With Coal-Fired Automatic Stoker Warm Air System)* 1960.
14: *Day* E.S.N. *Schools*. 1956.
15: *Training College Hostels*. 1957.
16: *Development Projects: Junior School, Amersham*. 1958.
17: *Development Projects: Secondary School, Arnold*. 1960.
3: *Village Schools*. 1961.
18: *Schools in the* U.S.A. 1961.
19: *the Story of* CLASP. 1961.
20: *Youth Service Buildings: General Mixed Clubs*. 1961.
21: *Remodelling Old Schools* [Greenhead High School for Girls]. 1963.
22: *Youth Club, Withywood, Bristol*. 1963.
*23. Primary School Plans: a Second Selection (*2nd ed. of BB6*)*. 1964
24: *Controlling Dimensions for Educational Building*.1964.
25: *Secondary School Design: Sixth Form and Staff*. 1965.
26: *Secondary School Design: Physical Education*. 1965.
27: *Boarding Schools for Maladjusted Children* [Hailey Hall Residential School].1965.
28: *Playing Fields and Hard Surface Areas*. 1966. 2nd ed. 1982.
29: *Harris College, Preston*. 1966.
30: *Secondary School Design: Drama and Music*. 1966.
31: *Secondary School Design: Workshop Crafts*. 1966.
32: *New Problems in School Design: Additions for the Fifth form*. 1966.
33: *Lighting in Schools*. 1967.
34: *Secondary School Design: Designing for Arts and Crafts*. 1967.
35: *New Problems in School Design: Middle Schools: Implications of Transfer at 12 or 13 Years*. 1966.
36: *Eveline Lowe Primary School, London*. 1967.
37: *Student Residence*. 1967.
38: *School Furniture Dimensions: Standing and Reaching*. 1967, 2nd ed. 1974.
39: *Designing for Science: Oxford School Development Project*. 1967.
40: *New Problems in School Design: Comprehensive Schools From Existing Buildings*. 1967.
41: *Rosebery County School for Girls, Epsom, Surrey Sixth Form Centre*. 1967.
42: *the Coordination of Components for Educational Building*. 1968.

43: *Secondary School Design: Modern Languages*. 1968.
44: *Furniture and Equipment Dimensions: Further and Higher Education: 18-25 Age Group*. 1970.
45: *CLASP/JDP: the Development of a Building System for Higher Education*. 1970.
46: *British School Population Survey*, 1972.
47: *Eveline Lowe School: Appraisal*. 1972.
48: *Maiden Erlegh Secondary School*. 1973. *Cost Analysis Supplement* 1975.
49: *Abraham Moss Centre*.1973.
50: *Furniture and Equipment: Working Heights and Zones for Practical Activities*. 1973.
51: *Acoustics in Education Buildings*. 1975.
52: *School Furniture: Standing and Sitting Postures*. 1976.
53: *Guillemont Junior School, Farnborough, Hampshire*. 1976.
54: *The Consortia: Co-operation in Educational Building*. 1976.
55: *Energy Conservation in Educational Buildings*. 1977.
56: *Nursery Education in Converted Space*. 1978.
57: *The Renewal of Primary Schools: Planning for the Eighties*.1980.
58: *Storage of Pupils' Personal Belongings*. 1980.
59: *Victoria Centre, Crewe: School and Community Provision in Urban Renewal*. 1981.
60: *Designing a Medium-Sized Public Library*. 1981.
61: *Designing for Children with Special Educational Needs. Ordinary Schools*. 1984.
62: *Body Dimensions of the School Population*. 1985.
63: *Craft Design and Technology Accommodation in Secondary Schools*. 1985.
64: *Adaptable Facilities in Further Education in Business and office Studies*. 1986.
65: *Adaptable Teaching Kitchens in Further Education*. 1986.
66: *Adaptable Facilities in Further Education for Accommodation Studies*. 1988.
67: *Crime Prevention in Schools. Practical Guidance*. 1987.
68: *Weald College, Harrow Development Project*. 1989.
69: *Crime Prevention in Schools. Specification, Installation and Maintenance of intruder Alarm Systems*. 1989.
70: *Maintenance of Mechanical Services*. 1990.
71: *The Outdoor Classroom: Educational Use, Landscape Design and Management of School Grounds*. 1990. 2nd ed. 1999.
72: *Educational Design Initiatives in City Technology Colleges*. 1991.
73: *Maintenance and Renewal in Educational Buildings. a Guide To Energy Efficient Refurbishment*. 1991.
74: *A School for Armenia*. 1991.
75: *Crime Prevention in Schools. Closed Circuit TV Surveillance Systems in Educational Buildings*. 1991.
76: *Maintenance and Renewal in Educational Buildings. Maintenance of Electrical Services*. 1992.
77: *Designing for Pupils with Special Educational Needs. Special Schools*. 1992.
78: *Crime Prevention in Schools. Security Lighting*. 1993.
79: *Passive Solar Schools: a Design Guide*. 1994.
80: *Science Accommodation in Secondary Schools*. 1995, revised 1999.
81: *Design and Technology Accommodation in Secondary Schools*. 1996, revised 2004.
82: *Area Guidelines for Schools*. 1996. (Superseded by BB98: 2004 and BB99: 2006).
83: *Schools Environmental Assessment Method (SEAM)*. 1996.
84: *Boarding Accommodation: a Design Guide*. 1996.
85: *School Grounds: a Guide to Good Practice*. 1997.
86: *Music Accommodation in Secondary Schools: a Design Guide*. 1997, revised 2010.
87: *Guidelines for Environmental Design in Schools*. Revision of Design Note 17). 1997.
88: *Fume Cupboards in Schools*. (Revision of Design Note 29). 1998.
89: *Art Accommodation in Secondary Schools: a Design Guide*. 1998.

90: *Lighting Design for Schools*. 1999.
91: *Access for Disabled People to School Buildings*. 1999.
92: *Modern foreign Languages Accommodation*. 2000.
93: *Acoustic Design of Schools: a Design Guide*. 2003
94: *Inclusive School Design: Accommodating Pupils with Special Educational Needs and Disabilities in Mainstream Schools*. 2001
95: *Schools for the Future: Designs for Learning Communities*. 2002.
96: *Meeting the Educational Needs of Children and Young People in Hospital*. 2003.
98: *Briefing Framework for Secondary School Projects* (Revision of BB82) 2004.
99 Briefing Framework for Primary School Projects. 2006.
100: *Design for Fire Safety in Schools*. 2007.
101: *Ventilation of School Buildings*. 2006.
102: *Designing for Disabled Children and Children with Special Educational Needs*. 2008.

(b) Design Notes

a Series Supplementing the Building Bulletins, Written Anonymously By Staff of the Department of Education and Science and Published By Her Majesty's Stationary office in London; Number and Publication Date Shown
1: *Building for Nursery Education*. 1968.
2. Henry Fanshawe School, Dronfield, Derbyshire. 1969
5: *The School and the Community*. 1970.
6: *Sedgefield School, Durham*. 1970.
7: *USA Visit*. 1970.
8: *Polytechnics: Planning for Development*. 1972.
9: *Designing for Further Education*. 1972.
10: *ESN Special Schools. Designing for the Severely Handicapped*. 1972.
11: *Chaucer Infant & Nursery School, Ilkeston, Derbyshire*. 1973.
12: *Space Utilization in Universities and Polytechnics*. 1974.
14: *School and Community-2: Provision for Joint Use and Sharing in a Changing World*. 1976.
15: *Crewe Central Area Development: Provision for School and Community in an inner Urban Area*. 1977.
16: *Energy Conservation in Two Oxfordshire Schools*. 1978.
17: *Guidelines for Environmental Design and Fuel Conservation in Educational Buildings*. 1979; Revised 1981.
18: *Access for the Physically Disabled To Educational Buildings*. 1979. *Second Edition:* 1984.
19: *Building User Manuals: Guillemont Junior School*. 1979.
20: *Polytechnics Planning for Change: Supplement to Design Note 8*. 1979.
21: *Sedgefield Secondary School, Durham: Phase II: Base for First Year and Music*. 1980.
22. Accommodation for the 16-19 Age Group: NAFE: Designing for Change. 1980.
23: *Accommodation for the 16-19 Age Group: Four Colleges in 1980*. 1980.
24: *Compliance With Constructional Standards: an Account of Good Practice in Local Authority Architect's offices*. 1981.
25: *Lighting and Acoustic Criteria for the Visually Handicapped and Hearing Impaired in Schools*. 1981.
26: *Opportunities for Improvement: Penistone Grammar School: a Self-Financing Strategy to Meet Falling Rolls*. 1981.
27: *Falling School Rolls and Premises-Related Costs*. 1981.
28: *Opportunities for Improvement: North-East Wiltshire: a Review of Secondary Education and Facilities in the Light of Falling Rolls*. 1981.
29: *Fume Cupboards in Schools*. 1982.
30: *Educational Furniture for the 16-19 Age Group: Specification and Design*. 1982.
31: *Educational Planning in North America: a Review of Current Trends in Planning and Design*. 1982.

32: *Designing 8-12 Middle Schools*. 1983.
33: *Area Guidelines for Sixth form, Tertiary and* NAFE *Colleges*. 1983.
34: *Area Guidelines for Secondary Schools*. 1983.
35: *Accommodation for the New Training Courses*. 1983.
36: *Secondary School Playing Fields: North-East Wiltshire*. 1983.
37: *Assessing the Capacity of Further Education Buildings*. 1984.
38: *Meeting the Educational Needs of Children in Hospital*. 1984.
39: *Educational Furniture for the 16-19 Age Group: Space Standards*. 1984.
40: *Maintenance and Renewal in Educational Buildings: Needs and Priorities*. 1985.
41: *Accommodation for Changes in Public Sector Higher Education*. 1985.
42: *the Dukeries Complex: a Place for the Family*. 1985.
43: *CDT Accommodation in a Secondary School: John Kyrie School, Ross-On-Wye*. 1985.
44: *Area Guidelines for Advanced Further Education Institutions*. 1985.
45: *Assessing the Capacity of Public Sector Higher Education Buildings*.1985.
46: *Maintenance and Renewal in Educational Buildings: Flat Roofs: Criteria and Methods of Assessment, Repair and Replacement*. 1985.
47: *St John's School, Sefton: the Design of a New Primary School*. 1989.
48: *Graffiti: Removal and Control*. 1989.
49: *Further Education and Sixth form Colleges: Development Strategies for Accommodation*. 1992.
50: *Accommodation for Changes in Further Education*. 1994

APPENDIX 1: GLOSSARY OF ABBREVIATIONS AND ACRONYMS

3M/RT	Rationalised Traditional (West Riding County Council)
AA	Architectural Association
AASTA	Association of Architects, Surveyors and Technical Assistants
A&B Branch	Architects and Building Branch
ACP	Architects' Co-Partnership
AJ	*Architects' Journal*
ASC	Anglican Standing Conference
BRE	Building Research Establishment
BRS	Building Research Station
BAC	Bristol Aircraft Corporation (system)
BSF	Buildings Schools for the Future
CACE(E)	Central Advisory Council for Education (England)
CAD	Computer Aided Drafting
CAOC	Chief Architects of Consortia
CB	County Borough
CTC	City Technology College
CDT	Craft Design and Technology
CE	Church of England
CEMA	Council for the Encouragement of Music and the Arts
CEO	Chief Education Officer
CGS	Curriculum Study Group
CLASP	Consortium of Local Authorities Special Programme
CLAW	Consortium of Local Authorities in Wales
CPB	Chamberlin, Powell and Bon
DES	Department for Education and Science (1964-92)
Edcon	Liverpool-based consortium (W. and J.B. Ellis, Desmond Williams and Associates and Burles Newton and Partners)
EFL	Educational Facilities Laboratories (New York)
EPA	Educational Priority Area
ESN	Educationally Sub-normal
FE	Further Education
GCE	General Certificate of Education
GCSE	General Certificate of Secondary Education
GMW	Gollins Melvin Ward
GLC	Greater London Council (1965-86)
GRP	Glass-Reinforced Plastic
HE	Higher Education
HMI	Her Majesty's Inspectorate (or Inspector) of Education.
HMSO	Her Majesty's Stationary Office
HORSA	Hutting Operation for the Raising of the School Leaving Age
IBIS	Industrialised Building in Steel
ICT	Information and Communication Technology
IED	Integrated Environmental Design

ILEA	Inner-London Education Authority (1965-90)
JDP	Joint Development Project (CLASP)
JMI	Junior Mixed and Infant school or department.
LB	London Borough
LCC	London County Council
LEA	Local Education Authority
LFM	Local Financial Management
LIE	Lyons, Israel and Ellis
LIU	Laboratories Investigation Unit
LL/LF/LE	Long Life / Loose Fit / Low Energy
LTL	Learning Through Landscapes
MACE	Metropolitan Architectural Consortium for Education
MBC	Method of Component Building (Essex County Council)
Method	Consortium for Method Building (also CMB)
MKDC	Milton Keynes Development Corporation
MMC	'Modern Methods of Construction'
MoE	Ministry of Education
MoHLG	Ministry of Housing and Local Government
MPBW	Ministry of Public Buildings and Works
NUT	National Union of Teachers
OFSTED	Office for Standards in Education, Children's Services and Skills
ONWARD	Organisation of North Western Authorities for Rationalised Design
PCP	Primary Capital Programme
PE	Physical Education
PH	Physically Handicapped
PSAL	Permanent Supplementary Artificial Lighting
PTA	Parent-Teacher Association
PWSG	Post-War Steering Group
QS	Quantity Surveyor
'Rat. trad.'	Rationalised traditional construction
RBS	Rationalised Building System (GLC system)
RC	Roman Catholic
RCHME	Royal Commission on the Historical Monuments of England
RIBA	Royal Institute of British Architects
RMJM	Robert Marshall, Johnson-Marshall and Partners
ROSLA	Raising of the School Leaving Age
RSM	Research into Site Management (Nottinghamshire County Council)
SCOLA	Second Consortium of Local Authorities
SCSD	School Construction Systems Development
SEA	Society for Education in Art
SEAC	South Eastern Architects' Collaboration
SEN	Special Educational Need
SERC	Science and Engineering Research Council
TCWP	Technical Co-ordination Working Party
TYEI	Technical Vocational Educational Initiative
UDC	Urban Development Corporations
YRM	Yorke Rosenberg and Mardall

Appendix 2: Listed Post-War Schools as of October 2012

Name	*Architect*	*Date*	*Grade*	*Listed*
Burleigh Primary School, Cheshunt, Broxbourne, Hertfordshire	Herts County Council	1946-48	II	29.3.1988
Essendon School, Welwyn Hatfield, Hertfordshire	Herts County Council	1947-48	II	30.3.1993
Barclay School, Stevenage, Hertfordshire	Yorke, Rosenberg & Mardall	1947-9, 1951	II	30.3.1993
Morgan's Junior School, Hertford, Hertfordshire	Herts County Council	1948-49	II*	5.7.1998
Aboyne Lodge School, St Albans, Hertfordshire	Herts County Council	1948-50	II	24.3.2010
Templewood JMI, Welwyn Garden City, Hertfordshire	Herts County Council	1949-50	II*	30.3.1993
Woodberry Down Primary School, Hackney	LCC Architect's Department	1949-50	II	23.1.2007
Greenside School, Westville Road, Hammersmith	Ernö Goldfinger	1950-51	II*	30.3.1993
Danegrove Infants School, East Barnet, Barnet	Architects' Co-Partnership	1950-51	II	30.3.1993
Brandlehow School, Putney, Wandsworth	Ernö Goldfinger	1950-51	II	30.3.1993
Susan Lawrence and Elizabeth Lansbury Schools, Tower Hamlets	Yorke, Rosenberg & Mardall	1950-52	II	5.3.1998
Greenfields School, Oxhey, Watford, Hertfordshire	Herts County Council	1951-52	II	30.3.1993
Limbrick Wood School, Tile Hill, Coventry	Ministry of Education and Coventry City Council	1951-52	II	30.3.1993
St Crispin's School, Wokingham, Berkshire	Ministry of Education	1951-53	II	30.3.1993
Smithdon School, Hunstanton, West Norfolk	A. and P. Smithson	1951-54	II*	30.3.1993
Phoenix School, Bow, Tower Hamlets	Farquharson & McMorran	1951-52	II*	30.3.1993
Hallfield School, Paddington, Westminster	Drake & Lasdun	1953-55	II*	29.3.1998
Woodlands School, Tile Hill, Coventry	Ministry of Education	1952-54	II	30.3.1993
Elliott School, Wandsworth	London County Council	1953-56	II	30.3.1993
Bousfield School, Kensington	Chamberlin, Powell & Bon	1954-56	II	30.3.1993
Medlycott Building and War Memorial, Sherborne School, Dorset	O. S. Brakspear	1954-56	II	4.10.1973
Fairlawn School, Honor Oak Road, Lewisham, London	Peter Moro & Michael Mellish	1955-57	II	17.12.2007
Woodside Junior School, Amersham, Chiltern, Buckinghamshire	Ministry of Education	1956-57	II	30.3.1993
Intake Farm School, Mansfield, Nottinghamshire	Notts County Council	1957	II	30.3.1993
Oldbury Wells Schools, East and West, Bridgnorth, Shropshire	Lyons, Israel & Ellis	1957-60	II	30.3.1993
Rhodesway Secondary School, Bradford	Scherrer & Hicks with Bradford City Council	1957-59	II	30.3.1993
Marylebone Lower House, now King Solomon Academy, Westminster,	Leonard Manasseh	1958-60	II*	6 5 1998
Geoffrey Chaucer School, Southwark	Chamberlin, Powell & Bon	1958-60	II	30.3.1993
New Hall, College St, Winchester School, Winchester	Peter Shepheard	1958-60	II	14.1.1974
Up Holland School, Upholland, Lancashire	Lyons, Israel & Ellis	1958-60	II	30.3.1993
Solar Campus (formerly St George's School), Leasowe Road, Wallasey	Emsley Morgan	1960-61	II	22.1.1996
Barstable Grammar School, Basildon, Essex	Yorke, Rosenberg & Mardall	1961-62	II	30.3.1993

Dining and Assembly Hall, Brunswick Park Primary School, Southwark	James Stirling and James Gowan	1961-62	II	4.5.2011
Lilian Baylis School, Lollard St, Lambeth	Architects' Co-Partnership	1962-64	II	20.12.2000
St Paul's Cathedral School, New Change, City of London	Architects' Co-Partnership	1962-67	II*	3.1.2007
Synagogue and Amphitheatre, Carmel College, Oxfordshire	Thomas Hancock	1963, 1965	II	9.12.1999
City of London School for Girls (listed as part of Barbican Complex)	Chamberlin, Powell and Bon	1963-69	II	5.9.2001
Haggerston Girls' School, Weymouth Terrace, Hackney	Ernö Goldfinger	1964-67	II	20.2.2004
Assembly Hall, Bootham School, Bootham School, Bootham, York	Trevor Dannatt	1965-66	II	31 3 2007
Eveline Lowe School, Marlborough Grove, Southwark	DES, David Medd	1965-67	II	3.7.2006
Bromley Hall School for the Physically Handicapped, Tower Hamlets	GLC Architect's Department	1967-68	II	9.1.2012
Julius Gottlieb Boathouse, Carmel College, Oxfordshire	Sir B Spence, Bonnington & Collins	1969-70	II*	25.11.1999
Sports Pavilion at King Edward VI Grammar School, S-on-Avon	Robert Harvey	1971	II	12 9 2011
Christ's Hospital School Theatre, nr Horsham, West Sussex	Howell, Killick, Partridge & Amis	1974-76	II*	4 12 2000
Edinburgh Dome, Malvern Girls College, Malvern Worcs	Godwin & Cooper	1977-8	II	21 5 2009

Total: 45

ENGLISH HERITAGE RESEARCH AND THE HISTORIC ENVIRONMENT

English Heritage undertakes and commissions research into the historic environment, and the issues that affect its condition and survival, in order to provide the understanding necessary for informed policy and decision making, for the protection and sustainable management of the resource, and to promote the widest access, appreciation and enjoyment of our heritage. Much of this work is conceived and implemented in the context of the National Heritage Protection Plan. For more information on the NHPP please go to http://www.english-heritage.org.uk/professional/protection/national-heritage-protection-plan/.

The Heritage Protection Department provides English Heritage with this capacity in the fields of building history, archaeology, archaeological science, imaging and visualisation, landscape history, and remote sensing. It brings together four teams with complementary investigative, analytical and technical skills to provide integrated applied research expertise across the range of the historic environment. These are:

* Intervention and Analysis (including Archaeology Projects, Archives, Environmental Studies, Archaeological Conservation and Technology, and Scientific Dating)
* Assessment (including Archaeological and Architectural Investigation, the Blue Plaques Team and the Survey of London)
* Imaging and Visualisation (including Technical Survey, Graphics and Photography)
* Remote Sensing (including Mapping, Photogrammetry and Geophysics)

The Heritage Protection Department undertakes a wide range of investigative and analytical projects, and provides quality assurance and management support for externally-commissioned research. We aim for innovative work of the highest quality which will set agendas and standards for the historic environment sector. In support of this, and to build capacity and promote best practice in the sector, we also publish guidance and provide advice and training. We support community engagement and build this in to our projects and programmes wherever possible.

We make the results of our work available through the Research Report Series, and through journal publications and monographs. Our newsletter *Research News*, which appears twice a year, aims to keep our partners within and outside English Heritage up-to-date with our projects and activities.

A full list of Research Reports, with abstracts and information on how to obtain copies, may be found on www.english-heritage.org.uk/researchreports

For further information visit www.english-heritage.org.uk

ENGLISH HERITAGE

ISSN 2046-9799 (Print)
ISSN 2046-9802 (Online)