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## Technological Change and Industrial Relations in the British Postal Service 1969-1975

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INSTITUTE FOR CONTEMPORARY BRITISH HISTORY, KING'S COLLEGE LONDON

# Technological Change and Industrial Relations in the British Postal Service

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1969-1975

By Peter Sutton

**Submitted in 2012 for PhD in History. Formally examined in April, 2013.  
Supervised by Professor Patricia M. Thane and Professor David Edgerton**

## **Abstract**

This is a history of the mechanisation programme in the British postal service in the 1960s and 1970s, providing a record of the first six years of the network restructuring project known as the Letter Post Plan. This involved the introduction of automated sorting and coding machines and the creation of large, mechanised sorting offices. This brought fundamental changes to mail operations and was the subject of much disagreement and discussion within the industry. The key groups involved were unions, management and engineers, and their roles are considered through planning, negotiation and implementation of the plan. The central theme of the thesis is the interrelation of new technology and industrial relations. The main issues addressed include: the reasons for commissioning the plan in 1969; the preparations made for organisational change including R&D, financial modelling, training and consultation; the effects of the political and economic troubles of the 1970s; the introduction of new consultation arrangements following an embargo on new technology by the Union of Post Office Workers in 1972; and the course of negotiations which led to agreement upon a revised plan in 1975.

The Post Office has been criticised over the introduction of mechanisation in this period, including charges of naive management, inadequate engineering and union obstruction. The limited attention the subject has received from historians has echoed this. This thesis contests this interpretation by arguing that the Post Office deserves more credit for the design and implementation of the plan, and that its problems were largely caused by external political and economic forces. It offers a detailed account of the workings of the postal service and the political and technical challenges faced in changing its operations, documenting several progressive and constructive aspects of this process. This therefore contributes to a historiographical reinterpretation of 1970s industrial politics and questions the negative portrayal of the nationalised industries in this period.

The research is based primarily on the archival holdings of the British Postal Museum & Archive in London, including policy papers and board minutes, scientific and technical reports, union newspapers and publications, diagrams, photographs and correspondence. Other resources include the Modern Record Centre in Warwick, the National Archives, the works of modern postal historians and literature in the history of science, technology, labour and twentieth century public enterprise.

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Peter Sutton

London, December 2012

## Terms and Abbreviations

<b>BMC</b>	Buildings and Mechanisation Committee
<b>COPOU</b>	Council of Post Office Unions. Umbrella group for the twelve major unions representing nearly all PO staff.
<b>DCF</b>	Discounted Cash Flow analysis. A costing method used in forecasting financial returns on capital expenditure.
<b>EC</b>	Executive Committee. The elected leadership of a union.
<b>IR</b>	Industrial Relations
<b>JWGIR</b>	Joint Working Group on Industrial Relations
<b>LPP</b>	Letter Post Plan. Formal title of the capital project begun in 1969 to restructure the postal system and mechanise sorting.
<b>LPR</b>	London Postal Region
<b>MAC</b>	Mechanical Aids Committee
<b>MLO</b>	Mechanised Letter Office. Sorting office designated under the Letter Post Plan operating code-sort equipment
<b>MUA</b>	Mail Users Association. Lobby group representing large commercial users of mail.
<b>OCR</b>	Optical Character Recognition
<b>PMB</b>	Postal Mechanisation Branch
<b>POEU</b>	Post Office Engineering Union. The second largest PO union representing telephone and postal engineers.
<b>POMB</b>	Post Office Mechanisation & Buildings Division
<b>POMSA</b>	Post Office Management Staff Association
<b>POUNC</b>	Post Office Users National Council. Industry regulator representing the public interest.
<b>SPLSM</b>	Single Position Letter Sorting Machine
<b>UPW</b>	Union of Post Office Workers. The largest PO union representing c. 175,000-210,000 postal rank and file staff.

# **Introduction**

## **Overview of the thesis**

This thesis is a study of how the British Post Office tried to mechanise the sorting of letters in the post-war period, with an emphasis on the period 1969-1975 when long-made plans for new technology transitioned into implementation. The goal is to offer a detailed account of the relationship between technological change and industrial relations in the postal service. New technology entered the workplace in the form of sorting machines and coding desks during the 1960s and 1970s, based on a plan set in motion after the Second World War to mechanise sorting and restructure the mails network by building Mechanised Letter Offices (MLOs) and issuing every address in Britain with a postcode. This amounted to the largest structural change to the system in the twentieth century. More than twenty years of research and development (R&D) went into creating the scheme, titled the “Letter Post Plan” (LPP), which was approved by the Board in 1969. However, implementation was not smooth. There followed a major breakdown in relations between staff and management, including the largest strike in Post Office history in 1971 and the withdrawal of union cooperation over the introduction of new technology in 1972. A major review of mechanisation policy ensued, leading to a new plan in 1975. These developments came at a time of unprecedented organisational change in which the Post Office was removed from the civil service and reconstituted as a public corporation following the Post Office Act, 1969, in the wake of which a new framework for industrial relations was devised. Many of the records generated by these events have been preserved, offering an opportunity to study the politics of technological change in a nationalised industry in mid-twentieth century Britain. The connections between new technology and industrial relations became especially prominent and explicit in the postal service during the late 1960s and early 1970s, and, in what follows, this period is addressed closely while being considered in the wider context of post-war British social and economic history.

The overarching argument is that the Post Office has been unfairly maligned over the introduction of new technology and that, although the mechanisation programme encountered severe delays and substantial political problems, these were largely caused by external pressures. In the context of a troubled economy and an acrimonious industrial relations climate, the planning and implementation of technological change was, overall, characterised by greater competence and ingenuity than has previously been recognised. The delays and disputes which followed the inauguration of the plan in 1969 have

attracted strong criticism, and yet, in the long run, the decision to mechanise has been justified. From its establishment as a permanent field at the PO after 1945, the goal of mechanisation was to reduce the postal service's dependency on high levels of labour and to improve the efficiency and reliability of its increasingly sprawling and unwieldy mails network, and, over the following decades, it went a long way to achieving this. The planning undertaken before 1969 was thorough, considered, in-depth and of a long term nature, with its roots in sorting machine trials in the 1930s, rather than the faddish appeal of new technology associated with the "White Heat" of the 1960s. A thread of cooperation between staff and management can be traced throughout the post-war planning phase and, although this appeared to break down temporarily in the early 1970s, there is much evidence that new forms of cooperation emerged during a joint effort to mend the situation. The disputes, delays and alterations to the plan during the early 1970s required substantial efforts in consultation and negotiation in order to reach a cross-industry agreement in 1975. While the reasons for these difficulties need to be assessed critically, an undercurrent of beneficial changes in industrial relations and improvements in mechanisation strategy is also evident.

Exposing the extent of the collaborative and constructive efforts required in the mechanisation of the mail offers reasons to question whether the role of nationalised industries in post-war Britain has been adequately understood by historians. The negative portrayal of British industrial politics in this period has led to a popular account in which the problems of industrial politics have been identified as contributing to the crises of the state in 1974 and 1979. Although this is understandable, given that industrial action in the public sector was closely associated with the fall of two governments, it has served to obscure some important and worthwhile changes in the nationalised industries. This thesis demonstrates that although major industrial conflicts were an important element of the wider economic and cultural crisis, it is possible that this masks ongoing beneficial developments behind the scenes. Trade unionism was in this period at its peak in terms of membership and political prominence and has attracted much historical study as a result. Assessing the course and significance of pay disputes in the nationalised industries benefits from a better understanding of attitudes towards technological change and industrial reorganisation, as these were important elements of the political economy of the time. An attempt to improve the reputation of 1970s industrial relations and to expand analysis to get to the heart of interactions between the different sides of particular industries has been advocated as a desirable direction for this field of history.<sup>1</sup> Exposing the PO's commitment to sophisticated and humane technological change under severe external pressures is also intended to rehabilitate a period of postal history commonly regarded negatively. As with the wider account of nationalised industries in the 1970s, there

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<sup>1</sup> John McIlroy, Nina Fishman and Alan Campbell 'Introduction: Approaching Post-War Trade Unionism', in McIlroy, Fishman and Campbell (eds.) *British Trade Unions and Industrial Politics: The High Tide of Trade Unionism, 1964-79* (1999), pp.1-19.

are understandable reasons it has been characterised as a troubled decade for the postal service, and postal mechanisation has been implicated in this. The following chapters critically examine this portrayal.

During the period 1969-1975 the PO experienced unprecedented organisational upheaval in which both Telecoms and Posts were removed from the civil service and were re-formed as semi-autonomous enterprises in a single public corporation. This coincided with a severe downturn in the increasingly inflationary British economy, wreaking havoc in the labour-intensive postal industry. This led to an unfortunate situation in which the postal service endured its most acute industrial relations crisis just as a radical restructuring of the national mail network based on mechanised sorting got underway. While the long-made plans for a concentrated, postcoded, mechanised system were beginning to be implemented, the industry descended into a bitter and lasting dispute over pay. Soon after its inauguration in 1969, the Letter Post Plan was for a time derailed by an increasing trend of industrial confrontation in Britain. Early in 1971 there was a national postal strike which was the first great strike of the 1970s and the largest in PO history. Its causes were not related in any strong sense with mechanisation, but its repercussions were enormous. This thesis documents some effects of the strike on the mechanisation programme and argues that it had a major influence on the decision taken by the Union of Post Office Workers (UPW) – the largest PO union representing c. 175,000-200,000 postal staff<sup>2</sup> – to issue an embargo on cooperating with the introduction of new technology, lasting from 1972-1975. This was a period in which the grievances expressed by the UPW during the strike (to do with low pay and the emergence of commercial management attitudes within what was previously a civil service tradition) did not go away, but were transferred to other areas over which the union had a say, including negotiating a deal for cooperation with mechanisation. This not only continued the strike figuratively, it resumed it literally, in a restricted way. Postal workers, rather than withdrawing from sorting/conveyance/delivery entirely, restricted their withdrawal of cooperation to a highly specific but strategically valuable new method of sorting. A major issue underlying the embargo remained pay, but this slower paced dispute increasingly encompassed the issues of working methods, system organisation and a contested future. In the context of the overall dispute, those aspects concerning working conditions and the long term future of the industry became more prominent between 1972-1975. This led to a paradox in which, although the terms of the mechanisation programme were under dispute, attempts to resolve the problem led to a constructive joint-reappraisal through which some trust was restored.

I therefore argue that although management underestimated the human problems of superimposing a mechanised system onto the traditional manual network during the 1960s planning phase, the design of a second generation of machines and the re-evaluation of the wider project in the

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<sup>2</sup> Figures vary depending on the source and how part-time staff are counted.

early 1970s helped to build bridges between management and staff. This was achieved through more consultation, contributing to agreement over better machines and working conditions, and to a special pay award in 1975 to resolve the conflict. The UPW not only succeeded in securing this sizeable special payment for postal staff, but also a greater degree of involvement in the production of a revised programme for mechanisation. The payment alleviated the pressure on industrial relations by acting outside wage restraint agreements with the government, while the greater involvement in the reappraisal of the plan was an important step in establishing the ongoing extension of consultative provisions which helped pave the way to an industrial democracy experiment at the end of the decade. This phase of reappraisal and consultation helped check the hard-line element in senior management and permitted the UPW a longer-term means of increasing wages in the postman grade. At the same time, it provided forums in which industrial relations could be repaired through detailed negotiations over decisions which were central to the future operations of the industry.

Though politics in the postal service was heavily influenced by wage bargaining in this period, several parts of this thesis also highlight the role of engineers in shaping industrial relations. I will demonstrate that postal engineering became a scientific and systematic field at the PO after 1945 and that the designs which were implemented after 1969 were the product of an ambitious, long-term plan based upon what was referred to as the “code-sort concept”. The design of sorting machines, postcodes and the restructuring of mail circulation was premised on this concept which, by 1969, had become a coherent package of reforms with the ultimate aim of automating all aspects of sorting. The distinctiveness of the British approach is emphasised in this regard, including comparisons with parallel developments in postal mechanisation abroad, with references to America, Canada, Europe, Japan and Australia. For much of the post-war period, the British were widely believed to lead the world in this field, though this began to change in the 1970s, and some reasons for this are suggested. However the role of engineers was not restricted to the design of machines and systems. Key figures in the Engineering Department sat on, or advised, the PO Board on issues such as financial modelling and staff training, and examples of this with connections to the mechanisation of letter sorting are discussed. PO engineers in this period designed new types of work, negotiated changes with unions and tended to view the pursuit of healthy industrial relations as an important element in their Department’s principal purpose: to increase the efficiency and productivity of mail operations. The importance of political considerations in their work is documented throughout, though the focus is mostly on their roles in the development of the first two generations of code-sort machinery: the technology at the heart of the Letter Post Plan.

The first generation of machines slowly came into service after trials in the 1950s and 1960s, leading to the formation of hardware capable of making the code-sort concept a reality. The second

generation of machines was designed during the early 1970s and came into operation from 1975 onwards. In developing the second generation, the role of engineers as mediators between the two conflicting sides of industry was more pronounced, as their energies increasingly focussed on improving the human problems of the changing sorting office environment. The ergonomics and cost-effectiveness of the second generation “Easy-View” coding desk were significant in being explicitly adapted to staff and management needs respectively. As will be shown, the design of sorting machines was largely the work of in-house engineers, but their work was conditioned by requirements established in committees on which both staff and management were represented. This corporate tradition of consultation over new technology meant that unions had a say in the R&D process throughout the post-war period and it is clear that the views of staff were taken more seriously in the design process after the UPW embargo was announced in 1972. Nowhere is this clearer than in studying the changes incorporated in the Easy-View coding desk. The story of its design leads to insights into the psychology of the workplace and the economics of restructuring the network under increased financial constraints. The history of the coding desk plays a central role as the key “human-machine interface” in the emerging mechanised system of mail sorting, and as the technology of most strategic and political significance. But, more broadly, senior engineers exerted increasing influence over management strategy as the industry committed to a technological future.

In summary, there are two distinct contributions this thesis seeks to make. The first is to fill an empirical gap on a major period of technological change in the history of a socially and economically important British institution. Relatively little has been written about the history of the Letter Post Plan and this thesis presents new primary research for the critical period of its development, organised around a thematic framework concerned with the intersection of technological change and industrial relations. The second is to recognise that what has been written on this subject has tended to give a pessimistic impression of events at the Post Office, contributing to the wider negative portrayal of nationalised industries in the post-war period, discussed below. By contrast, this case study offers insights into the nature of organisational change that suggest there are positive and constructive aspects of the subject yet to be considered. This thesis therefore presents evidence that, though severe problems plagued the LPP and the postal service more generally in this period, these difficulties are better understood in a wider context characterised by improvements to the industry jointly secured by three of its major stakeholders: staff, management and engineers. The sources used for this, an outline of the chapters and the overall structure in which they are arranged are summarised at the end of this introduction.



## Historiography and contemporary commentary on postal mechanisation

Until recently the modern Post Office received relatively little attention from historians. Given the scale and diversity of its societal impact in twentieth century Britain, and considering the wealth of relevant primary documentation now available to scholars, this has meant that significant aspects of the PO's recent history, worthy of enquiry, are not adequately understood. Other formerly nationalised industries, such as coal mining and rail transport, have been studied more thoroughly and received greater attention in synthetic works such as William Ashworth's *The State in Business*.<sup>3</sup> This has begun to change in recent years following the publication in 2011 of Duncan Campbell Smith's *Masters of the Post*, which added a second commissioned history to Martin Daunton's *Royal Mail*, published in 1984. This, alongside recent doctoral theses by Helen Glew and Mark Crowley on women's employment, has reinvigorated PO historiography.<sup>4</sup> The other major publication with which I engage is Alan Clinton's *Post Office Workers*, an exhaustive study of PO trade unionism published in 1984.<sup>5</sup> However, the influence of engineers and new technology on industrial relations at the PO is so far little understood. Daunton and Clinton established a framework for understanding the 1970s PO focussed on a national economy in crisis, government incomes policies, TUC policies and the growth of working class unrest. Both alluded to the sizeable political and operational changes involved in mechanisation but chose not to address them while they were still unfolding. Daunton's treatment of the PO's post-war experience was limited to sketching the main issues faced by postal management in the 1960s-1970s. Clinton's treatment was in greater depth but confined to union issues. Of particular relevance is his account of the 1971 strike and appraisal of the UPW campaign against the Conservative Industrial Relations Act and incomes policies of 1970-1974. Both historians singled out changing technology as a major challenge to industrial relations on the postal

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<sup>3</sup> Book-length studies of the nationalised industries include: William Ashworth, *The State in Business: 1945 to the Mid-1980s* (London: Palgrave Macmillan, 1991); *The History of the British Coal Industry: Volume 5* (Oxford: Clarendon Press, 1986); Terry Gourvish, *British Rail, 1974-1997: From Integration to Privatisation* (Oxford: Oxford University Press, 2002); *British Railways, 1948-73: A Business History* (Cambridge: Cambridge University Press, 1986); Chris Harlow, *Innovation and Productivity under Nationalisation: The First Thirty Years* (London: Allen & Unwin, 1977); Robert Millward and John Singleton (eds.), *The Political Economy of Nationalisation in Britain, 1920-1950* (Cambridge: Cambridge University Press, 1995); Richard Pryke, *The Nationalised Industries: Policies and Performance since 1968* (Oxford: Martin Robertson, 1981); Barry Supple, *The History of the British Coal Industry: Volume 4: 1913-1946: The Political Economy of Decline* (Oxford: Oxford University Press, 1988); Pier Angelo Toninelli (ed.), *The Rise and Fall of State-Owned Enterprise in the Western World* (Cambridge: Cambridge University Press, 2000); Christine Whitehead (Ed.), *Reshaping the Nationalised Industries* (New Jersey: Transaction Books, 1988).

<sup>4</sup> Campbell-Smith, *Masters of the Post*; Martin Daunton, *Royal Mail: The Post Office Since 1840* (London: Athlone, 1985); Helen Glew, *Women's Employment in the General Post Office, 1914-1939*, (University of London, IHR, PhD thesis, 2010); Mark Crowley, *Women Workers in the General Post Office, 1939-1945* (University of London, IHR, PhD thesis, 2010).

<sup>5</sup> Alan Clinton, *Post Office Workers: A Trade Union and Social History* (London: Allen & Unwin, 1984).

side, but detailed study was left to future historians as neither then had access to the relevant management or engineering files.<sup>6</sup> These single-volume works have therefore noted the importance of mechanisation without offering the subject substantial coverage. Their few remarks on mechanisation are discussed in the chapters which follow.

In *Masters of the Post*, Duncan Campbell-Smith, a former management consultant for McKinsey and *Financial Times* journalist, addresses the early history of sorting machine trials and the importance of the modernisation drive in the 1960s. He dwells briefly on the history and significance of postal mechanisation at two points in a long narrative which, for the modern period, is largely concerned with boardroom personalities and the big issues they faced in running the PO. The first is in the opening passages of Chapter 9, titled “Bright hopes blighted, 1949-64”, in which he introduces some of the reasons mechanisation was first pursued, some of the engineering personalities at the forefront of research and some key events in the early history of sorting machine design and the pursuit of an operable postcode. I flesh out some of his findings in chapters 1 and 2 of this thesis, introduce new evidence with a bearing on long-term industrial relations and question certain aspects of his characterisation of the R&D process. This section of the thesis is mostly based on primary documents relating to the emergence of postal mechanisation in the PO after 1945, though empirical work on the details of sorting machine development, postcode concentration schemes and related philatelic matters has been published by the Postal Mechanisation Study Circle, most notably in an introductory handbook edited by Douglas N. Muir and in the PMSC’s quarterly journal *Ident*.<sup>7</sup> Some elements of this specialist literature are integrated in what follows.

Campbell-Smith’s second engagement with mechanisation is found in a five-page passage in Chapter 11, “A dismal decade, 1969-79”, in which he casts the implementation of the Letter Post Plan after 1969 in an unflattering light. By incorporating discussion of the field’s most prominent obstacles into a chapter designed to convey the deep problems faced by the PO in this period, Campbell-Smith understandably gives the strongest contemporary criticisms a lot of weight.<sup>8</sup> On this view, mechanisation ‘looked in danger of falling flat on its face’ and ‘the correct and courageous decision, some now argued, would be to can it’.<sup>9</sup> Engineers are referred to as ‘predictably not much interested in the politics of the workplace’,<sup>10</sup> negotiations with the UPW ‘descended into a tortuous wrangle’ and the scale of the re-evaluation of mechanisation in 1973 (known as the revalidation) is taken as evidence that the case for

<sup>6</sup> Daunton, *Royal Mail*, pp.xviii, 337-355; Clinton, *Post Office Workers*, pp.545-585.

<sup>7</sup> Both available in the BPMA search room. Details of PMSC are available at <http://www.orpheusweb.co.uk/devekeyb/PMSC.html> (accessed October 2012) or can be contacted via the BPMA.

<sup>8</sup> Campbell-Smith, *Masters of the Post*, pp.517-522.

<sup>9</sup> *Ibid.*, p.518.

<sup>10</sup> *Ibid.*

abandoning the LPP was strong.<sup>11</sup> Though he acknowledges in passing that the decision to persist with mechanisation during crisis periods was, in hindsight, vindicated by the ‘march of technology’, he goes on to recite sympathetically various other contemporary criticisms, covering the putative poverty of public relations, management confusion and union obstinacy. As will be shown, many of these were ill-founded, marginal or the product of an ideologically-inflected, blame-seeking agenda. The result is that the problems encountered in this period are emphasised without consideration of counter-balancing evidence, such that a misleading impression of technological change and industrial relations is given. In particular, he refers approvingly to the views of Michael Corby, a former PO executive turned critic who spent seven years on the postal side before leaving in 1976 to become Director of the Mail Users’ Association (MUA), which lobbied on behalf of large business users. Corby argued, in provocative terms, that the incorporation of the PO left it in the hands of career civil servants charged with running it in the style of a commercial business, who obstinately pursued their plans regardless of commercial justification while exacerbating delays by pandering to the unions. He later wrote *The Postal Business, 1969-1979: A Study in Public Sector Management*, a book based on a variety of published sources and private conversations with some senior PO and government officials, resulting in a forthright critique of postal management in the period. It includes critical examinations of the organisation’s structure, finances, service alterations, staffing policies, and relations with government, as well as an extremely negative appraisal of the mechanisation programme.

Mechanisation, Corby argued, was characterised by incompetent planning, naive strategy and avoidable delays. The Board were wrong to place their faith in technology in 1969 and should have abandoned mechanisation entirely after its first major review in 1973. The PO and its auditors at the Department of Industry were, he wrote, ‘prisoner[s] of the type of thought that is uncritically receptive of technological change’.<sup>12</sup> He considered the centralisation of sorting as the greatest organisational change of the period, but held that the pre-existing system of smaller offices functioned relatively well and that moving work to larger offices created a range of new problems including a loss of management control, operational inflexibility, more stoppages, and more working days lost. The alleged inflexibility of the mechanised system was, in Corby’s view, the outcome of a rigid and ill-informed approach to planning.

Planners were frequently surprised at objections raised by both public and staff and attempted to dismiss them as standing in the way of progress. Attempts to alter or question plans internally were stifled, and

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<sup>11</sup> *Ibid.*, p.519.

<sup>12</sup> Michael Corby, *The Postal Business, 1969-1979: A Study in Public Sector Management* (London: Kogan Page, 1979), p.207.

schemes no matter how lacking in common sense, or out of touch with reality, rolled on with a poetic inevitability.<sup>13</sup>

The only mitigating factor he offered was recognition that the postal service was hamstrung in this period by a squeeze on capital expenditure and political short-termism, applicable to most public service organisations.<sup>14</sup> However his portrayal of mechanisation was otherwise wholly negative. ‘A miasma of ineptitude seems to pervade every area involved in mechanisation’, he concluded. ‘Government and the POUNC [Post Office Users National Council, the industry regulator] appear to have fallen down in their roles as guardians of the public interest.’<sup>15</sup> These views were derived from the MUA’s lengthy critique submitted to the Carter Commission in 1976, which I assess critically in Chapter 5. This was one of two major commissions of inquiry in the 1970s, taking a panoramic view of the whole of the PO’s operations. The first was the Hardman Inquiry following the 1971 strike, while the Carter Inquiry was prompted by the collapse of PO finances amidst unprecedented levels of national inflation in 1975. Both resulted in reports critical of management complacency and union obstruction. The latter included a substantial appendix published in 1977 and remains the most comprehensive audit in PO history.<sup>16</sup> Corby’s main complaint was that in the 1970s the PO did not adequately deal with declining productivity, a symptom of the wider failure to apply the principles of private sector commercial management. This general line of argument is implied throughout the final chapters of Campbell-Smith’s *Masters of the Post*, who comments that ‘nowhere was the lack of [managerial] drive more conspicuous than in the melancholy plight of postal mechanization’.<sup>17</sup>

This highlights the importance of contemporary commentary for historians wishing to understand developments in the modern PO. During the 1960s and 1970s, assorted studies by industrial sociologists, journalists and economists investigated developments in the postal service. This has left a range of descriptions of the industry, including some incisive analyses of its political and economic make-up, and some of this has addressed questions of new technology in general, the mechanisation programme specifically and many relevant contextual issues. The most thoroughgoing academic analysis of the period was that of the sociologists Eric Batstone, Anthony Ferner and Michael Terry. In 1975, at the prompting of the newly elected Labour government, the PO opened discussions with the Industrial Relations Research Unit at Warwick University about the potential for an experiment in industrial democracy at the

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<sup>13</sup> *Ibid.*, pp.94-95.

<sup>14</sup> *Ibid.*, p.140.

<sup>15</sup> *Ibid.*, p.210.

<sup>16</sup> POST 65/288, ‘[Hardman Report] Report of a committee appointed by the PO and UPW to enquire into the circumstances of a dispute arising out of the Union’s claim for pay increases and shortening of incremental scales’, HMSO, 1971; Report of the Post Office (Carter) Review Committee, Cmnd. 6850 (London: HMSO, 1977); Appendix to the Carter Report (Post Office Review), Cmnd. 6954 (London: HMSO, 1977).

<sup>17</sup> Campbell-Smith, *Masters of the Post*, p.517.

PO, an arrangement in which unions and management would be equally represented on the Board and at regional and local levels. The trial was initiated in January 1978 but was discontinued the following year by the incoming Conservative government, to the approval of management and the disappointment of the unions. As the evidence in this thesis attests, the PO was chosen because it had developed a suitable IR framework. This led Lord Ponsonby in the House of Lords to describe the experiment as ‘an extension of the Post Office's rich history of participation through extensive consultative arrangements at all levels, built up over many years’.<sup>18</sup> From beginning to end, Batstone, Ferner and Terry conducted theoretical and empirical research, sat in on meetings, and conducted interviews, the results being published in *Unions on the Board* in 1983.<sup>19</sup> Their findings were so extensive that they subsequently published a supplementary book, *Consent and Efficiency: Labour Relations and Management Strategy in the State Enterprise*, which described the political economy of the postal and telephone services through a “processual” lens. A central theme was the relationship between commercial and labour relations strategies, leading to an analysis of the effects of public ownership and of its political environment, in particular the role of the government’s sponsoring department and external lobbies such as the MUA and POUNC – referred to collectively as the ‘political contingency’.<sup>20</sup>

*Consent and Efficiency* did not contain much of substance on postal mechanisation *per se*, but its authors cited it as part of their wider observations about the political and operational changes then underway, and their conclusions are of significant contextual relevance to this thesis. They argued that the provisions of the PO Act, 1969, facilitated a fundamental shift in the prevailing managerial ethos from a *service* to a *commercial* paradigm. The Act established profit targets and applied more commercial criteria to the rate of return expected on capital expenditure. This was more demanding for Telecoms than for Posts, which was recognised as having special social obligations and an unusually heavy dependence on labour. This led the Board to apply techniques and practices common in the private sector, leading to more bullish approaches to commercial strategy, finance, marketing and personnel management. The Batstone team found that in practice this was applied more vigorously in Telecoms than in Posts where longstanding traditions were more difficult to overturn, though they found evidence that ‘important elements’ had changed on the postal side, citing new services, marketing drives and mechanisation.

Commercialism had to be taken seriously; to have done otherwise would have been to risk political attack and unwelcome intervention... [Posts] had become sufficiently marginal to the concerns of governments

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<sup>18</sup> Hansard, ‘Post Office Industrial Democracy’, Lords Sitting, 12/12/79, Series 5, Vol. 403, cc. 1160.

<sup>19</sup> Eric Batstone, Anthony Ferner and Michael Terry, *Unions on the Board: An Experiment in Industrial Democracy* (London: Basil Blackwell, 1983).

<sup>20</sup> Batstone et al., *Consent and Efficiency*, p.6.

and powerful commercial and consumer interests for it to be able, through the deployment of political skills, to avert the full-blooded implementation of the commercial paradigm.<sup>21</sup>

The radical restructuring of 1969 established the Postal Management Board as a separate entity from the main PO Board, as part of an enlargement of the Directorate to include separate departments for Operations, Finance, Personnel, Pay & Grading, and Mechanisation and Buildings. All staff were re-graded between 1971-1974. Batstone et al. believed the size and centralised structure of the early corporation produced a range of problems which often left regional and local managers ‘fire-fighting’ to keep the service free from disruptions that might ‘cause embarrassment’.<sup>22</sup>

The importance attached to operational matters reflected the importance of operational continuity for continued freedom from political interference... The relative and political insignificance of the postal business meant that its relationship with the state was essentially a passive, arm’s-length one based around an unstated status-quo of a trouble-free service, operating at given levels of performance, roughly breaking even financially, and not exposing the state to criticism from consumers or politicians. In exchange, the state did not press too hard for reformed change. In particular, it had not pursued the implementation of commercial strategies with great determination.<sup>23</sup>

At the time of their research, Posts appeared to be heading into long-term decline as, since the early 1970s, annual volumes of mail stopped their historic rise and were believed to be heading into long-term, irreversible decline as other mediums such as telephones, fax and data transmission increased their share of the communications market.<sup>24</sup> Later, new services, pricing arrangements and innovative marketing combined with a surge in economic activity to recover mail volumes in the 1980s and 1990s, but when they wrote in the early 1980s, the damage appeared to be terminal. Similarly, with mechanisation, the delays, reviews and alterations to the programme of the 1970s meant that the full benefits of a system of Mechanised Letter Offices (MLOs) had not yet come into effect, leading Batstone et al. to note the shortcomings of the LPP and to echo the criticisms of Corby, albeit in softer tones.

...in virtually all respects the mechanisation programme fell short of targets. For a variety of reasons it failed to meet all its deadlines for implementation, the manpower savings were insignificant, the financial savings... negligible, the increase in efficiency minimal or non-existent, and public utilization of the postcode far below hoped for levels.<sup>25</sup>

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<sup>21</sup> *Ibid.*, p.76.

<sup>22</sup> *Ibid.*, pp.98-100.

<sup>23</sup> *Ibid.*, p.101.

<sup>24</sup> *Ibid.*, p.85.

<sup>25</sup> *Ibid.*, p.88.

They went on to state that mechanisation unhelpfully reduced the flexibility of the sorting system and that there were political motivations behind the continued support for the project which included a desire to appear modern and show determination in dealing with postal problems. This followed the Carter Committee in voicing scepticism over whether the LPP would have been approved in 1969 had subsequent data been available.<sup>26</sup> The question of whether these remarks are accurate or fair, or whether they are an appropriate way to frame a debate about the process of long-term automation in a nationalised industry, is considered in the conclusion of this thesis. An important point to note here is that these criticisms, like Corby's, were made some years before the LPP was completed and the wider systemic benefits of the plan were felt. As is made clear in the following chapters, some criticism was justified on the basis of the narrow financial criteria favoured by some – but not all – economists and journalists. (Others, such as the economist Alec Nove, flagged up the inappropriateness of applying commercial criteria in the absence of market competition and noted that almost every postal administration in the world was, in the early 1970s, a Government Department with a public service remit. He also recognised that many of the financial models used in the private sector could not come to grips with the complexities of nationalised network industries).<sup>27</sup> However, as the PO pointed out at the time, the reasons for pursuing a change in technology were multi-dimensional; forming part of a complex package of reforms connected with a strategy which sought to restructure the organisation, reduce its dependence on labour and to foster healthier and more sustainable industrial relations.

The limited historiography bearing on postal mechanisation has therefore been influenced by the industrial commentary of this period. Moreover, these contemporary criticisms of the mechanisation programme often formed part of more general critiques of the Post Office. These, in turn, tended to be shaped, either explicitly or implicitly, by the left-right ideological divide concerning the legitimacy of state-owned enterprise.<sup>28</sup> In the case of the postal industry, the major areas of debate centred around the extent its operations should be subsidised by the state and the extent to which it should be managed according to commercial criteria; that is, whether it was a business or a service. Unlike other parts of the public sector, postal services were not provided for free and so questions over its pricing and management were disputed.<sup>29</sup> Those opposed to nationalised industry on principle tended to see problems in the postal

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<sup>26</sup> Carter Report, p.104.

<sup>27</sup> Alec Nove, *Efficiency Criteria for Nationalised Industries* (London: George Allen & Unwin, 1973), pp.23-24.

<sup>28</sup> Andrew Pendleton and Jonathan Winterton, 'Introduction: Public Enterprise Industrial Relations in Context', in Andrew Pendleton (ed.), *Public Enterprise in Transition: Industrial Relations in State and Privatized Corporations*, (London: Routledge, 1993), pp.8-11; Barry Supple, 'Irrational Expectations', in *London Review of Books*, Vol. 4, 21 (1982), pp.11-12.

<sup>29</sup> David Winchester, 'Industrial Relations in the Public Sector', in George Sayers Bain (ed.), *Industrial Relations in Britain* (Oxford: Basil Blackwell, 1983), pp.156-157; Leslie Hannah 'A Failed Experiment: The State Ownership of

service as evidence of the fundamental weakness of public enterprise. Debate about where the organisation fell on the business/service continuum was longstanding<sup>30</sup> and became especially salient from the 1960s onwards. Alan Clinton has suggested that this increased focus was connected with the extraordinary growth of inflation in the 1970s coinciding with profound organisational change. ‘Throughout these years, unprecedented technological development and profound external economic crisis created long-term problems for the Post Office which were accompanied by a level of public criticism at least as great as in the 1830s and the 1920s’.<sup>31</sup> R.J.S. Baker, who ran various headquarters departments in the 1950s-1970s, highlighted how this criticism repeatedly returned to disagreements over how the organisation should be run. ‘The Postal Service has many problems including finance, services and organisation’, he said, ‘but at the root of them all is the problem of fundamental uncertainty as to what the organisation essentially is and what it ought to be: a “business”, a “public service” or whatever – and of what these words mean’.<sup>32</sup> His own view was that the postal ‘business’ ought to be renamed the postal ‘service’.<sup>33</sup> The debate was reignited during the Carter Inquiry which, addressing the large and complex problems of PO structure and strategy, concluded that the organisation’s relationship with the government compromised attempts at commercially sound decisions on pricing and operations.<sup>34</sup> Douglass Pitt, an academic commentator, aptly summarised the dilemma in his review of the Carter Report. ‘The basic environmental paradox presented by such evidence is that the Post Office has been explicitly enjoined to act commercially since [1969], but has had this goal subverted by constant governmental interference’.<sup>35</sup> This resulted in slowly evolving compromise arrangements, which in general had seen a long-term shift ‘from a public service-based equity conception of the Post Office’s task to a commercial conception of it’.<sup>36</sup>

## **New technology and industrial relations in context**

This section is intended to provide further historical and historiographical context by highlighting wider developments in Britain in this period with relevance to the themes and events addressed in this thesis.

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Industry’, in Roderick Floud and Paul Johnson (eds.) *The Cambridge Economic History of Modern Britain, Volume III: Structural Change and Growth, 1939-2000* (Cambridge: Cambridge University Press, 2004), p.86.

<sup>30</sup> Campbell-Smith, *Masters of the Post*, p.xxix.

<sup>31</sup> Clinton, *Post Office Workers*, p.310.

<sup>32</sup> R.J.S. Baker, ‘The Postal Service: a Problem of Identity’, in *The Political Quarterly*, Vol. 47, 1 (1976), p.59.

<sup>33</sup> *Ibid.*, p.69.

<sup>34</sup> Appendix to the Carter Report, Section 2.1.

<sup>35</sup> Douglass Pitt, ‘The Carter Report on the Post Office’, in *Public Administration*, Vol 56, 2 (1978), p.188.

<sup>36</sup> *Ibid.*, p.191.



The 1960s and 1970s saw important reforms to industrial relations and major changes involving new technology. Along with other public sector organisations, the Post Office was involved in and affected by these developments and so an understanding of the Letter Post Plan is enhanced by being considered in this light. Drawing on the work of historians and contemporary academics, a range of contextual issues which characterised the period are summarised, having been selected for their relevance to questions of new technology, industrial relations and the postal service. These include such matters as the economic crisis, government policy, large-scale strikes in the public sector, reforms to the British system of industrial relations, the spread of computing and automation, debates about the “labour process” and the role of trade unions in technological change.

The key issues in the public sector in the late 1960s and 1970s were problems associated with pay and state attempts to control rising inflation. Acute industrial relations problems were at the time posited as a contributory factor in exacerbating low productivity and this came to preoccupy economic and industrial commentators. There were three common arguments. First, from the right, that the unions had become too powerful and were acting irresponsibly. Second, from the left, that structures of inequality led to conflicts of interests that ultimately harmed industrial efficiency. Finally, from the more centrally inclined “liberal pluralists”, the argument that the fundamental balance of power was not the problem, rather incremental changes to institutions and the law might act to reduce conflict and secure order. This was how Eric Batstone, the academic most familiar with the PO, characterised the debate.<sup>37</sup> Low productivity was in his view caused by several factors characteristic of the period, including lack of investment, labour supply problems, approaches to management, the global economic crisis of the early 1970s, high oil prices and heavy-handed government economic policies. The view that militant unionism and fraught industrial relations were a major cause was also widely promulgated and yet, as Batstone pointed out, the correlation between productivity and restrictive practices was slight.<sup>38</sup>

Nevertheless, a highly visible feature of this period was the increased incidence, scale and duration of strikes in the public sector and the postal service played a part in this trend. David Winchester, a prominent scholar of IR in the public sector, was unequivocal about the salience of public sector industrial relations to the fortunes of the British economy:

The control of public expenditure and its most substantial component – public sector pay – was one of the most important issues in British economic policy in the 1970s. In a context of high inflation and deepening economic recession, traditional patterns of public sector industrial relations were transformed by a series of

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<sup>37</sup> Eric Batstone, *Working Order: Workplace Industrial Relations over Two Decades* (Oxford: Basil Blackwell, 1984), pp.1-4.

<sup>38</sup> *Ibid.*, pp.141-145.

changes in government, management and trade union policies. The most visible evidence of a substantial breakdown in the system of public sector collective bargaining can be seen in the series of major pay disputes that destroyed a succession of incomes policies and injected a new dimension of instability into British politics.<sup>39</sup>

The problem of large strikes in the public sector, including previously mostly strike-free groups, was, in part, precipitated by government incomes policies in which the state imposed wage caps applied directly to public sector employees.<sup>40</sup> The dilemma therefore centred around working class resistance to Conservative interventions in public sector pay, which began in 1970 and went through two phases. Unions found the so-called N-1 policy, in which public sector pay would be capped and thereafter annually lowered by 1%, to be arbitrary, crude and unfair. Its original aim was to incrementally scale down public sector wage settlements to 8% by the end of 1971, which was the figure offered to postal workers prior to the strike.<sup>41</sup> The following two years saw over 1.5 million workers involved in large strikes in local authorities, postal services and coal mining as well as restrictive practices in electricity supply and railways. All led to large pay increases, except for the postal service.<sup>42</sup> The second phase followed the 1972 miners' strike when the government pursued a formal incomes policy involving two long phases of pay restraint. Almost half (43%) of the 70 million working days lost due to strikes between 1970-1974 were in the public sector.<sup>43</sup> Workers tended to struggle to maintain real wages, while employers felt greater pressure on profits.<sup>44</sup> Some looked abroad and realised that events in Britain were by no means out of step with the USA and Canada.<sup>45</sup> The 1971 postal strike in Britain, for example, bore a resemblance to events in America the previous year, where postal staff in New York – protesting at political interference in wages, organisational change and the mechanisation of mail centres – initiated a wildcat strike which spread nationwide, involving 600 post offices and 200,000 workers.<sup>46</sup> Events in Britain therefore need to be considered in global context. The worldwide strike wave of the late 1960s and early 1970s put workers' control in the foreground and invigorated academic interest in paid work, giving impetus both to the rise of segmentation theory in America and labour process theory in Britain.<sup>47</sup>

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<sup>39</sup> Winchester, 'Industrial Relations in the Public Sector', pp.163-164.

<sup>40</sup> *Ibid.*, p.155; A.W.J. Thompson and P.B. Beaumont, *Public Sector Bargaining: A Study of Relative Gain* (Farnborough: Saxon House, 1978).

<sup>41</sup> Laurence Hunter, 'British Incomes Policy, 1972-1974', in *Industrial & Labour Relations Review*, Vol. 29, 1 (1975), pp.67, 74.

<sup>42</sup> Winchester, 'Industrial Relations in the Public Sector', p.166.

<sup>43</sup> *Ibid.*, p.167.

<sup>44</sup> P.K. Edwards, 'The Pattern of Collective Industrial Action', in Bain (Ed.), *Industrial Relations in Britain*, p.215.

<sup>45</sup> Samuel Brittan, 'How British is the British Sickness?', in *Journal of Law and Economics*, Vol. 21, 2 (1978), p.263.

<sup>46</sup> Baxter, 'Process of Change', p.295.

<sup>47</sup> Michael Rose, 'Work and Politics: Review Article', in *Sociological Review*, Vol. 3, 1 (1987), p.78.

The conventional view of post-war industrial relations is therefore that the late 1960s and 1970s form a coherent phase defined primarily by instability, especially in the public sector.<sup>48</sup> A significant body of work has focussed on the seismic effects of industrial confrontation and the history of IR has been viewed unfavourably as a consequence<sup>49</sup> However, some historians have argued that these accounts exaggerate Britain's uniqueness in experiencing industrial unrest.<sup>50</sup> Jonathan Zeitlin has warned against a teleology which has tended to obscure a rich and diverse range of case studies which do not fit so easily into the conventional framework.

The postwar history of British industrial relations is increasingly written as a tale of doom foretold, in which the ascendancy of trade-union power and shopfloor militancy from the 1950s through the 1970s inexorably prepared the ground for the Conservative counterrevolution of the 1980s and 1990s. Viewed from the left the tale reads as a tragedy, viewed from the right as a morality play, but absent from both versions is a sense of contingency and strategic choice: the possibility that the plot might have turned out differently depending on the sequence of events and the decisions of the key actors.<sup>51</sup>

Jim Tomlinson has similarly argued that viewing the public ownership of industry as a 'failed experiment' has some value but can also be one-dimensional, while John McIlroy and Alan Campbell have agreed that the prevailing view of IR in this period is today coloured by the putative demise of the British labour movement after 1979.<sup>52</sup> As historians of the PO have recognised,<sup>53</sup> and as this thesis attests, spiralling inflation was the key economic force driving union militancy and ever more contentious wage claims in 1970s Britain and so there has arisen a strand of historiography seeking to exculpate the major

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<sup>48</sup> Andrew Pendleton, 'The Evolution of Industrial Relations in UK Nationalized Industries', in *British Journal of Industrial Relations*, Vol. 35, 2 (1997), pp.157-162

<sup>49</sup> Robert Bacon and Walter Eltis, *Britain's Economic Problem: Too Few Producers* (London: Macmillan, 1976); William Brown 'Industrial Relations and the Economy', in Floud and Johnson (eds.), *Cambridge Economic History of Modern Britain*, pp.399-423; J. Dunkerley and P.Hare 'Nationalised Industries', in Nicolas Crafts and Nicholas Woodward (eds.) *The British Economy Since 1945* (Oxford: Clarendon Press, 1991), pp 381-416; John Redwood, *Public Enterprise in Crisis: The Future of the Nationalised Industries* (Oxford: Blackwell, 1980); Chris Wrigley 'Trade union development, 1945-79', in Chris Wrigley (ed.), *A History of British Industrial Relations, 1939-1979: Industrial Relations in a Declining Economy* (Cheltenham: Edward Elgar, 1996), pp.62-83.

<sup>50</sup> Robert Millward, 'State Enterprise in Britain in the Twentieth Century', in Pier Angelo Toninelli (ed.), *The Rise and Fall of State-Owned Enterprise in the Western World* (Cambridge: Cambridge University Press, 2000), pp 157-184.

<sup>51</sup> Jonathan Zeitlin, 'Review of Chris Wrigley (ed.), *A History of British Industrial Relations, 1939-1979: Industrial Relations in a Declining Economy*', in *Albion: A Quarterly Journal Concerned with British Studies*, 29, 3 (1997), p.523.

<sup>52</sup> Jim Tomlinson, 'A "Failed Experiment"? Public Ownership and the Narratives of Post-War Britain', in *Labour History Review*, Vol. 73, 2 (2008), pp.228-243; John McIlroy and Alan Campbell, 'The High Tide of British Trade Unionism: Mapping Industrial Politics, 1964-79', in McIlroy et al. (eds.), *British Trade Unions*, p.113.

<sup>53</sup> Campbell-Smith, *Masters of the Post*, pp.523-524; Clinton, *Post Office Workers*, p.311.

stakeholders in British industrial performance – i.e. governments, unions and employers – by emphasising the severity of external shocks to the economy.<sup>54</sup>

Others have considered the evolution of IR through documenting the history of British industrial sociology and its influence on government inquiries and legislation.<sup>55</sup> In the post-war period a number of Oxford academics with ties to the Labour Party and the TUC continued a tradition begun by Sydney and Beatrice Webb of applying social scientific methods to understanding the role of unions in British industry and the frameworks in place for collective bargaining. The leading figures of the so-called “Oxford School of Industrial Relations” were Allan Flanders, Hugh Clegg, Alan Fox and George Sayers Bain who mentored the likes of Eric Batstone and David Winchester who would go on to study the public enterprise in considerable detail. Clegg and Flanders were known as the foremost experts on the empirical and theoretical aspects of IR, respectively, and were the ‘intellectual architects’ of the 1968 Donovan Commission: a monumental inquiry into the state of IR in Britain in the 1960s, which found that there were two systems predominating in Britain – the formal and the informal.<sup>56</sup> The Donovan Commission was charged with analysing IR in both public and private sectors but ended up dwelling almost exclusively on the private sector.<sup>57</sup> There, especially in manufacturing, the formal system referred to bargaining between employers’ organisations (representing multiple employers) and trade unions (representing mostly engineering and general workers).<sup>58</sup> However, the informal system dominated, with no legally enforceable bargains, and this distinguished the British system from many foreign arrangements. The decentralisation and informality of bargaining created a tendency to resist technological change, according to the Report. However generalisations were difficult. Clegg, after the

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<sup>54</sup> Richard Coopey and Nicholas Woodward (eds.), *Britain in the 1970s: the Troubled Economy* (London: Routledge, 1996); Andy Beckett, *When the Lights Went Out: Britain in the Seventies* (London: Faber and Faber, 2009).

<sup>55</sup> Peter Ackers and Adrian Wilkinson, ‘Introduction: The British Industrial Relations Tradition - Formation, Breakdown and Salvage’, in Peter Ackers and Adrian Wilkinson (eds.) *Understanding Work and Employment: Industrial Relations in Transition* (Oxford: Oxford University Press, 2003), pp.1-30; Peter Ackers, ‘Collective Bargaining as Industrial Democracy: Hugh Clegg and the Political Foundations of British Industrial Relations Pluralism’, in *British Journal of Industrial Relations*, Vol. 45, 1 (2007), pp.77–101; ‘The Changing Systems of British Industrial Relations, 1954–1979: Hugh Clegg and the Warwick Sociological Turn’, in *British Journal of Industrial Relations*, Vol. 49, 2 (2011), pp.306–330; Brian Harrison, ‘Oxford and the Labour Movement’, in *Twentieth Century British History*, Vol. 2, 3 (1991), pp.226-271; William McCarthy, ‘The Involvement of Academics in British Industrial Relations’, in *British Journal of Industrial Relations*, Vol. 32, 2 (1994), pp.202–217; Jim Phillips, ‘Industrial Relations, Historical Contingencies and Political Economy: Britain in the 1960s and 1970s’, in *Labour History Review*, Vol. 72, 3 (2007), pp.215-233; Jonathan Zeitlin, ‘From Labour History to the History of Industrial Relations’, in *The Economic History Review, New Series*, Vol. 40, 2 (1987), pp.159-184.

<sup>56</sup> Ackers, ‘Collective Bargaining as Industrial Democracy’, p.77.

<sup>57</sup> Report of the Royal Commission on Trade Unions and Employers’ Associations (Donovan Report), Cmnd. 3623 (London: HMSO, 1968).

<sup>58</sup> Keith Sisson and William Brown, ‘Industrial Relations in the Private Sector: Donovan Re-visited’, in Bain (ed.), *Industrial Relations in Britain*, p.137.

Commission concluded, referred to British IR as ‘complex beyond belief.’<sup>59</sup> An outcome was a concerted effort both by the state and by students of industrial society to bring order to this complexity by enlarging the sphere of formal bargaining in ways meant to secure wider and deeper consultation, stable wage bargaining and ongoing productivity improvements. This was an interventionist strategy with sizeable effects on the postal service.

In the post-Donovan period, a distinctive model of what constituted good industrial relations was promoted by the government and by state agencies such as the National Board for Prices and Incomes and the Commission on Industrial Relations. Recommendations for recognising union legitimacy and formalising IR procedures were highly influential in the public sector.<sup>60</sup> The increasing specialisation and formalisation of IR management were widespread trends in the 1960s and 70s, attributed to the growth and concentration of workforces in large multi-divisional corporations. This coincided with wide-reaching government interventions in many aspects of the employment relationship.<sup>61</sup> Workplace industrial relations were thus ‘reconstructed’ in the 1970s, involving the formalisation of procedures for negotiation, consultation, grievances and collective disputes, discipline, health and safety and other programmes designed to stabilise the management/union relationship, though this was later acknowledged to have created unhelpful rigidity.<sup>62</sup> The underlying philosophy behind was that endorsed by the above-mentioned “liberal pluralism”, cultivated by the Oxford School and embodied in the Donovan Report. The central idea was that divergent interests in industry were legitimate and necessary, and that the institutionalisation of industrial conflict - embodied in collective bargaining – should be protected and made more orderly through legal and institutional reforms.<sup>63</sup> Some even argued that strikes in the public sector were an indication of the validity and vitality of collective bargaining, rather than its breakdown.<sup>64</sup>

Something similar to the Donovan model was adopted in the postal service, encouraged by the PO Act, 1969, which brought wholesale reforms to IR machinery. This formed part of a wider programme of refitting the PO for a post-civil service future, elements of which are discussed in this thesis. Much of this was mediated by a greatly enlarged Personnel Division, established to facilitate and co-ordinate communication between different staff groups. In 1967 there was a functional split in the management of

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<sup>59</sup> Mark W. Bufton, *Britain's Productivity Problem, 1948-1990* (Basingstoke: Palgrave Macmillan, 2004), pp.99-104.

<sup>60</sup> Michael Terry, ‘Shop Steward Development and Managerial Strategies’, in Bain (ed.), *Industrial Relations in Britain*, p.85.

<sup>61</sup> John Purcell and Keith Sisson, ‘Strategies and Practice in the Management of Industrial Relations’, in Bain (ed.), *Industrial Relations in Britain*, pp.96-101.

<sup>62</sup> *Ibid.*, pp.102-112.

<sup>63</sup> Batstone, *Working Order*, pp.3-11.

<sup>64</sup> Winchester, ‘Industrial Relations in the Public Sector’, p.178; Thompson and Beaumont, *Public Sector Bargaining*, p.157.

personnel when different departments were created for Posts and Telecoms. In Posts, this created the separate functions of Staffing, Training, Pay and Organisation. Beyond this, regional departments were established to handle recruitment, promotion, appointments, discipline and health matters.<sup>65</sup> It was stressed that the creation of negotiating procedures was a flexible and organic process in which Headquarters, Regional and Union representatives should be in constant communication. The department's prevailing philosophy was one of balancing the systematic gathering of data with constant informal conversations in building up a practical knowledge of IR before attempting any changes. It was believed that this was in keeping with wider post-Donovan developments.<sup>66</sup>

This period therefore saw a large increase in the number of IR specialists and in the incidence of negotiations and written agreements over working practices.<sup>67</sup> This should not obscure the profound nature of the political and economic shifts occurring after 1968, for which the Donovan recommendations were not designed. An ironic course of events ensued in which IR practices were improving on a wide front at the same time as industrial conflict increased. This was most obvious in the clash over incomes policies and legal reform to unions, beginning with the 1969 White Paper, *In Place of Strife*, which sought to use the law to restrict trade union power but was eventually defeated. When the Conservatives were elected in 1970, they pursued an equally bullish Industrial Relations Act, a hugely complex and strenuously opposed piece of legislation which took up about a third of all parliamentary time during 1970-1. It had major ramifications for the British political climate, for the law and as a divisive issue between unions and government.<sup>68</sup> The Office of Population Censuses & Surveys investigated workplace attitudes to IR in 1972, and uncovered a sizeable shift nationally. Antagonisms had grown more acute, shop stewards had become more militant and influential, and much other data in the Donovan Report was rapidly becoming obsolete.<sup>69</sup> The survey found that the reasons given by people who joined a union still included the desire for better pay and conditions and for other collective benefits, but this had shifted to accommodate a growing need to resolve grievances and disputes.<sup>70</sup> In the postal service the UPW represented all postal staff, and the ways in which it offered its members collective solidarity in times of crisis – including financial assistance, medical advice and moral support – is documented throughout the

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<sup>65</sup> R.J.S. Baker, 'Some Tasks and Processes of Personnel Management in a Very Large Public Utility', in *Journal of Management Studies*, Vol. 8, 1 (1971), pp.28-29.

<sup>66</sup> *Ibid.*, pp.32-33.

<sup>67</sup> M. G. Wilders and S. R. Parker, 'Changes in Workplace Industrial Relations, 1966-72', in *British Journal of Industrial Relations*, Vol. 13, 1 (1975), pp.20-21.

<sup>68</sup> Keith Middlemas, *Politics in Industrial Society: The Experience of the British System since 1911* (London: André Deutsch, 1979), p.444; S.R. Engleman and A.W.J. Thomson, 'Experience Under the British Industrial Relations Act', in *Industrial Relations: a Journal of Economy & Society*, Vol. 13, 2 (1974), pp.131-132; Joseph Garbarino, 'The British Experiment with Industrial Relations Reform', in *Industrial and Labour Relations Review*, Vol. 26, 2 (1973), pp.793-804.

<sup>69</sup> Wilders and Parker, 'Changes in Workplace Industrial Relations', p.14.

<sup>70</sup> *Ibid.*, p.19.

work of Alan Clinton and was studied from a sociological perspective by Michael Moran.<sup>71</sup> Alastair Reid has observed that this scenario was common to most process workers who in this period shared a perspective of ‘gritty realism’ concerned with pay, conditions and standards of living, and they tended to be keenly aware of their position in the pay league for public workers.<sup>72</sup>

Therefore, for public enterprise workers, the question of how the annual wage round was calculated came to the foreground. David Winchester focussed especially on the erosion of “fair comparison” which had been the traditional principle of wage determination for much of the twentieth century and was formally endorsed by the Priestly Commission in 1955.

The overall direction and magnitude of the changes cannot be in doubt. For two decades after World War II, the stability of public sector industrial relations was based on an implicit understanding that as long as government and senior management discharged their responsibility to be “good” employers, then employees and their union representatives would accept a reciprocal obligation to avoid industrial conflict. The central institutional expression of this tacit agreement was the system of “fair comparison” for civil service pay... Most of the unrest in public sector industrial relations has arisen from government intervention in collective bargaining; in particular, from the way in which different forms of incomes policy have disturbed customary pay relativities and undermined the principle of comparability that for a long time was the foremost influence on public sector pay determination.<sup>73</sup>

The principle of fair comparison was always complex and imperfect and became more so in the 1960s when, under Labour, various attempts at linking wage agreements with productivity measurements were pursued which, alongside other interventions, led to the deterioration of pay relative to the private sector.<sup>74</sup> Again, this issue was pronounced in public, labour-intensive industries such as the postal service.

All these developments took place against a backdrop of long-term structural and technological shifts in the British economy, most notably the decline of blue collar and the rise of white collar employment, and the concomitant automation of several industrial sectors. Research by George Sayers Bain first showed in detail that the rise of the service economy was one of the major shifts of the twentieth century. He found that changing technology was of central importance to shifts in Britain’s occupational structure, influencing the growth and decline of different industries.<sup>75</sup> Public sector

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<sup>71</sup> Clinton, *Post Office Workers*; Michael Moran, *The Union of Post Office Workers: A study in Political Sociology* (London: Macmillan, 1974).

<sup>72</sup> Alastair J. Reid, *United We Stand: A History of Britain’s Trade Unions* (London: Penguin, 2004), p.304.

<sup>73</sup> Winchester, ‘Industrial Relations in the Public Sector’, p.176-177.

<sup>74</sup> *Ibid.*, p.165. See also Gregor Gall, *The Meaning of Militancy? Postal Workers and Industrial Relations* (Aldershot: Ashgate, 2003), p.28.

<sup>75</sup> George Sayers Bain, ‘The Growth of White-Collar Unionism in Great Britain’, in *British Journal of Industrial Relations*, Vol. 4, 3 (1966), p.308.

industries had, since the late 1950s, increasingly responded to technological change with new IR policies and productivity agreements. This applied equally to a number of industries, namely gas which had made the switch from coal to oil; the railways which had undergone electrification; coalmining which had extended the use of power loading; and the ongoing evolution of the electricity supply network. This removed the need for millions of jobs, on the whole successfully planned and managed via natural wastage using methods of recruitment control, retirement, voluntary redundancies and retraining. Each of these industries therefore made changes to the utilisation of labour, creating new payment systems designed to elicit cooperation from their workforces.<sup>76</sup>

The Oxford School took an interest in how this applied in modern workplaces and boardrooms and tended to argue there was room for greater consultation over technological change, though there was some acknowledgement that this risked compromising unions' chief task of defending their members' interests, while management would tend to defend their autonomy. Worker participation in technological change was thus triumphed by some while others saw it as no more than an 'adjunct' to the more important role of collective bargaining.<sup>77</sup> The historian Mark Bufton has argued that joint consultation was the most effective form of worker participation in this period and was successful in several European economies in binding labour and management into a common cause.<sup>78</sup> Its chief merit was the improvement of productivity by fostering clearer communications between groups. This was held to strengthen workers' morale by including them in discussing changes to their jobs and providing a forum to express grievances and suggest improvements which made better use of tacit knowledge. It also encouraged a workforce to be proactively involved in organisation and planning.<sup>79</sup> From a management perspective, Joint Productivity Councils were time-consuming and undermined their scope for autonomous action. From the workers' perspective, the benefits were not always apparent in practice. As a result, the track record of JPCs was patchy during the 1960s and 1970s. As Stephen Deery found in his research into the role of joint consultation in the process of technological change in this period:

The basic difficulty for unions seems to lie in their inability to gain entry to the process of management decision-making at a sufficiently early stage to participate in the questions affecting the design and application of new technology. Invariably their role has been confined to ex post facto bargaining about pay and related issues once the technological systems have been implemented.<sup>80</sup>

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<sup>76</sup> J.D.M. Bell, 'The Development of Industrial Relations in Nationalized Industries in Postwar Britain', in *British Journal of Industrial Relations*, Vol. 13, 1 (1975), pp.6-7.

<sup>77</sup> Ackers, 'Collective Bargaining as Industrial Democracy', pp.81-95.

<sup>78</sup> Bufton, *Britain's Productivity Problem*, p.49.

<sup>79</sup> *Ibid.*, pp.168-172.

<sup>80</sup> Stephen Deery, 'Determinants of Trade Union Influence over Technological Change', in *New Technology, Work and Employment*, Vol. 4, 2 (1989), p.118.



As will be shown, this was less of an issue in the design of sorting machinery in the postal service, where union involvement had a significant effect on the process over the long term and increased once problems were encountered.

The automation of industrial processes was clearly a major political issue throughout the western world in the twentieth century. The influx of micro-electronic technology into British industry gathered pace from the mid-1970s and prompted much debate among scholars. A landmark work was Harry Braverman's *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century* (1974), which appropriated Marx's theory of class conflict and argued that industrial technology had been used as a tool to control the workforces of large corporations.<sup>81</sup> By deskilling jobs, automation weakened labour's bargaining power and so the appeal to technological "progress" was in reality a fig leaf for capital's continued exploitation of labour in the pursuit of profit. The extent to which this applied in Britain was much debated. Empirical work in the 1960s by Joan Woodward suggested that there was a clear pattern in the relationship between strategies of managerial control and choice of technology. Studying changing organisational structures and technologies in British firms, she found that managerial control could be either personal or mechanical. Personal control relied on the authority and influence of one person or group over another in a process of task supervision, a style best suited to small firms engaged in unit or small batch production. Mechanical controls were better suited to large organisations where the machines of production were designed to excerpt control over human operators. This was more often associated with the largest firms utilising process technology as opposed to unit or batch technology.<sup>82</sup> However, beyond these general observations it was unclear how far the Braverman thesis applied in Britain, where it was criticised for being one-sided and lacking evidence. Several industrial sociologists argued that, in Britain, the labour process was likely to involve cooperation as well as conflict. Moreover, the introduction of automation or work-study programmes tended to de-skill labour and underestimated the complexity of "skill", which covered both technical and social spheres and involved various forms of tacit knowledge.<sup>83</sup> Contrary to Braverman, some believed that automation brought the potential to democratise hitherto adversarial employment relationships. Writing in 1986, Richard Harris argued for the progressive

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<sup>81</sup> Harry Braverman, *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century* (New York: Monthly Review Press, 1974).

<sup>82</sup> Joan Woodward, *Industrial Organization: Theory and Practice* (Oxford: Oxford University Press, first published 1965, second edition 1980), pp.xix-xxiii.

<sup>83</sup> Craig Littler, 'The Labour Process Debate: A Theoretical Review 1974-88', in David Knights and Hugh Willmott (eds.) *Labour Process Theory* (London: Macmillan, 1990), p.54; Craig Littler, 'Understanding Taylorism', in *The British Journal of Sociology*, Vol. 25, 2 (1978), p.187; Stephen Wood (ed.), *The Degradation of Work? Skill, Deskilling and the Labour Process* (London: Hutchinson, 1984); Stephen Wood, 'The Deskilling Debate, New Technology and Work Organization', in *Acta Sociologica*, Vol. 30, 1 (1987), p.4; Heather Rolfe, 'Skill, Deskilling and New Technology in the Non-Manual Labour Process', in *New Technology, Work & Employment*, Vol. 1, 1 (1986), pp.37-46

potential of changes based on micro-electronics when allied to participatory politics.<sup>84</sup> He was joined by other students of the production process such as Ian Benson, John Lloyd and Harley Shaiken in believing that industrial institutions were defined by the technical division of labour and ‘the human-technology relationships that make up the core structure of organizations’.<sup>85</sup> At the same time, worker participation in the design of technology was much discussed with reference to British firms such as Lucas Aerospace.<sup>86</sup> Many likeminded scholars were enamoured with the democratisation of innovation, carried furthest in Swedish and Norwegian organisations.<sup>87</sup>

The Economic and Social Research Council, the largest funding body for economic and social research in Britain, sponsored a major multi-industry survey into the effects of automation on the labour process in this period. The findings were published and analysed by William Daniel in *Workplace Industrial Relations and Technical Change* (1987).<sup>88</sup> This found that technological change was not as divisive, and unions not as hostile to it, as many had suggested. Workers and managers at 2,000 British firms were interviewed in 1980 and, contrary to expectations, workers and shop stewards generally did not oppose technological change but were more likely to welcome it, even where it created redundancies. In other words, while public perception of worker resistance to technological change was strong, the reality was different.<sup>89</sup> Although some workforces did contest technical change, resistance to organisational change – that is, alterations in working methods or relocations of staff *not* involving any changes in technology – was far more widespread. This trend was more marked than other variables, such as the sector of the economy involved, although resistance to all forms of change was more likely in large organisations and nationalised industries. Subsequent studies indicated that supportive attitudes were due to several factors including a belief that new technology represented progress; that the benefits of new machinery were immediate and tangible; that advanced technology conferred competitive advantage and prestige; that it offered assurances of a healthy future for the workplace concerned; and that new technology was attractive because it helped people to master skills of increasing usefulness outside of work. In summary, a clear trend towards the perception of new technology as progressive and inevitable

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<sup>84</sup> Richard Harris, ‘The Impact of the Micro-Electronics Revolution on the Basic Structure of Modern Organizations’, in *Science, Technology, & Human Values*, Vol. 11, 4 (1986), p.31.

<sup>85</sup> *Ibid.*, p.32; Ian Benson and John Lloyd, *New Technology and Industrial Change* (London: Kogan Paul, 1983), pp.198-203; Harley Shaiken, *Work Transformed: Automation and Labor in the Computer Age* (New York: Holt, Rinehart and Winston, 1984), p.13.

<sup>86</sup> Michael Cooley, *Architect or Bee? The Human/Technology Relationship* (Boston: South End Press, 1982), pp.95-100.

<sup>87</sup> Harris, *Micro-Electronics Revolution*, p.37.

<sup>88</sup> William W. Daniel, *Workplace Industrial Relations and Technical Change* (HMSO, Economic & Social Research Council, Policy Studies Institute, 1987).

<sup>89</sup> William W. Daniel and Terence Hogarth, ‘Worker Support for Technical Change’, in *New Technology, Work and Employment*, Vol. 5, 2 (1990), pp.85-86.

was discerned.<sup>90</sup> The study also shed light on the role of worker participation in the choice and implementation of new technology. Daniels emphasised that there was a wide consensus over the benefits of worker participation over the introduction of new technology which included the CBI, the TUC and the main political parties. Yet, overall, British management remained resistant and so in many cases there was little workforce involvement in technological change.<sup>91</sup> Such consultation was more prevalent in nationalised industries than in all other economic sectors.<sup>92</sup>

These findings were consistent with public statements by the TUC in the 1970s, which were generally encouraging of technological change, asking for full disclosure of plans and consultations with the people affected, leading to mutual agreements between workers and management.<sup>93</sup> Common arguments were that redundancies should be minimised; financial savings should be shared with the workforce; and computers should not be used to monitor work performance. The TUC consistently stressed the importance of investing in new technology to secure employment in the long-term.<sup>94</sup> Similar statements were the norm in most individual cases in this period, while a MORI poll found that only 2% of rank and file union members believed new technology should be resisted, while managers responded that investment decisions were rarely scuppered by union opposition.<sup>95</sup> Although New Technology Agreements were commonplace, especially towards the end of the decade, they were often incorporated with wider agreements over wages and conditions. Significant influence over technical and job design was rare. Mark Dodgson and Roderick Martin observed that questions of technology were generally included in existing collective bargaining procedures and typically revolved around traditional issues such as pay, grading, redundancy and safety rather than the choice of technology or its specifications.<sup>96</sup> Mark Bufton has established that, overall, unions in this period influenced technological change in diverse ways.<sup>97</sup> A union's past record of obstruction might affect the decision over what sort of technology to choose or whether to invest at all. The financial outcomes of particular projects were altered by differing technology-related productivity agreements and pay disputes. The pattern of implementation and the way this altered working techniques often changed through negotiation and consultation. There was no single predictable effect of unionism on the process of technical change or on its productivity outcomes.

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<sup>90</sup> *Ibid.*, pp.87-91.

<sup>91</sup> Daniel, *Workplace Industrial Relations*, p.112-113.

<sup>92</sup> *Ibid.*, p.134.

<sup>93</sup> John Hughes, *The TUC: A Plan for the 1970s* (London: Fabian Society, 1969), p.5; Bell, 'The Development of Industrial Relations', pp.1-2.

<sup>94</sup> Mark Dodgson and Roderick Martin, 'Trade Union Policies on New Technology: Facing the Challenges of the 1980s', in *New Technology, Work and Employment*, Vol. 2, 1 (1987), p.9.

<sup>95</sup> *Ibid.*, p.11.

<sup>96</sup> *Ibid.*, p.17.

<sup>97</sup> Bufton, *Britain's Productivity Problem*

Quantitative studies provide no safe conclusions about whether, in general, unions have a positive or a negative effect on investment in technology or productivity performance in post-war Britain.<sup>98</sup>

Several studies of automation in particular industries have shown that mechanisation in the postal service was, in many respects, not unique. For example, strong parallels exist between technological change in the postal and printing industries. Roderick Martin has documented simultaneous technological changes in Britain's major newspaper groups in the 1970s, when Fleet Street struggled with the introduction of computerised printing presses.<sup>99</sup> As with postal mechanisation, this was the first fundamental technical change to the core process since the nineteenth century and involved both conflict and consultation between management and unions. It also involved new types of data-entry via keyboards and comparisons with this study are made at various points in this thesis. Alan Booth has shed light on various examples of technological change in the post-war British economy. In office and clerical work, automation was prompted in part by the increasing volume and complexity of work generated by growing economic activity and by an increasingly problematic labour market. Large organisations felt the greatest need for a combination of computerised tools and work-study programmes. Moreover, they were the most likely to equip managers with huge amounts of data and statistics on all manner of operational matters. This led to a preference for highly sophisticated operational simulations being used to guide decisions over investment decisions and organisational change.<sup>100</sup> In banking, the mechanisation of the mass-handling of documentation (such as cheques) was coupled with an influx of "systems thinking" in the 1960s, the stepwise improvement of technology over successive "generations" and the massive use of computing, bringing with it the introduction of larger work centres and the centralisation of decision-making.<sup>101</sup> These are all features of technological change which feature in the following chapters.

The sociologists Jon Clark, Ian McLoughlin, Howard Rose and Robin King have highlighted the role of social and technical forces at work in the development of British telephone exchanges in the 1980s. They found that maintenance engineers were split between two different technologies: the older, mechanical Strowger system and the newer, electronic TXE4 system.<sup>102</sup> The Strowger system required maintenance engineers to use manual dexterity and linear problem solving. They might begin their careers fixing the more common, straightforward faults before moving on to more complex cases. Contrastingly,

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<sup>98</sup> *Ibid.*, pp.33-36; 178. See also Derek Aldcroft and Michael Oliver, *Trade Unions and the Economy: 1870-2000* (Aldershot: Ashgate Publishing, 2000), pp.88-132.

<sup>99</sup> Roderick Martin, *New Technology and Industrial Relations in Fleet Street* (Oxford: Clarendon Press, 1981)

<sup>100</sup> Alan Booth, *The Management of Technical Change: Automation in the UK and USA since 1950* (Basingstoke: Palgrave Macmillan, 2006), pp.117-140.

<sup>101</sup> *Ibid.*, pp.141-164.

<sup>102</sup> Jon Clark, Ian McLoughlin, Howard Rose and Robin King, *The Process of Technological Change: New Technology and Social Choice in the Workplace* (Cambridge: Cambridge University Press, 1988).

the TXE4 system had fewer faults but maintenance engineers needed to think laterally and in greater depth to identify them, requiring detailed system-knowledge from the outset. Both systems achieved similar results but technical differences in the hardware had a determining influence on the design of jobs and the structure and hierarchy of the workforce.<sup>103</sup> They echo a point made by the historian Thomas Hughes,<sup>104</sup> that, once frozen into a particular configuration, technology itself has its own properties and momentum and needs to be incorporated as a central feature of a rounded explanation.

Finally, there has been a tradition in the social history of technology of attempting to situate the emergence of technological systems in their cultural and economic context and this has led to certain theoretical insights of relevance to this thesis.<sup>105</sup> Thomas Hughes has written extensively on the history of electricity networks and the role of engineers, inventors and corporations in the formation of American industrial capitalism.<sup>106</sup> In his preoccupation with networks and systems, Hughes challenges common assumptions about the role of the ‘individual inventor genius’ by delineating the structural forces that shape the processes of design, innovation and implementation of what he terms ‘technological systems’.<sup>107</sup> In this spirit, some have thought of entire postal systems as a form of technology.<sup>108</sup> As will be shown, the systems concept became hugely important in postal engineering as well as in operational fields at the Post Office in the twentieth century. Hughes also identified distinguishing characteristics of institutionalised systems engineering, focussing on the “Reverse Salient” in which long-term problem-solving across a wide front is, at historical junctures, threatened by critical technical problems which may appear to jeopardise the feasibility of the emerging technical paradigm. All efforts are then expended in removing this reverse salient to get the project back on track and this, too, applies to the British project of developing coded sorting, for instance in the early chemistry research intended to solve the problem of imprinting codes on envelopes. This has ties with the theory of “path dependence” and “lock-in”

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<sup>103</sup> Howard Rose, Ian McLoughlin, Robin King and Jon Clark, ‘Opening the Black box: The Relation between Technology and Work’, in *New Technology, Work & Employment*, Vol. 1, 1 (1986), p.18.

<sup>104</sup> Thomas P. Hughes, ‘Technological Momentum in History: Hydrogenation in Germany 1898-1933’, in *Past and Present*, Vol. 44 (1969), pp.106-132; Hughes, ‘Technological Momentum’, in Smith and Marx (eds.), *Does Technology Drive History?*, pp.101-113.

<sup>105</sup> Donald MacKenzie and Judy Wajcman (eds.), *The Social Shaping of Technology: How the Refrigerator got its Hum* (Milton Keynes: Open University Press, 1985); Weibe Bijker, Thomas Hughes and Trevor Pinch (eds.), *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge Massachusetts: MIT Press, 1989); Weibe Bijker and John Law (eds.), *Shaping Technology/Building Society: Studies in Sociotechnical Change* (Cambridge Massachusetts: MIT Press, 1994).

<sup>106</sup> Thomas P. Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (Baltimore: Johns Hopkins University Press, 1993); *American Genesis: A Century of Invention and Technological Enthusiasm, 1870-1970* (Chicago: University Of Chicago Press, 2004).

<sup>107</sup> Thomas P. Hughes, ‘The Evolution of Large Technological Systems’, in Bijker et al. (eds.), *The Social Construction of Technological Systems*, pp.51-82.

<sup>108</sup> Richard R. John, ‘The Politics of Innovation’, in *Daedalus*, Vol 127, 4 (1998), p.188; Keith Grint and Steve Woolgar, *The Machine at Work: Technology, Work and Organization* (Cambridge: Polity Press, 1997), p.17.

originally founded in economic and evolutionary sciences, in which historical contingency may establish a single path of development among many equally viable (in principle) alternatives.<sup>109</sup> The establishment of the design-path described in Chapter 1 sheds light on how something like this phenomenon played out in the postal service.

## **Structure, sources and methodology**

The thesis is organised into six, roughly chronological, chapters. Each has a theme which, taken together, give an indication of the arc of the thesis. These are: design, planning, conflict, reappraisal, consultation and training. The first two chapters are concerned in different ways with explaining how and why the PO approved the Letter Post Plan in 1969. The first chapter summarises the pre- and post-war history of postal mechanisation, explaining why the PO became interested in automated sorting and the role of the Engineering Department in designing machines which would have long-lasting political implications. The second chapter considers the political and bureaucratic context in which planning the LPP was undertaken. The third chapter describes the effects of the 1971 strike and the reasons why the UPW voted to withdraw their cooperation in 1972. The fourth and fifth chapters address how this dispute was resolved. Chapter four describes the negotiation and remodelling involved in revalidating the LPP, while chapter five provides an account of the design of a second generation of machines with improvements in joint-consultation. The final chapter draws closer to the practical questions of implementing new technology by tracing the history of staff training in preparation for mechanisation. The conclusion returns to the issues discussed above, and reviews the conclusions reached in the chapters leading to ask again how the PO should be judged in its record of managing technological change.

A set of overarching, preliminary questions guided the early research for this thesis. i.e. What were the major events and developments characterising the mechanisation of the mail? Why did the PO pursue mechanisation and were they right to do so? How did this decision affect industrial relations – was it divisive or constructive? It soon became apparent that the history of postal mechanisation was too broad and complex to address thoroughly in a single study, and so research increasingly focussed on the critical period 1969-1975. Though this period continued to be the main focus, there is some overlap, especially in chapters one and two which summarise elements of the back-story to the formal approval of the LPP in

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<sup>109</sup> Arthur, W. Brian, 'Competing Technologies, Increasing Returns, and Lock-In by Historical Events', in *Economic Journal*, Vol. 97 (1989), pp.642-665; Joel Mokyr, 'Evolutionary Biology, Technological Change and Economic History', in *Bulletin of Economic Research*, Vol. 43 (1991), pp.127-147; Stephen Jay Gould, 'The Panda Thumb of Technology', in *Bully for Brontosaurus: Reflections in Natural History* (New York: Norton, 1992), pp.59-78.

1969. As research progressed, new questions arose concerning the nature of systems planning in the post-war period; how design engineering interacted with industrial politics; the relationship between corporate strategy, structural change and technological innovation in a network industry; the effects of government policy and inflation on public sector capital investment; and the nature and course of negotiating workplace change between staff, engineers and management. These are outlined in more detail in each of the chapters.

The primary archival resource has been the documentary holdings of the British Postal Museum & Archive (BPMA) in London, also referred to as the Royal Mail Archive. The BPMA has catalogued its material into around 150 classes according to the National Archives' records management criteria. Each "POST" class encompasses a particular theme, such as buildings, uniforms, mail circulation or publications, and the files are organised according to their originating department and by period. Many types of documents were consulted including committee reports and minutes, official publications, research papers, correspondence, magazines, journals, newspaper cuttings, departmental histories, scientific and technical reports, manuals, diagrams, maps and photos. I had free access to all open records and was able to view some closed files under the Freedom of Information Act and in consultation with archivists. I was also provided with access to the internal cataloguing system and, under the guidance of archivists, to much uncatalogued material. The bibliography contains a list of the main classes and records involved. The BPMA search room also holds many informally collated "portfolios" containing miscellaneous cuttings on various subjects and personalities. There is a substantial specialist library with books on all aspects of PO history, and back issues of specialist journals in philatelic and local postal history. I also visited the BPMA's warehouse in Debdon, Essex, where the Royal Mail museum collections are currently stored and viewed dozens of artefacts including sorting machines, vehicles and post boxes. The BPMA is currently located on the site of Royal Mail's eight-acre Mount Pleasant Sorting Office, with other offices on site, which provided many opportunities to observe postal operations first-hand.

Other archival resources included the trade union records held at the Modern Record Centre in Warwick (identified in the footnotes as MRC) and governmental papers held at the National Archive (TNA). The National Sound Archive at the British Library (BL, NSA) is home to "An Oral History of the Post Office" including recorded interviews with many former PO employees, executive managers and senior engineers. These provided an important human counterpoint to an otherwise mostly documentary source base, which I augmented with conversations and correspondence with former PO employees, engineers, managers and unionists whom I met through the BPMA or in the course of presenting papers in various seminars and lectures. Secondary sources are discussed above and are referred to throughout

the thesis, but it should be noted that the period under study is relatively recent and so there is a great deal of published material from sociological and organisational journals which is a hybrid between primary and secondary material.



# **Chapter 1 The emergence of postal mechanisation in Britain and its industrial relations implications**

## **Introduction**

In May 1969 the Post Office Board convened to consider what had come to be known as the *Letter Post Plan* (LPP). A case was presented for reshaping the letter post system involving the most radical and wide-ranging changes to the network in modern history. The idea of concentrating the mail onto new types of mechanised sorting offices had long been discussed within the industry and had been formally examined by the Treasury. Indeed certain major preparatory policies – the limited introduction of sorting machinery, the two-tier (first and second class) service and the issuing of postcodes – were already in place before 1969. However the Board was now ready to receive a formal proposal for how mechanisation might be implemented nationally. Most of the nation’s correspondence was then sorted at thousands of locations in the network; the LPP proposed that this flow of mail should instead be concentrated in 120 Mechanised Letter Offices, each equipped with sorting machinery capable of rapidly processing large quantities of mail. Added to this, every address in Britain was to be issued with a code which householders and businesses should attach when addressing their correspondence, so that letters could be registered by a machine operator when entering the system and subsequently sorted by machine at every point along their journey. This arrangement was termed “code-sort”: a simple and elegant concept intended to modernise the increasingly complex and unwieldy infrastructure which had evolved over the preceding century. The Board heard of the efficiency and labour-saving benefits promised up to the end of the century and beyond, and, satisfied with the plan’s economic, technological and political prospects, gave formal approval. In context, this decision was one of a series of wider changes marking the year 1969. These were the final days of the old General Post Office, or “GPO”, with the entire organisation on the brink of having its status changed from that of a government department, whose staff were civil servants, to a public corporation with putatively greater autonomy from government, more explicit profit targets and a commercial management ethos. Mechanising the mail was envisioned as part of a wider movement to modernise the postal service and equip it for the future. It promised fundamental changes to the technology at the heart of postal infrastructure and to the working environment. The proposals therefore carried far reaching implications for both the structure of postal operations and for industrial relations.

This chapter provides a brief history of automated sorting up to the 1960s, focussed mostly on technological developments. The purpose of this and the following chapter is to point out that the LPP approved in 1969 was the culmination of more than twenty years of technological, economic and political planning. The present chapter focuses on technological aspects of planning, while the following chapter focuses on the political aspects. This establishes the groundwork for arguing that the characterisation of the PO's management of change in this period as inept is flawed. While some naivety and mistakes are acknowledged, these are viewed in the context of the achievements of planning and the good reasons that existed for choosing to mechanise in 1969, remembering that British preparations were widely held to be the most advanced in the world. This section of the thesis therefore challenges existing assumptions about the causes of postal mechanisation and, by extension, about the relative failure of mid-twentieth century nationalised industries to plan for change. There is little appreciation of the scale and duration of technological planning in Post Office historiography. Martin Daunton and Alan Clinton both followed the former-executive-turned-critic Michael Corby in believing that mechanisation was a product of the 1960s fashion for technological modernisation. Daunton stated that 'the benefits were certainly exaggerated in the contemporary enthusiasm for technology for its own sake, so characteristic of the 1960s'. Clinton's view was that 'the changes in the Post Office after 1964 should be seen in the context of exaggerated faith in the efficiency of ... technological innovation and administrative reform'.<sup>1</sup> In his recent narrative history of Royal Mail, Duncan Campbell-Smith includes some perceptive passages on the design of sorting machines, although his interpretation is questioned here. He has also assessed the impact of Benn and the consultants McKinsey, although he focussed on how they helped shape the Corporation Act 1969 rather than on their advocacy of mechanisation.<sup>2</sup>

Discussion of planning specifically related to technological change remains undeveloped in PO historiography and where judgements have been made about why the PO chose to mechanise sorting and about the suitability of its plans for doing so, they have been superficial. In this chapter the origins of technological planning are traced back to experimentation with the first sorting machines in the 1930s and the post-war decision to expand research and development, arguing that long-term industrial relations were critical to establishing the design path. The evolution of postcodes is highlighted to show that planning for the mechanised era took into account not only the convenience of public and commercial users, but also the wellbeing of postal workers. In chapter 2 the context of the 1960s modernisation movement in which the plan gained momentum is assessed, showing that preparing for new technology and new industrial relations had connections with the wider institutional upheaval associated with the Post Office Act, 1969. In tracing the long and short term factors shaping the LPP, some of the salient

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<sup>1</sup> Corby, *The Postal Business*, p.196; Daunton, *Royal Mail*, p.344; Clinton, *Post Office Workers*, p.305.

<sup>2</sup> Campbell-Smith, *Masters of the Post*, pp.393-408; 438-446.

characteristics of the industry are explained and these chapters provide a framework for the thesis by summarising the history of the main technological and political issues underpinning mechanisation. Commercial strategy, system planning, machine design, and union consultation were central themes of the political economy of the 1970s postal service and of the chapters which follow. Understanding of these issues is enriched by appreciating their history and interrelation. In doing this, a principal theme of the thesis is also introduced, namely, the centrality of collaboration between engineering, management and labour.

### **Pre-war mechanisation**

Sorting the mail has long been one of the major functions of the postal service, alongside collections, conveyance and delivery. The Royal Mail established the basic methods for this in the seventeenth century. Although these were honed over time as the system became more elaborate, the fundamental principles involved were unchanged by the mid-twentieth century. Based primarily on the simple sorting frame, mail was divided between dozens of pigeon holes, or “selections”, denoting the next stage in the journey of each letter. Frame-sorting techniques were refined during the Victorian expansion of postal services, when a labyrinthine system of timetables and trains connected a growing number of Head Post Offices and Forwarding Offices where most of the sorting took place. The system continued to evolve on this basis through the first half of the twentieth century when new technology was slow to make any great impact on the core techniques. Frame-sorting took place in rural post offices, large city buildings and even specialised train carriages – the famous Travelling Post Offices celebrated in W.H. Auden’s poem, *Night Mail*. Critical points in the network such as London’s Mount Pleasant and the King Edward Building were sited within reach of major railway stations and became home to specialised sections (i.e. Inland and Foreign) where the traditions of frame-sorting were perfected. Ideas for mechanising letter handling were aired speculatively in the nineteenth century but gained little traction until, first, motorised conveyance and, second, new computing and mechanical handling technologies became available during the first half of the twentieth century.<sup>3</sup>

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<sup>3</sup> Charles Babbage investigated postal services as he developed his ideas about information-flow in dynamic systems. He pointed out to Rowland Hill that the cost of carrying a letter was governed not by the distance it was conveyed but by the number of times it needed sorting along the way. This point was made by Anthony Wedgewood Benn while advocating mechanisation to Parliament in 1965. Hansard, ‘Postal Services’, Commons Sitting of 30/03/65, Series 5, Vol. 709, cc. 1421-22. Babbage’s study of the postal system has been seen as a precursor in the history of the computing concept of packet-switching. George Dyson, *Darwin among the Machines: The Evolution of Global Intelligence* (New York: Basic Books, 1998), pp.65, 69.

The mechanisation of conveyance in the early twentieth century in particular altered the dynamics of postal operations in ways to which later mechanisation had to adapt. Although much of the material infrastructure of the early twentieth century was a developed version of Victorian arrangements, such as bags, trolleys, sorting frames, tables, lists and directives etc., key elements of logistics were progressively mechanised primarily in the form of a growing motor transport fleet between offices,<sup>4</sup> and conveyor belt installations within offices. Such mechanical handling systems were highly developed and widely adopted throughout European postal administrations in the inter-war period.<sup>5</sup> In the 1930s London's largest sorting office, Mount Pleasant, was fitted with chutes and lifts transporting mail between floors, while conveyor belts shuttled the mail above the heads of sorting clerks.<sup>6</sup> At the Bristol Head Post Office, large conveyors ran through a tunnel connecting the building with train platforms. Under the streets of London the largest offices were connected by an unmanned, subterranean railway, opened in 1928 and later known as Mail Rail, running between Paddington and Whitechapel. During this period the PO fortified its global reach as it established airmail services with Imperial Airways.<sup>7</sup> Methods of conveyance were continuously refined to maintain service levels in the face of a national annual letter volume that doubled from 5 to 10 billion items through the middle third of the twentieth century.<sup>8</sup> Increasing the speed and reach of transport went hand in hand with various service alterations such as the reduction of the numbers of daily deliveries and the concentration of sorting onto larger offices. The building of a 4,000 strong motor fleet had, by the 1930s, rendered permanent changes to circulation and sorting arrangements. While statistical research made contributions in the 1950s, followed by computer-aided routing in the 1960s, sorting remained in large part a trade craft based on memory, dexterity and team work. 'It was always a pleasure to watch a team of expert sorters under pressure' remembered former Regional Postal Director W. MacKenzie in 1976.

Without so much as a glance at the sorting lists they would pump out a steady 40 a minute, with an occasional query about the whereabouts of some obscure address – the query and the answer from a colleague made without a break in the rhythm – the sorters reading the address on one letter as they were putting the previous one in the appropriate box...The early 1900's probably saw the heyday of circulation as an art; those were the days of the legendary circulation wizards in the Surveying offices, chaps whose Bible

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<sup>4</sup> Cyril R.H. Parsons, 'Carrying the Mail within the United Kingdom from 1900', in *Cross Post*, Vol. 11, 4 (2007), pp. 40-50; Julian Stray, *Moving the Mail... by Road* (London: BPMA, 2006).

<sup>5</sup> POST 17/451, The Mechanical Handling of Mails in Large Sorting Offices, c 1940, provides an illustrated inventory of mechanical conveyance systems in use in European postal centres during the 1930s.

<sup>6</sup> Mail travelled in boxes which discharged their load when a set of pins contacted a fixed metal guide at the appropriate point. POST 69/28, PO Board 1946, Index and Board Papers, Vol. 1, BP 25 (46), Appendix: Mechanical Appliances, Section 7.

<sup>7</sup> Derek Bayliss, *The Post Office Railway London* (Sheffield: Turntable Publications, 1978); F. V. Monk and H. T. Winter, *Air Mail* (London: Percy Press, 1936).

<sup>8</sup> Clinton, *Post Office Workers*, Appendix 26; Daunton, *Royal Mail*, pp.46-49.

was the railway working time-tables and their Prayer Book, the works of Bradshaw, alas now no more. Colleagues long since dead used to tell how they had only to suggest a mail from anywhere to anywhere and the wizard invariably knew a train on some obscure branch line, almost forgotten by the railway authorities themselves, which would provide just the connection required.<sup>9</sup>

This was manual sorting, and by the middle of the twentieth century it continued to be the predominant method. All dispatching offices received a daily influx of mail which was segregated first by physical qualities (letters, newspapers, parcels etc.) and then by geographic destination (regions, cities, towns and streets). This depended on the manual sorter who typically stood, or was perched on a stool, at one of many 36- or 48-box sorting frames, filling each pigeon hole with letters according to their destination. Mail was brought to one of roughly 1,200 Dispatch Offices and sorted for delivery to its next destination. Each listed a set of other offices to which it sent mail, and each had a unique distribution pattern tied to the historic characteristics of that area's mail flow. If the intended destination for a letter coincided with one of the destination offices on the list, it was dispatched there directly and become part of the flow of mail for the inward office. Inward sorting would then take place, again by hand, breaking the mail up into smaller and smaller units down to street level, ready to be bundled up and assigned to a postman's delivery round. However, much of the mail might have to travel between several offices en route. Where an item was not bound for one of the prescribed destination offices it was sorted by county and moved on to one of two dozen intermediate offices until reaching that catering for the intended destination. These interim points, or Distribution Offices, were positioned by major transport hubs. Where these did not deliver to each other, a higher layer of a dozen General Forwarding Offices ensured a connection. Beyond these three main office types were Local Forwarding Offices (performing the same function as General Forwarding Offices but at the district level) and, on the railways, Travelling Post Offices. At every point in the network the mail needed segregating and sorting into different divisions meaning that letters might be handled numerous times before delivery.<sup>10</sup>

Before the 1930s a handful of inventions had brought modest changes to manual sorting. This applied in particular to the preliminary stages of letter sorting. Stamp cancelling machines improved considerably upon the first hand-powered patent of Pearson Hill (son of the famous postal reformer Rowland Hill) in 1856-57. Letters were stacked and faced in the same direction before sorting and fed into the canceller, imprinting a mark – and often a date and place – across each stamp. Thereafter

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<sup>9</sup> W.K. Mackenzie, 'Postal Circulation, Part 1', in *Postal History: The Bulletin of the Postal History Society*, Vol. 197 (1976), pp.12-19; 'Postal Circulation, Part 2', in *Postal History: The Bulletin of the Postal History Society*, Vol. 199 (1976), pp.6-9.

<sup>10</sup> POST 17/147, Record of Principal Events in Circulation, 1939-1965, gives an impression of the nature and rate of variation to forwarding arrangements, with about 20 major changes per annum; P119/240, 'Coding Desk Translator Manual', 1977, pp.6-7, contains a description of the pre-1970s manual system.

engineering companies from Germany, America and Canada provided alternatives. Incremental improvements from the 1880s were submitted by experienced officers and surveyors, but in 1901 the PO purchased 'The Columbia' from an American firm, with around 60 used in London, Liverpool, Bristol and elsewhere by 1909.<sup>11</sup> In 1937, a sorting clerk described for the *Post Office Magazine* how sorting aids were used to prepare mail for frame-sorting.

The "Impress Machines" are set in motion, and as the evening "collections" rattle through the fells I hear a porter checking out the London mail. The evening's work has begun. Every man on the floor has a job. Collectors empty their loads on tables, - indoor postmen sort out and face up "flat" correspondence, - packets are placed in rows (stamp upwards) and above the rattle of the impress machines can be heard porters yelling the arrival and departure of connecting mails.

Letters are first sorted on upright 48 pigeon-holes placed back to back and in a row. Each pigeon-hole is labelled in geographical order with the name of an "area" or large town in the British Isles. The quickly filled "Foreign" box reflects the rapid increase in foreign correspondence. The extreme monotony of this work is brightened by discussions on almost every topic of the day, and "spicy" rumour of, say, a rise in wages is heard with eagerness. On "Primary" conversation often mixes with work and mirth sometimes drowns the whirr of the impress machine.<sup>12</sup>

By the late 1930s physicists at Dollis Hill were fitting photo-electric cells to cancelling and stamping equipment capable of sensing the position of a stamp on an envelope. This increased their output to 500-700 items per minute. Other innovations included table conveyors which moved the mail along during bag opening, facing and stamping stages, as well as bag cleaning machines to reduce dust.<sup>13</sup>

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<sup>11</sup> Jack Peach, 'Cancelling Machines – Who made them and how they worked', in Douglas N. Muir (ed.), *Postal Mechanisation Study Circle Handbook* (London: Postal Mechanisation Study Circle, 1993), sections B1, D1, E1; Douglas N. Muir, 'Victorian Innovation', in *Cross Post*, Vol. 11, 1 (2005), pp. 16-25.

<sup>12</sup> POST 115/545, *The Post Annual*, 1936-1938, Denis Baugh, 'A Sorter's Life' (1937), pp.86-88; Stuart Chesmore, *Behind the Letter Box*, (1936), pp.27-29, 62-64; POST 92/1162, St Martin's le Grand: *The Post Office Magazine*, 1933, James Goldie, 'The Speed of the Post'.

<sup>13</sup> POST 69/28... BP 25 (46), Appendix: Mechanical Appliances, Section 7.

Figure 1.1: London Sorting Office, 1907<sup>14</sup>

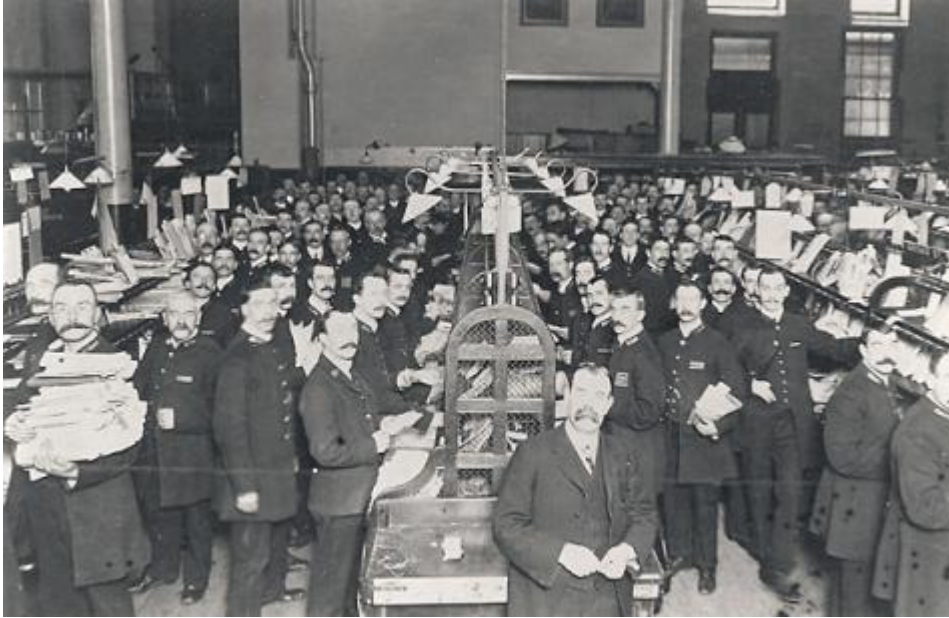


Figure 1.2: Mechanical conveyor system in operation at a London sorting office, 1934<sup>15</sup>



<sup>14</sup> London Sorting Office, 1907, BPMA search room photograph library

<sup>15</sup> Mount Pleasant Sorting Office, London, 1934, BPMA search room photograph library

Notwithstanding the introduction of supporting mechanical aids, the first significant steps in mechanising the core activities of sorting occurred in the 1930s when the PO trialled a machine called the Transorma, which proved to be a defining moment in the history of postal mechanisation. The PO had spent years making speculative enquiries, dating back to 1910 when Major O'Meara, the Engineer-in-Chief, and Sir Robert Bruce, Controller of the London Postal Service, witnessed various mechanical devices in American postal depots and returned convinced that these could increase efficiency and reduce costs in the British system.<sup>16</sup> O'Meara realised that, for mechanical aids to be effective, their design must be informed by local operational knowledge and he requested mail flow estimates for towns in which new buildings were planned. Operational experience and statistical knowledge of mail flow thereafter came increasingly to bear as the search for mechanical solutions became more focussed. Following the First World War, John Doherty, a determined but ultimately frustrated Head Postmaster who worked at both Manchester and Maidstone, submitted consecutive schemes which were trialled but found wanting on operational and economic grounds; as were attempts by engineers from America and New Zealand.<sup>17</sup> The American engineer, M. C. Voigtlander, first fitted a keyboard to an automatic facer/canceller to direct letters among numerous selection boxes, but was similarly unable to persuade the British of his ideas. Meanwhile Joseph Witherup, a postman from Liverpool, also fascinated by the potential of keyboards, imagined a rotating drum lined with slits to segregate small from large items of mail. Again, his ideas were thought impractical, although both keyboards and segregating drums would later become crucial features of mechanised sorting.<sup>18</sup> Dissatisfied with even these more sophisticated designs, the PO turned in January 1928 to the Federation of British Industries and met thirteen firms to explain their needs. Of the trio that stepped forward, a proposal by Jackson & Co in Glasgow for a mechanical clearance fitting for facing and cancelling was trialled. However, after two years, this was similarly discontinued, again on operational and financial grounds.

Meanwhile, in 1922, the PO formed a Mechanical Aids Committee (MAC) to add impetus to their investigations. Funding was a problem and the disparity between resources for telephone and postal research was identified by the MAC following its formation. It was later felt that the incentive to increase funding was missing in the inter-war period owing to the ready availability of 'cheap' labour and that the national volume of letter traffic, though growing, was more manageable.<sup>19</sup> Nevertheless, MAC research was renewed when the PO moved its R&D from cramped offices in central London to the Dollis Hill Research Station on the outskirts of the city, opened by Prime Minister, Ramsey MacDonald, in October

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<sup>16</sup> POST 69/28... BP 25 (46), Appendix: Mechanical Appliances, Section 2.

<sup>17</sup> *Ibid.*, Appendix Section 3.

<sup>18</sup> Douglas N. Muir, 'Early British Sorting Machines', in Muir (ed.) *PMSC Handbook*, section C.

<sup>19</sup> POST 69/28... BP 25 (46), Appendix: Mechanical Appliances, Section 4; Daunton, *Royal Mail*, pp.339-41.



1933. The new site provided separate laboratories for physics, chemistry, metallurgy, telephony, telegraphy, spectrography and short-wave radio, as well as a library, lecture hall and construction park.<sup>20</sup> Though it was mainly used for telephone research, work on postal projects was undertaken in collaboration with Sovex Ltd, a contractor who built the mechanical parts of a new facing machine – comprising a table with drives, rollers, belts and scanning units.<sup>21</sup> These developments moved in step with events abroad, as the Post Office took an interest in a machine developed in Holland and operating in Rotterdam sorting office since 1931.

Now regarded as ‘the world’s first successful letter sorting machine’, the Transorma was designed by J. Marchand and J. Andriessen in the 1920s.<sup>22</sup> Marchand began his career as a postman in the Dutch Post Office, later becoming an overseer, engineer and eventually Board member, before taking early retirement to build his machine with Andriessen, a professional mechanical engineer with whom he went into business, selling various Transorma models in several countries.<sup>23</sup> The British Post Office purchased two 20-tonne machines to run in tandem at a suitable office in Brighton, beginning trials in October 1935 in the hope this might ‘prove an inspiration to British firms to design a superior type of sorting machine’.<sup>24</sup> Sitting with colleagues on the upper deck of the machine, operators received spring-loaded trays of letters already cancelled, stacked and faced. They lifted the front letter from the stack with the right hand, read the address, and dropped the letter into a slot. The left hand entered a code on the keyboard as the right hand was freed to fish out the next letter in line. Any one of hundreds of codes denoting Brighton streets and districts was recalled by memory, the operators drawing on their training and overhead code lists. Each letter was then carried by the machine on a fixed-pace “endless chain carrier” delivering to one of 250 selection boxes according to the operator’s code which set nine steel pins on the carrier corresponding to the unique release settings for the correct selection box. Thus the routing information was stored and transmitted mechanically. Duncan Campbell-Smith has perhaps captured the essence of the machine best: ‘The keys were attached to a highly ingenious series of levers, push-rods, conveyor belts, flaps and buckets that clattered around inside the body of the machine like the workings of some giant fairground attraction’.<sup>25</sup>

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<sup>20</sup> POST 76/47, Notes on the early history of the Research Station, 1968; POST 76/119, Booklet containing photographs of laboratories in the Research Station, c. 1934.

<sup>21</sup> POST 76/46, Correspondence, quotes, tenders and contracts between the Engineer-in-Chief and Sovex Ltd, 1937-1939.

<sup>22</sup> Douglas N. Muir, *The Transorma at Brighton* (London: Postal Mechanisation Study Circle, 2006), p.1.

<sup>23</sup> J. Marchand, *Modernization of Postal Services* (The Hague: De Boekerij, 1945), p.16.

<sup>24</sup> Muir, *Transorma*, p.2.

<sup>25</sup> Campbell-Smith, *Masters of the Post*, p.394.

In several respects, the machines were successful in providing local operational benefits, and, consequently, remained in use well into the 1960s. Sorting rates were automatically recorded and marginally higher than frame-sorting, and operator 'ident' stamps allowed errors to be traced back to source. The chief advantage of the Transorma was that a large increase in the number of 'pigeon holes' to which a sorting clerk could divide the mail was enabled without reducing the rate of sorting. Nevertheless, the PO declined further purchases because the initial outlay exceeded long term savings and due to a range of technical and ergonomic flaws. Difficulties with letter stacking, sorting errors, maintenance, and the replacement of parts created frustration, while keyboard design, machine size and noise levels were also problematic. But two flaws in particular were fundamental. The first was that the coding technique enabled only local mechanical sorting. No machine-readable code was added to the letters themselves, so manual sorting was still necessary during the letter's journey. The second was that the pace at which operators worked was rigidly fixed by the speed of the endless chain carrier, a type of mechanism commonly used in process manufacturing since the industrial revolution.<sup>26</sup> This monotonised the work of the operator and precluded his improving future sorting rates. The machine's limits were still governed by human abilities, now located not in average physical capacity as in frame sorting, but in the average memory capacity. Experiments suggested that the average mind could quickly recall about 250 numbers corresponding to place names, and imaginative methods of training in this skill were devised. Marchand later published an operator training manual, with a timetable scheduling rounds of choral singing for trainee 'Transormists', combined with other techniques, such as the instructor pointing out successive cities and demanding instant recall of the correct numbers, in unison.<sup>27</sup> Singing and chanting to help the work along was already practiced by some at the sorting frame, as postman Jerry O'Connor explained in the *Post Office Magazine* in 1938:

Music has a sustaining power, and should be harnessed to the other arts to lighten the labours of those who perform rhythmical jobs such as sorting. There was once a Superintendent who, when the work was flagging, would tap the electric light shade in front of his desk, and the staff, taking the note (which was G), would proceed to sing quietly a verse of a well-known hymn.<sup>28</sup>

However, it is unlikely Transormists will have identified with this scene. John Piggott, an early pioneer in postal engineering, remembers that the union was 'seething' in the Brighton area at the time and that

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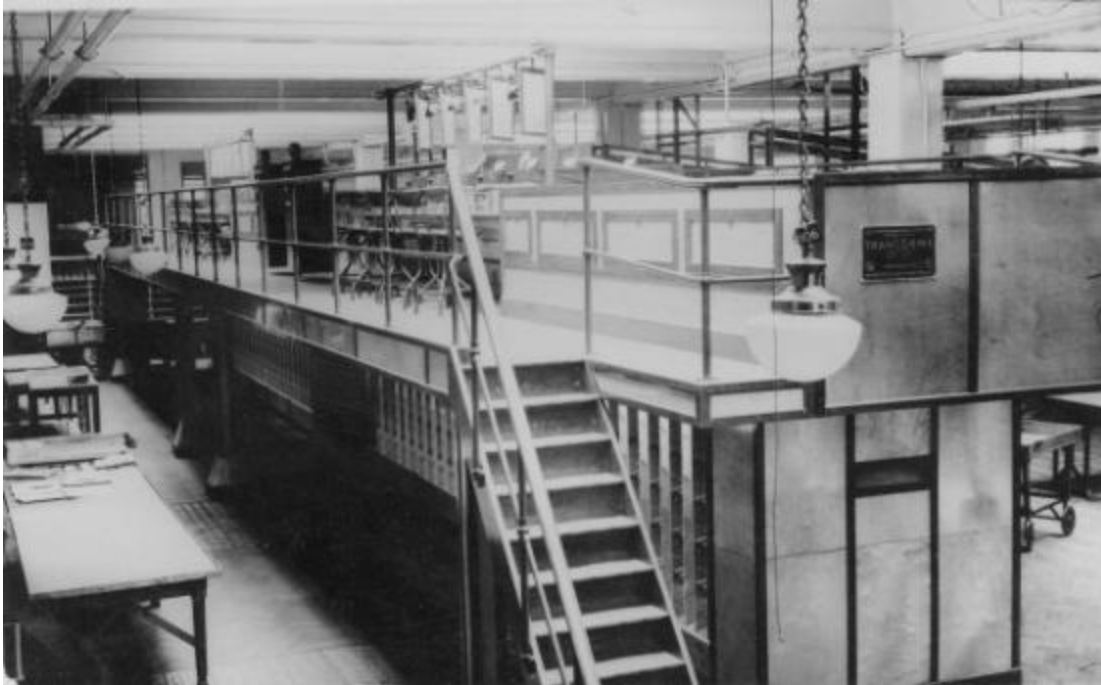
<sup>26</sup> Raphael Samuel, 'Workshop of the World: Steam Power and Hand Technology in mid-Victorian Britain', in *History Workshop Journal*, Vol. 3, 1 (1977), p.8.

<sup>27</sup> Marchand, *Modernization*, p.65.

<sup>28</sup> POST 92/1167, *Post Office Magazine*, 1938, Jerry O'Connor, 'Sing as we go', p.355. The Solent Male Voice Choir, also known as "The Postman's Choir", continues to perform. They formed in 1961 whilst working at the Portsmouth Head Post Office where they sang while sorting the mail. <http://postalheritage.wordpress.com/2012/08/13/solent-male-voice-choir/> accessed 14/08/12.

operators resented losing control over their pace of work. ‘What they hated was that the machine controlled them, they did not control the machine’.<sup>29</sup>

**Figure 1.3: The Transorma at Brighton<sup>30</sup>**



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<sup>29</sup> BL, NSA, C1007/15/01-14, Interview with John Piggott, Tape 7 (F10132) Side B.

<sup>30</sup> POST 118/5152, Transorma general view of Brighton Sorting Office

Figure 1.4: Operators at work on the Transorma<sup>31</sup>



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<sup>31</sup> POST 118/5153, Transorma in use at Brighton Sorting Office

In summary, the early history of postal mechanisation shows that an aspiration to mechanise the mail became a persistent PO policy at least fifty years before the enthusiasm for technological renewal of the 1960s. From a technical perspective, during the inter-war period several of the techniques which later became vital to the field emerged, including the use of belts and rollers for physical manipulation; of photo-electrical devices for sensing; of keyboards and codes for rendering the mail intelligible to machines; and of mechanical forms of memory storage for linking the coding and sorting stages. Likewise, from a political perspective, the PO had its first experiences of acclimatising to the use of mechanical aids; of coordinating the expertise of contractors, field officers and engineers; designing training courses that delivered efficient performance; and consulting staff over the integration of new working methods with long-established routines. The culmination of these developments is seen in the Transorma experiment, the significance of which was that it provided the PO with a template upon which to improve. Douglas N. Muir, Curator of Philately at the British Postal Museum & Archive, has described the experiment as a 'test bed for the future' in proving the possibility in principle of an economical sorting machine and furnishing a body of knowledge about its 'real world' workings. It also helped the PO gauge the reactions of staff and, above all, displayed in its shortcomings the technical issues for future investigation.<sup>32</sup> The Transorma also highlighted the limits that reliance on outside contractors placed on finding a broader solution. Moving to that level required in-house, systematic, R&D, drawing on resources that only a large institution could provide. Though capable of one-off automatic sorting, the Transorma could not mechanise the mail in the widest sense on account of the need for re-sorting by hand elsewhere in the system. It was an isolated success in speeding up the work of sorting clerks in a particular location, but it was an expensive and problematic investment only suitable for particular types of offices. By the 1940s, PO engineers were thus prompted to consider a system-wide solution, recognising that this was a longer road, lined with more formidable obstacles, but promising to lead much closer to their hoped for destination of full automation.

### **Post-war mechanisation**

Pre-war, both the emergence of motorised conveyance and mechanised sorting aids owed much to the increasing influence of the Engineering Department. Post-war, the influence of engineers on postal services became greater still, partly because letter sorting had at last demonstrated a susceptibility to new

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<sup>32</sup> Muir, *Transorma*, pp.37-39; H. Dagnall, *The Mechanised Sorting of Mail* (Leicester: published by author, 1976), p.10.

types of mechanical control, but also because engineering had in the first half of the century grown into a powerful force at the Post Office thanks to the role of technicians in building and maintaining the national telephone network. Engineering was established as a PO profession when the telegraphs were incorporated in 1870. When telephones were later similarly nationalised there was a surge in the employment of electrical engineers, many of whom after the First World War joined together to form the Post Office Engineering Union (POEU).<sup>33</sup> In the interwar period the Engineering Department was preoccupied with installation and maintenance, while increasing resources were devoted to research and development. While the majority of R&D in telephony continued to come from the Bell Laboratories in America, in Britain the establishment of the Dollis Hill labs fostered more in-house innovation, particularly in cabling, transistors and radio.<sup>34</sup> In the mid 1930s, the Engineer-in-Chief commanded a workforce comprising dozens of research and design staff, nearly 1,500 provincial engineering supervisors, and hundreds more in London working on lines and exchanges, supplies and fittings and maintaining the motor fleet.<sup>35</sup> During the Second World War, PO Engineers Tommy Flowers and Gordon Radley contributed to code-breaking at Bletchley Park through the construction of “Colossus” (the first electronic, programmable computer developed by the British to read encrypted German messages) based on the valve-switching used in telephone exchanges, an experience that enriched both telephone and postal R&D after the war.<sup>36</sup> By 1946 the Department was regarded as a global leader, with more than 6,000 established engineers, tens of thousands more unestablished staff, and a significant R&D establishment of 40 research engineers and 14 scientists.<sup>37</sup> Before 1945, R&D therefore related to establishing, expanding and making more efficient telegraph, telephone and radio communications. Modern postal engineering grew partly out of this context, able from the outset to draw on telephone expertise. Moreover, the PO’s involvement in military operations during the Second World War meant that its leading engineering personalities had firsthand knowledge of the power of massive, centralised,

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<sup>33</sup> Clinton, *Post Office Workers*, p.249. When the POEU formed, electrical engineers were often paid by piece-work, had low job security and doubtful professional status. ‘The engineers, however skilled, who built and maintained the system were generally looked down upon by those who operated it’, p.54.

<sup>34</sup> There was ‘practically no research work’ before 1918 and though basic research increased thereafter it remained limited for economic reasons. The larger American telephone providers committed greater resources to basic research, with the Bell laboratories (AT&T) at the forefront of research into long-distance telephony and radio. POST 69/28... BP 8 (46), Engineering Research; Leonard S. Reich, ‘Industrial Research and the Pursuit of Corporate Security: The Early Years of Bell Labs’, in *Business History Review*, Vol. 4, (1980), pp.504-529.

<sup>35</sup> POST 59/169, List of the Principal Officers in the Post Office, 1937, pp.69-70.

<sup>36</sup> Paul Gannon, *Colossus: Bletchley Park’s Greatest Secret* (London: Atlantic Books, 2006), pp.244-268. On the role of wartime research in contributing to post-war commercial exploitation of valve-switching see Jerome Kraus, ‘The British Electron Tube and Semiconductor Industry, 1935-62’, in *Technology and Culture*, Vol. 9, 4 (1968), pp.544-561; Carol Heim, ‘R&D, Defense, and Spatial Divisions of Labor in Twentieth-Century Britain’, in *Journal of Economic History*, 47, 2, (1987), pp.365-378.

<sup>37</sup> The numbers of unestablished engineers in 1946 is unclear but the 1956 Commercial Accounts counted over 80,000. POST 59/176, List of the Principal Officers in the Post Office, 1946, p.48; POST 69/28... BP 8 (46), Engineering Research, p.4.

operational research. Thereafter, these factors ensured that a better resourced and more systematic attempt to mechanise the mail was possible.

Increasingly during the 1930s and 1940s, contacts were made between Britain and America over the development of postal and telephone systems, and leading figures at the British PO were influenced by both technical and intellectual shifts occurring across the Atlantic. The burgeoning of national telephony resulted in new, systems-oriented conceptions of how R&D should proceed and the ideas similar to those of Theodore Vail, Chief Executive of AT&T in the interwar period, became prominent among senior British PO engineers. Vail understood the Bell System as ‘an ever-living organism.’<sup>38</sup> He promoted ‘the ideology of systems engineering’ in which all elements needed to be coordinated and considered in a network context. Vail was instrumental in fostering what has been termed ‘network mystique’, in which, to be successful, new ideas needed the backing of a powerful scientific and engineering establishment and a period of adaptive development in which constraints imposed by the wider system were recognised.<sup>39</sup> As a result, R&D in the Bell system was more gradual and methodical than market conditions would otherwise permit and this became a self-conscious virtue at AT&T, which, thereafter, acted according to ‘a strategy that looked far into the future and measured progress in decades instead of years’.<sup>40</sup> The British PO in this period came to realise that a similar, long-term and systems-oriented philosophy was required for the postal service if a new platform of sorting technology was to be successfully introduced. Experience with the Transorma only reconfirmed the British PO in its decision to apply a sustained in-house, systems-engineering approach to R&D in postal mechanisation. The best available machines on the international market did not meet PO requirements and although the general direction of the research that was needed was clear, the next stage was to decide whether to commit to this path and, if so, to specify the long-term target while figuring out what initial steps to take. These were questions for operational and engineering experts, but they would have to wait as, in 1939, all mechanisation research was shelved for the duration of the war.

The Engineer-in-Chief in this period was Sir Stanley Angwin, appointed to the position in 1939 having first joined as a Second Class Engineer in 1906. After the war he turned his attention to mechanisation and became convinced that conditions were ripe for a more concerted approach. During his career he saw that a shift had occurred in postal economics. The financial position had changed from the pre-war era when wages were 55% less costly. Mechanisation was financially justified where it had not been before and, in Angwin’s view, this made it ‘a matter of urgency to get an influx of new people and

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<sup>38</sup> Louis Galambos, ‘Theodore N. Vail and the Role of Innovation in the Modern Bell System’, in *Business History Review*, Vol. 66, 1 (1992), p.107.

<sup>39</sup> *Ibid*, p.108.

<sup>40</sup> *Ibid.*, p.123.

get them at work on the outstanding problems'.<sup>41</sup> As one of four Assistant Director Generals sitting on the PO Board,<sup>42</sup> he was able in November 1946 to recommend a significant injection of funding, arguing that the success seen in telephone research could be replicated in postal engineering. The extra resources would provide the basis for a more sustained and systematic approach. 'It has now been realized' read his report to the Board, 'that many of the problems of Postal Mechanization require the application of scientific principals not hitherto applied.'<sup>43</sup>

The move to tackle postal mechanisation with greater ambition while keeping the needs of workers in mind coincided with the post-war Labour Government's encouragement of innovative productivity policies. The President of the Board of Trade, Stafford Cripps, speaking in September 1946, urged 'the use of every device of ingenuity and invention by organization, mechanization, improved layout and more skilled and scientific management to increase the capacity of our industries without putting a greater load on our workers'.<sup>44</sup> In 1946 the Engineering Department for the first time listed postal mechanisation as one of the 39 major technical projects ongoing at Dollis Hill (alongside established telephone-related fields such as switching circuit theory and thermionic valve research) and £50,000 was allocated for the recruitment of additional scientists.<sup>45</sup> Meanwhile, an enlarged Mechanical Aids Committee was formed on which every major postal department was represented including Postal Services, Power and Research Engineering, Finance, Personnel, various regional directors as well as Union/Staff-side representation.<sup>46</sup> The new MAC stressed the importance of interdepartmental collaboration and, in particular, sought to offer a forum for dialogue between experienced postal managers and technologists.

The main motive is close and constant discussion and interchange of ideas between practical postal officers and engineers. While progress must finally depend in the main on the resource and ingenuity of the engineers, the secret of success undoubtedly lies in familiarising them with postal conditions and processes and postal requirements.<sup>47</sup>

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<sup>41</sup> POST 69/29, PO Board 1946, Proceedings and Progress Reports, Vol. 2, PO Board 8 (46), Board Meeting Proceedings, 08/11/46, p.8.

<sup>42</sup> The other three represented Services, Finance and Personnel. POST 59/176, Establishment Book, 1946, p.5.

<sup>43</sup> POST 69/28... BP 25 (46), Postal Mechanisation, pp.3-4; POST 69/29... Board meeting proceedings, 08/11/46, p.8.

<sup>44</sup> Address to Prosperity Campaign Conference, Edinburgh, 19 September 1946, quoted in Anthony Carew, 'The Anglo-American Council on Productivity (1948-52): The Ideological Roots of the Post-War Debate on Productivity in Britain', in *Journal of Contemporary History*, Vol. 26, 1 (1991), pp.49-69.

<sup>45</sup> POST 69/28... BP 25 (46), Postal Mechanisation, pp.4-5.

<sup>46</sup> POST 17/453, Mechanical Aids Committee Minutes, 1946-1955, Minutes of First Meeting, 24/05/46.

<sup>47</sup> POST 69/28... BP 25 (46), Postal Mechanisation, p.1.



A commonly held assumption about the creation of industrial technology is that a dominant group, usually management, sets the agenda and the goals. For example, Val Dusek's textbook on the philosophy of technology remarks that '[typically], the interests of owners and managers determine the design of factory technology to the almost complete exclusion of the desires and interests of labourers'.<sup>48</sup> At the PO, management and engineers were the driving force in directing postal R&D, but the records of the MAC make it clear that the staff-side became firmly established as a persistent and influential voice in the major issues surfacing through the 1940s, 50s and 60s. The Chairman was Sir Alexander Little, Director Postal Services, who described the MAC as 'a clearing house for ideas'. The first meeting was held in May 1946 where it was agreed that 'the committee must get away from the past and break new ground' and promote 'pioneering work'. It was also made clear at the outset that staff-side concerns should be central, as outlined by the UPW representative Mr G. Stevens who remarked that sorting machines should 'ease the staff's burden rather than be used to drive the staff'. The other members agreed that 'a major object should be to improve the conditions of staff'.<sup>49</sup> This became a well established design policy throughout the 1950s and 60s, and, in one crucial respect, one that engineers were locked into from 1946. This was the commitment to free human operators from the rhythm of the machine. It was believed that higher levels of productivity were possible if individual operators were not limited by a uniform, mechanised rhythm, catering to the (s)lowest common denominator, as the Transorma had done. Creating a system that successfully synchronised human-paced coding with subsequent (but interlinked) rhythmically-paced mechanical sorting became a defining feature of the post-war R&D effort. It was a hugely difficult but worthwhile problem to solve, as it enabled the workforce to operate in relative comfort and thereby achieve higher output. The more politically acceptable mechanised sorting could be, the more effective its contribution to productivity in the long-term. In this way staff wellbeing became integral to the pursuit of efficiency.

Two documents were produced in 1946 outlining the long-term vision and the short-term programme of R&D. These represented what Duncan Campbell-Smith has termed 'the Gemmell-Carter vision'.<sup>50</sup> Assistant Staff Engineer for Research, Mr R.O. Carter, 'put forward certain suggestions regarding the possible ultimate development of letter sorting, not ten years, but perhaps thirty or even fifty years hence'. He made an analogy with telephone R&D, pointing out that if, in the early years of automatic switching on local networks, there had been a clearly articulated long-term plan to create a nationally integrated system – even though certain technical problems then seemed insoluble – later problems in making the transition to long-distance trunk dialling might have been avoided.

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<sup>48</sup> Val Dusek, *Philosophy of Technology: An Introduction* (Oxford: Blackwell, 2006), p.206.

<sup>49</sup> POST 17453... MAC, 24/05/46.

<sup>50</sup> Campbell-Smith, *Masters of the Post*, p.397.

In the same way, if the future trend of mechanization of letter sorting can be foreseen, it may be possible to plan the immediate short-term development in such a way that radical alteration at a later date will be unnecessary.<sup>51</sup>

Carter therefore believed that R&D should not lose sight of the ultimate goal: a nationally integrated system of mechanised sorting offices in which the public would add a code to their letters in order that machines could do the sorting. ‘It is envisaged’, he wrote, ‘that every street, or possibly even every address would have its individual code, which would be noted or remembered with the name and address of a correspondent in the same way as are telephone numbers at the present time’.<sup>52</sup> Like staff wellbeing, the long-term goal of comprehensive and integrated sorting office mechanisation was appealed to time and again over the next twenty years.<sup>53</sup> It formed the basis not only of the main MAC but of its sub-committees such as the working parties responsible for major development fields such as coding and sorting machine design. For example Mr J.E. Yates of the Postal Services Department, overseeing sorting machine R&D, was explicit about this from the outset:

...the basis of the Working Party’s programme was to mechanise all processes ... from the time of arrival ... to the bagging off stage... Letter collections would be fed, via hoppers, into a mechanical segregator and facing machine, whence the letters would pass mechanically through a stamp cancelling machine, thence be fed automatically to a machine sorter who would read the address, and code for ... subsequent mechanical sorting... It [is] hoped that bundling would eventually be done without human intervention. It was with this ultimate picture in mind that the Working Party was proceeding.<sup>54</sup>

It was nevertheless acknowledged that this would take many years to accomplish. The medium-term challenge – within ‘the next one or two decades’ – was to produce a viable sorting machine.

Power Engineer Mr. W.T. Gemmel provided the near-term blueprint. His key concept was that the coding of letters should be separated from the sorting. That is, ‘the reading of the address and the translation of this information into the appropriate selection’ should be treated separately from ‘the placing of the letter in the box corresponding to this selection’. The first stage required that the information in an address be expressed as a machine-readable code and, as a distant prospect, there was hope that the public might reliably append standardised markings or, even more speculative, that

<sup>51</sup> POST 17/60, Letter Sorting Machine Working Party, Papers 1-24, 1946-1954, Paper 1A, ‘Mechanization of Letter Sorting: Some speculations on future developments’, 20/12/46.

<sup>52</sup> *Ibid.*

<sup>53</sup> POST 17/453... MAC, 25/11/47, p.2; POST 69/36, PO Board 1948: Board Paper 38, ‘Engineering Developments’, p.9; POST 76/27, Engineer-in-Chief’s Report, 1936-1949, 1948, p.57; POST 17/172, G. P.Copping and H. J. Langton, ‘Sorting Letters by Machine’, 1958, pp.14, 20; POST 122/461, Mechanisation: Trial of SPLSM at Bath: psychological study, 1951-1956, File 4; and Brigadier K. S. Holmes (Director of Postal Services) ‘Mechanization of the Postal Services’, in *Engineering* (1961), p.2

<sup>54</sup> POST 17/453... MAC, 25/11/47.

machines might be designed that were capable of reading human handwriting. But ‘with the normal variations in the handwriting and manner of addressing letters, it is difficult to conceive a method of performing [this] operation by machine, without the intervention of human intelligence’.<sup>55</sup> As with the Transorma, operators would still be needed to attach the code. However by separating this coding stage, Gemmel saw prospects for creating chains of coding stations to feed a single stream of code-marked letters into one sorting machine. Moreover this meant that once code-marked, a letter could in principle be re-sorted by machine at any office during its journey.

For example, a coding operator in London can apply a different coding to letters for Glasgow and Greenock respectively. Letters for both destinations will be placed in the same box by the sorting machine in London. On reaching Glasgow, they may be passed through the Glasgow sorting machine which will place letters for local delivery and letters for Greenock in different boxes.<sup>56</sup>

Gemmel concluded by summarising and prioritising the required R&D:

Technically the most difficult operations involved in the proposed system are those of recording the coding on the letter and of reading it subsequently in the sorting machine... The continuance or abandonment of the scheme will depend on the finding of satisfactory solutions to these problems. All of the suggested methods of coding may have to be investigated, possibly with variations which may suggest themselves as the work proceeds... Allowing for the necessary field trials on experimental models, the production of the first complete prototype equipment for service trial is likely to be a ten-year project.<sup>57</sup>

At the outset, they faced a series of complex mechanical problems including how to separate letters into streams, to face them in the same direction, stack them in uniform piles and manipulate their movements with belts and diverters.<sup>58</sup> The challenge was to create letter handling systems that could process many different sizes, shapes, weights and textures of mail with high reliability and speed. R&D in the 1950s therefore focussed on ‘evolving’<sup>59</sup> a variety of segregating, facing, stacking, and sorting

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<sup>55</sup> POST 17/60... ‘Possibility of developing a coding machine and an automatic letter sorting machine’, 27/11/46.

<sup>56</sup> *Ibid.*

<sup>57</sup> *Ibid.*

<sup>58</sup> Improvement of mail handling techniques continued for the rest of the century, reaching a remarkable state of sophistication. In the early 1970s, academic mathematicians took an interest in letter-turning and stacking in sorting machines for their innovative applications of various theories. Paul R. Scott, ‘The Klein Four-Group and the Post Office’, in *The Mathematical Gazette*, Vol. 58, 4 (1974), pp.142-143; Joseph A. Gallian, ‘Group Theory and the Design of a Letter Facing Machine’, in *The American Mathematical Monthly*, Vol. 84, 4 (1977), pp.285-287.

<sup>59</sup> Adaptationist and evolutionary concepts became integral to what was described in 1969 as the profession’s ‘philosophy of development’ in Nick de Jong, ‘Introductory Paper’, in Institution of Mechanical Engineers, *British Postal Engineering: A Conference jointly sponsored by the Manipulative and Mechanical Handling Machinery Group of the Institution of Mechanical Engineers and the Post Office, 19<sup>th</sup> to 21<sup>st</sup> May 1970* (London: IME, 1971), pp.3-4. Evolutionary language can be found throughout the R&D papers with reference to the creation of new mechanisms and techniques. See for instance POST 17/453... MAC, 11/11/48, p.2; POST 17/454, Mechanical Aids Committee Minutes, 1955-1969, Minutes, 04/04/57, p.2; POST 17/172... Copping and Langton ‘Sorting Letters by

methods to replace human labour in each discrete phase of the overall process.<sup>60</sup> Many of the mechanical breakthroughs came in designing what was known as the “Interim Machine”, in which six sorting positions were linked, outputting a single aggregated stream of mail. Testing took place in the basement of London’s Mount Pleasant Sorting Office, beginning with the feeding and stacking of letters: a ‘particularly difficult problem’ said Alexander Little, which had ‘baffled Postal Administrations for over 20 years’.<sup>61</sup> Improved belt and roller systems were developed and the machine’s framework was constructed at a factory in Birmingham. By the end of the decade, however, tests on the prototype led to concerns that the six-position format could not be brought up to operational standards with existing technology. Little vocalised this in October 1949: ‘We must face up to the hard conclusion’, he warned, ‘that the machine must be practically fool-proof and must deal with all types of small correspondence’.<sup>62</sup> By the following October, Gemmell wanted to continue testing, but his frustrations were mounting. A device for separating letters had to prove that it could handle hundreds of thousands of letters reliably, but he reported that ‘some 2,000 or 3,000 were handled without a fault then, for no apparent reason, a particular item would fail to be picked up’.<sup>63</sup> The most intractable problems stemmed from having the machine simultaneously accommodate six operators, and so although testing and refinement continued through the early 1950s, plans for alternative designs were put forward. Geoff Copping was one of those who believed a change of course was needed and in late 1952 argued that a single-position machine held out better prospects for operational viability. The Single Position Letter Sorting Machine – or “SPLSM” – was envisioned as a stand-alone sorting machine to be operated by a single keyboard position built onto one end. Copping believed that ‘the problems involved in the design and construction of the single unit machine were very much more susceptible of solution than those of the interim machine. Furthermore there was a vast reserve of experience gained during the development of the interim machine on which to draw’.<sup>64</sup> Development on both projects ran in parallel but, by mid-1955, Little judged that if the SPLSM could be proved in a live trial the six-position design could be dropped.<sup>65</sup>

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Machine’, pp.4, 8, 21; POST 69/84, PO Board Papers Part II, 1969, POB (69) 116, Research Department: Move to Martlesham, June 1969, Annex 1: R&D Objectives, p.1; POST 119/253, Postal Engineering Articles on Automatic Letter Sorting, c. 1968-1970, G.P.Copping, ‘The Conversion of the Postal Address into Machine Language’ (1968-9), pp.2, 4; POST 119/256, Code/Sort Translator (CST) 2, 1972-5, Notes by H.A.J. Bennett, 24/04/74.

<sup>60</sup> POST 17/453-458, Mechanical Aids Committee minutes, papers, memoranda & progress reports 1946-69; POST 17/459-461, Letter Sorting Machine Working Party minutes, papers & progress reports to MAC, 1946-1955; POST 17/462, Reports 1-20 on progress in the Engineering Department in the development of an Interim Letter Sorting Machine, 1947-1954; POST 17/91, Electronic Letter Sorting Machine Working Party, 1961-1968

<sup>61</sup> POST 17/453... MAC, 07/04/49.

<sup>62</sup> *Ibid.*, 27/10/49.

<sup>63</sup> *Ibid.*, 19/10/50.

<sup>64</sup> *Ibid.*, 23/10/52.

<sup>65</sup> *Ibid.*, 22/04/55.

Meanwhile, chemists, physicists and mathematicians at Dollis Hill set about creating the materials and system for a code. Whether this was attached to envelopes by the public or by the machine operator (from a memorised list or by using prescribed rules for deriving a code from the written address, a technique known as “Extract Coding”), each item of mail had to end up with an imprinted machine-readable code containing enough information for automated sorting. Early ideas for an ink-based chessboard pattern in black and white were abandoned because this might clash with other envelope markings.<sup>66</sup> Instead, variations on the theme were investigated. A working group designed various binary codes and pursued methods using fluorescent materials for imprinting these onto dummy mail. Setbacks in the first two years were such that, for a time, the entire future of code-sorting was thought to be vulnerable, as Yates explained to the MAC. Envelopes were made from many types of paper, some of which presented seemingly impossible complications to fluorescent marking. ‘The chemists [are] not yet ready to say that the task assigned to them [is] impossible but they [are] forced to admit that the outlook [is] very unpromising’.<sup>67</sup> A considerable amount of basic and applied research led to increasingly sophisticated chemical solutions. Simultaneous innovations included improved photo-electric scanning, the creation of machine languages and the application of coding theory.

The long evolution of the postcode drew also on sustained and in-depth psychological and social scientific research. The choice of the shape and form of code required an understanding of how the public and commerce were likely to respond. The public were already familiar with London district codes,<sup>68</sup> and analogies were drawn with car number plate schemes in search of a format that balanced familiarity with the optimal arrangement of numerals and letters.<sup>69</sup> Research into the likely commercial response revealed that 800,000 businesses used post, 5% of these were heavy users posting approximately 25,000 items per month, and the majority were in favour of the code, citing the potential for lowering costs and improving internal administration.<sup>70</sup> A four year study by outside consultants offered no new insights and concluded that ‘in general, Post Office thinking on, and study of, the problem of coding addresses was at an advanced stage’.<sup>71</sup> Such market research was an ongoing theme of technological planning at the PO and played its part in shaping the R&D development path, contrary to assumptions found in industrial

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<sup>66</sup> POST 17/60... ‘Possibility of developing a coding machine’, 27/11/46.

<sup>67</sup> POST 17/453... MAC, 07/04/49.

<sup>68</sup> Tony Gammons, ‘Before Postcodes’, in *Cross Post*, Vol. 5, 3 (1994), pp. 116-123; Tom Norgate, ‘Celebrating 50 Years of Postcodes’, in *Cross Post*, Vol. 13, 2 (2010), pp. 48-50; Douglas N. Muir, ‘New Acquisitions: The First Postcodes’, in *Cross Post*, Vol. 10, 1 (2003), pp. 46-47.

<sup>69</sup> POST 17/454... MAC, 25/07/58.

<sup>70</sup> POST 23/133, *The Social Survey: The Postal Services and the Business User*, 1960. On machine-coding R&D see POST 17/463, *Progress Reports of the Fluorescent Coding Study Group of the Letter Sorting Machine Working Party*, 1952-1954.

<sup>71</sup> POST 17/173, *Code Design and the Design of Keyboards: Report of work carried out on behalf of the Post Office*, 1958-62.

sociology that large organisations, when making long-term decisions about automation, tended to downplay market research in favour the prevailing bureaucratic ideology<sup>72</sup>

British accomplishments in postcode research were such that foreign postal administrations were advised by consultants to adopt similar alpha-numeric systems for the benefits they offered. The British system improved on European, American and Japanese schemes in accommodating not only outward but inward addressing. That is, the first part of the code gave city or town information (outward), while the second part gave street and house information (inward), allowing more flexibility in subsequent system planning.<sup>73</sup> More generally, the inclusive approach to staff-side involvement in R&D was also noted by foreign observers of the British efforts to improve industrial productivity. The mere existence of staff consultation was noteworthy when compared with some other administrations. In 1960, the American Study Group to the European Productivity Agency cited British postal mechanisation as an example in which union representatives were consulted at all stages of testing and implementation of new machinery. Some consultation was undertaken in Belgium, however, unlike in Britain, postal unions had no veto power over installation. In Germany, unions also had less power to alter technological plans and were consulted less. In the French Post Office there were no productivity committees during this period. Rather, unions were advised that management had considered their needs before installations began.<sup>74</sup>

An important characteristic of the R&D process was that within the limits set by what contemporary technology could be expected to realistically deliver, decision-making was further constrained by the various interests of staff, management, public and commercial habits, as well as the levels of performance required in the typical sorting office environment, not to mention the PO's public commitments to standards for speed and accuracy of delivery. For instance, reflecting on the origins of the postcode, the PO explained to the Carter Committee (a 1976 parliamentary inquiry into all aspects of the postal service) that strict parameters were placed on its design in the 1950s. The public needed something memorable and uniform, but compatible with the old city district codes. Operationally the code needed flexibility to accommodate ad hoc revisions to circulation and delivery, and would have to form two parts reflecting outward and inward sorting. The characteristics required of the code therefore had to mesh with the demands of the economic and psychological aspects of letter writing, something that PO officials later remembered:

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<sup>72</sup> Peter Senker, 'Technical Change, Work Organisation and Training: Some Issues Relating to the Role of Market Forces', in *New Technology, Work and Employment*, Vol. 4, 1 (1989), p.47.

<sup>73</sup> Carter Report, p.79; Appendix to the Carter Report, p.324; POST 92/17, PO Report and Accounts 1970-71, p.15; POST 17/454... MAC, 04/04/57.

<sup>74</sup> Bufton, *Britain's Productivity Problem*, pp.52-3.

This financial requirement was a major factor in determining the type of equipment developed which affected the shape of the postcode. For example, the method envisaged for imprinting the codes in machine language was by means of an operator using a keyboard; and there was a limit to the capacity of the code ‘translator’ device that could be developed at economic cost.<sup>75</sup>

The financial viability of any code-sort system depended on high throughput rates at coding desks – the ‘man-machine interface’ at which staff would sit and type each letter’s code for subsequent automatic sorting – and the chosen code structure was thus partly determined by which variants fitted best with the average mental and physical capacities (short-term memory and keyboard transcription) of operators. As Copping put it, ‘the longer the public code the longer the keying operation; this has a direct effect on the number of operators and coding machines the system will require’.<sup>76</sup> Copping also stressed that finding the optimal format was a long-term and organic process, remembering that ‘the code had to be evolved, introduced and the public educated to use it, a lengthy process’.<sup>77</sup> Similar explanations were heard by the Carter Committee:

The development of the British Postcode in its final form was a lengthy process which evolved over a period of time. The considerations the postcode was required to satisfy and the most acceptable method of doing so were identified continuously as ideas about the theory and practice of postal coding and mechanisation crystallised in the late 1950s and early 1960s.<sup>78</sup>

Indeed by the end of the 1950s each of the sub-disciplines in the maturing field of code-sort research had overcome the major barriers set before them in 1946. Working prototypes were in place for each of the key phases of sorting, from isolating a machinable stream from the mass of incoming mail, to the final act of automated sorting. Appropriate chemicals and techniques had been found for imprinting codes on envelopes. The complexities of twisting and turning letters accurately and at speed had been tamed, and the art of picking up, queuing and presenting letters of different shapes and sizes was producing useful results. Thermionic valve and threaded core matrix systems offered the computation to track and manipulate items of mail between the human coding and mechanical sorting phases. And a coding format had emerged, promising to balance the needs of machines, operators, the public, commerce and in-house demographic analysts whose job it would be to issue towns and cities with unique but consistent coding plans. The next step was to put these elements through a series of “live” tests. If it was to be operationally viable, mechanisation needed to perform reliably and economically under working conditions.

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<sup>75</sup> Appendix to the Carter Report, p.335.

<sup>76</sup> POST 119/253... G.P.Copping, ‘The Conversion of the Postal Address into Machine Language’ presented to Reading, Edinburgh, Preston and London Centres of the Institute of Post Office Electrical Engineering, Dec 1968-March 1969, p.2.

<sup>77</sup> *Ibid.*, p.11.

<sup>78</sup> Appendix to the Carter Report, p.334.

Three trials were particularly important in proving viability. Tests with a SPLSM at Bath Head Post Office in 1955 enabled the act of coding by staff to be examined from a psychological perspective.<sup>79</sup> In his preliminary research Dr Floyd, contributing experimental psychologist from the Medical Research Council, used slow-motion filmed footage to analyse operator movements and reactions. This prompted Sir Gordon Radley, senior engineer and Director of Postal Services, to pose the following questions of the research committee: What constitutes difficulty in deciphering and difficulty in coding a destination? Which kinds of codes are easiest to learn and use? What is the relationship between number of codes in a series and learning time? How far ahead would sorters read addresses given unlimited freedom? What are the determining factors? What is the relationship between coding time and the number of possible codes to choose from? How long does plural coding take relative to simple coding? What is the best training method?<sup>80</sup> A trial with live mail at Luton in the summer of 1960 showed that the information contained in a written postcode could be reliably transposed into machine-readable markings composed of phosphor dots imprinted onto each envelope under ‘real world’ conditions.<sup>81</sup> The most comprehensive trial was carried out in Norwich where, from 1959, all of the city’s addresses were allocated postcodes which the local population was asked to add to their correspondence. The Head Post Office was effectively turned into a pilot Mechanised Letter Office with local staff operating the full range of facing, segregating and code-sorting machinery. ‘It is from this installation’ wrote design engineer Geoff Copping in a 1959 paper on the future of automated sorting, ‘that it is expected to obtain the most valuable experience and to learn the fundamental economics of operating letter sorting machines’.<sup>82</sup> The Norwich experiment proved that code-sorting could work in practice. Public and commercial addressing habits could be altered with appropriate publicity. Staff-side cooperation could be retained through effective consultation. And financial savings and increased productivity could be secured. When a further trial in Croydon began in 1966, all local residents received a booklet from their Head Postmaster encouraging the use of their new codes. It read:

Sorting letters by hand is time-consuming and expensive: it now costs many millions of pounds every year and occupies a lot of people. We need to mechanise it and thereby improve our productivity. This is

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<sup>79</sup> POST 122/461... Trial of SPLSM at Bath.

<sup>80</sup> POST 17/454... MAC, 26/04/56.

<sup>81</sup> The British were the first to attempt such trials. POST 92/15, PO Report & Accounts, 1960-61, p.8; POST 69/66, PO Board 1959: Board Paper 50: Mechanisation and Buildings Department Progress Report, November 1959, p.1; Board Meeting Proceedings, 11/06/59, p.3.

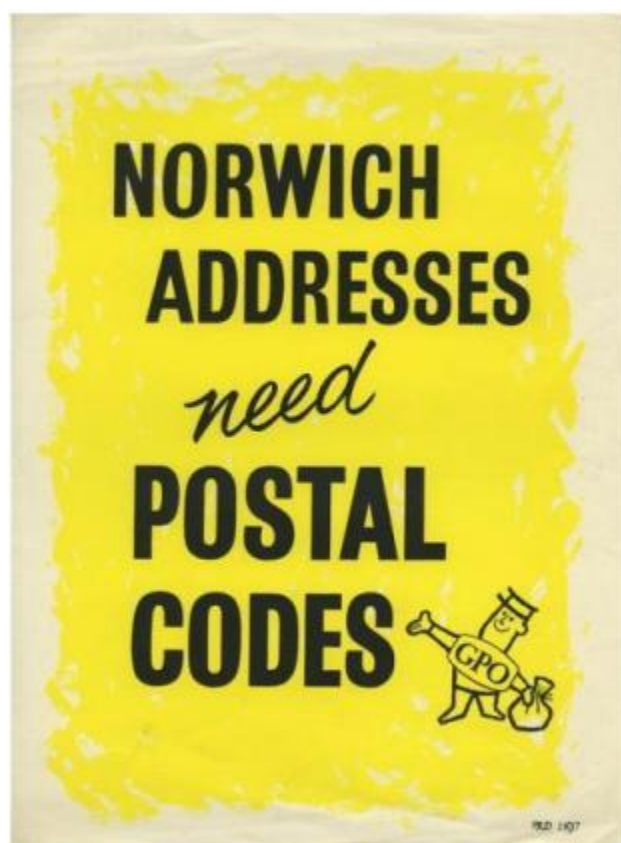
<sup>82</sup> POST 122/1565, Letter Mechanisation: Engineering Articles and Papers, 1959-1963, G. P.Copping and H. J. Langton, ‘Sorting Letters by Machine’, 1958, p.16.



important for us in the Post Office. It is also important for us as a nation. If we are to get the most out of postal mechanisation we must have coding.<sup>83</sup>

The success of the live trials was due not only to the smooth operation of the machines at the Head Post Offices involved, but also to the wider political and economic elements of the system working in harmony with the hardware. It was largely on the strength of the most substantial of the trials in Norwich that the Board approved the extension of postcoding nationwide in 1965, marking the point at which momentum started to gather at a higher policy level towards implementing code-sorting nationally.<sup>84</sup>

Figure 1.5: Poster publicising the introduction of postcodes for Norwich, 1961<sup>85</sup>



<sup>83</sup> POST 17/157, Postal Coding: An Important Message from the Head Postmaster, October 1966, p.2. Similar publicity in the Norwich trial was augmented by a survey which gathered data about why people chose not to use codes. POST 17/168, Analysis of Postal Enquiry into the Use of Postal Codes: Scope for Further Encouragement, 1961.

<sup>84</sup> POST 69/75, PO Board 1965: Board Paper 11, Postal Codes, January 1965.

<sup>85</sup> POST 110/4089.

Nevertheless, the foremost achievement of post-war mechanisation was the successful development of the hardware, which, by the early-1960s, was both highly sophisticated and operationally sound. This was the heyday of British postal engineering and the profession produced some remarkable documents detailing its achievements, the best being the papers submitted for an international conference held in London, published in 1971 by the Institute of Mechanical Engineers under the title *British Postal Engineering*.<sup>86</sup> These are addressed in some detail in a later chapter, which focuses on the political and ergonomic aspects of design and how this was carried forward to create a “second generation” of machines in the 1970s. Table 1.1 outlines the first generation of code-sort machines and their functions in order. The accompanying photographs and diagrams introduce the machines and indicate how they were joined to form a ‘suite’.

This demonstrates, in basic terms, the functioning of hardware in the trial offices such as Norwich and Croydon. There, the flow of incoming and outgoing mail through the office followed a path not dissimilar to the traditional practice in that, functionally, the distinct sorting phases were similar to those under manual conditions. In both scenarios, when mailbags entered the office, the contents was segregated into different streams for letters, packets and parcels. Once isolated, letters were faced in the same direction, dated and had their stamps cancelled, before being stacked ready for sorting. Whether manual or mechanised, sorting was according to destination, letters being grouped into selections. However, if both systems had functional similarities, these did not extend to the hardware. Under mechanised conditions, tables and frames were used not for the bulk of the mail, but to mop up what was not machinable.

The code-sort suite began with a segregating drum (SEG). Mail was loaded into SEGS as it entered the office. These were large, tilted, rotating drums separating large from small items of mail. The remaining letter stream was fed into the Automatic Letter Facer (ALF), which scanned each letter for stamp class and position before facing each in the same direction into uniform piles. (The postcode was not necessary for this preparatory phase of the process). Once stacked, surviving letters could be automatically presented to coding operators at the SPLSM, who typed in the appropriate code, triggering a printing unit which applied a series of phosphor dots to the envelope. After the Luton experiment, the keyboard end of the SPLSM was separated to form two distinct machines: the Coding Desk and the Automatic Sorting Machine (ASM). The workings of both were linked and controlled by a computer called a Translator. Once coding operators had imprinted the unique machine-readable code, the ASM was ready to sort the mail rapidly to the selection boxes housed in its frame. These were periodically emptied and sent on to the next sorting office, or grouped for a particular delivery round. Taken together,

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<sup>86</sup> Institution of Mechanical Engineers, *British Postal Engineering*

this whole process represented the successful automation of five discrete phases of the sorting process – segregation, facing, coding, translation and automatic sorting. Each stage in this sequence was connected and controlled by systems of electro-mechanical sub-units, manipulating the flow of letters in synchrony, progressively winnowing machinable from non-machinable mail. As early as 1961, PO engineers T. Pilling and P.S. Gerrard summarised the integrated nature of this achievement and pointed out its significance for the future of the postal system. ‘One outcome of these experimental installations’, they wrote, ‘is that a number of well-tried mechanical and electronic units or “building bricks” have emerged which permit, without further experiment or trial, the planning of complex mail-handling systems’.<sup>87</sup> In view of this they went on to note the importance of separating away the keyboard end of the SPLSM to create the coding desk. ‘In this form the coding desk becomes a “building block” of the whole structure’.<sup>88</sup> S.C. Knowles, Chief Draftsman at GEC-Elliot Precision Controls Ltd who manufactured the coding desk, later emphasised the centrality of ergonomics in its design, especially in the mechanical complexity invested in giving the operator control over the momentum of work. This ‘building block’ was thus itself divided into several modules including destacker, orientation, presentation, side-laying, printer unit, printer drive, tape feed, outlet section and electronics.<sup>89</sup>

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<sup>87</sup> POST 119/253... T. Pilling and P.S. Gerard, ‘Automatic Letter Sorting – The Luton Experiment’, in *Post Office Electrical Engineering Journal*, Vol. 54, (April 1961), p.31.

<sup>88</sup> *Ibid.*, p.34.

<sup>89</sup> S.C. Knowles, ‘Development of a Letter Coding Desk’, in Institution of Mechanical Engineers, *British Postal Engineering*, p.167.

Table 1.1: The main phases of automatic sorting, noting the machinery and workings in use in the late 1960s

<i>Sorting Phase</i>		<i>Machinery</i>	<i>How it worked</i>
<b>Preparatory Sorting</b>	<b>Segregation:</b> the separation of letters from packets and parcels into distinct streams.	Segregator (SEG)	Mail bags were emptied into a hopper. The contents travelled up a short conveyor belt to the mouth of an angled, rotating drum with slits in the side. The centrifugal force of the drum caused items of mail small enough to pass through the slits into a separate stream from larger items which tumbled out of the lower mouth of the drum.
	<b>Facing:</b> facing letters in the same direction, dating and cancelling each one and stacking them in piles.	Automatic Letter Facer (ALF)	The stream of letters flowing from the SEG was passed through a unit comprising belts, rollers and photo-electric sensors. The presence and position of each stamp was detected and used to turn and face all letters in the same direction. The mail was stacked, dated and cancelled.
<b>Code Sorting</b>	<b>Coding:</b> Turning the address information on each envelope into a machine-readable code.	The coding desk	Stacks of letters were fed into the coding desk and presented one at a time to a human operator. The operator, sitting at a keyboard, saw each letter through two viewing windows. When a new letter entered the top window, the operator read the address and entered a code. This was checked and confirmed in the lower window as a fresh letter dropped into the top window. Each envelope was then imprinted with a machine readable code.
	<b>Translation:</b> The automated reading, storage and manipulation of each code, and the synchronisation of the coding and sorting phases.	The Translator	The Translator was the 'brain' of the system. It could be programmed with different 'sorting plans' in which each code was detected and interpreted, generating routing instructions for each item. Tracking utilised 'pulses' tying the location of letters together with their unique routing instructions.
	<b>Automatic Sorting:</b> Mechanical sorting to the correct selection box.	The Automatic Sorting Machine (ASM)	Driven belts and diverters were used to rapidly transfer the coded mail into 144 selection boxes spread over five levels, each denoting a distinct geographical destination.

Figure 1.6: Interior of Segregator Drum (SEG)<sup>90</sup>



<sup>90</sup> POST 118/6087, Croydon, Segregator Interior, 1970

Figure 1.7: Automatic Letter Facer (ALF)<sup>91</sup>



<sup>91</sup> POST 118/6162, Croydon, Automatic Letter Facer, 1972

Figure 1.8: First Generation Coding Desk – Elliot Automation Model<sup>92</sup>



<sup>92</sup> POST 118/6029, Elliot Automation Letter Coding Desk, 1970

Figure 1.9: SPLSM sorting section interior: Diverters and Selection Boxes<sup>93</sup>

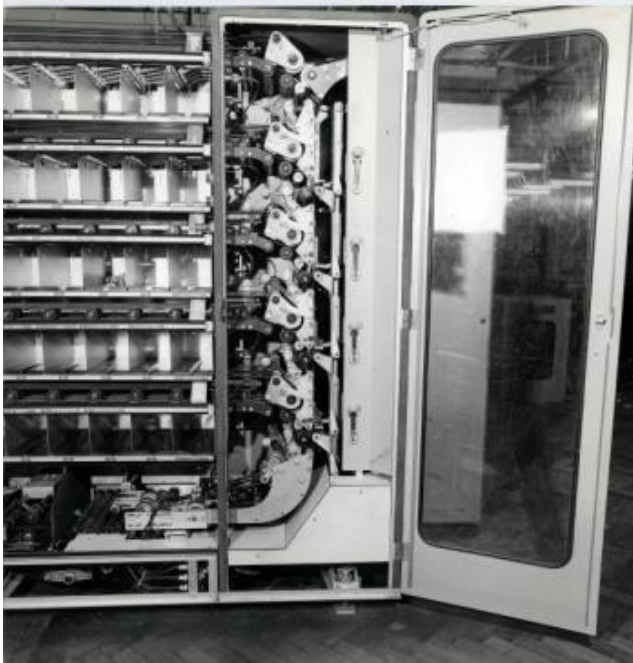


Figure 1.10: SPLSM presentation and sorting sections<sup>94</sup>



<sup>93</sup> SPLSM interior, BPMA search room portfolio

<sup>94</sup> POST 118/6027, SPLSM, King Edward Building, c. 1971



Figure 1.11: SPLSM presentation unit interior<sup>95</sup>

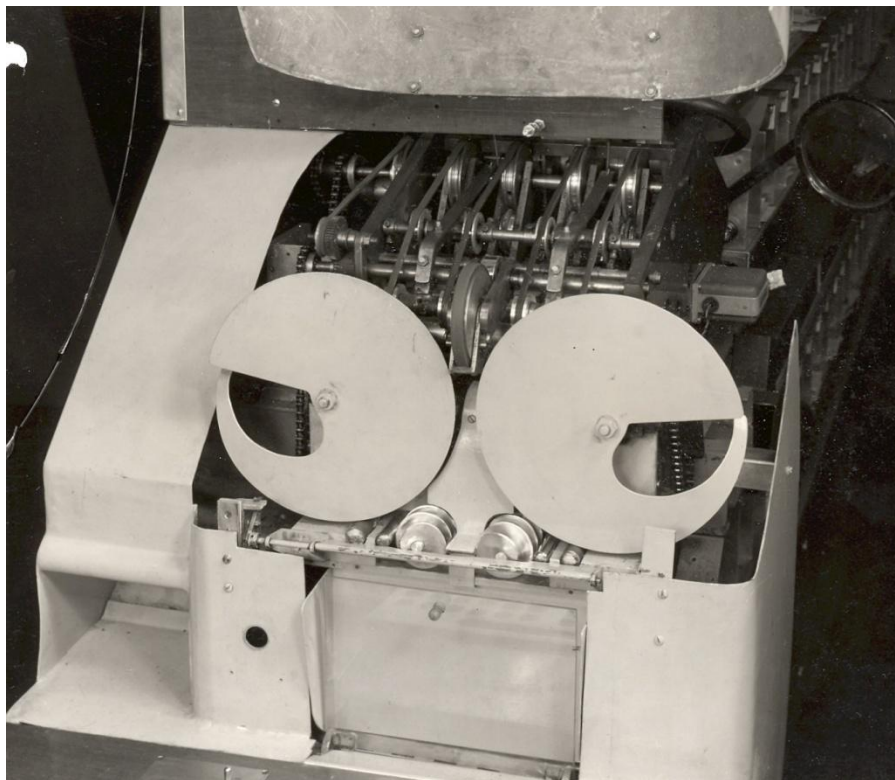
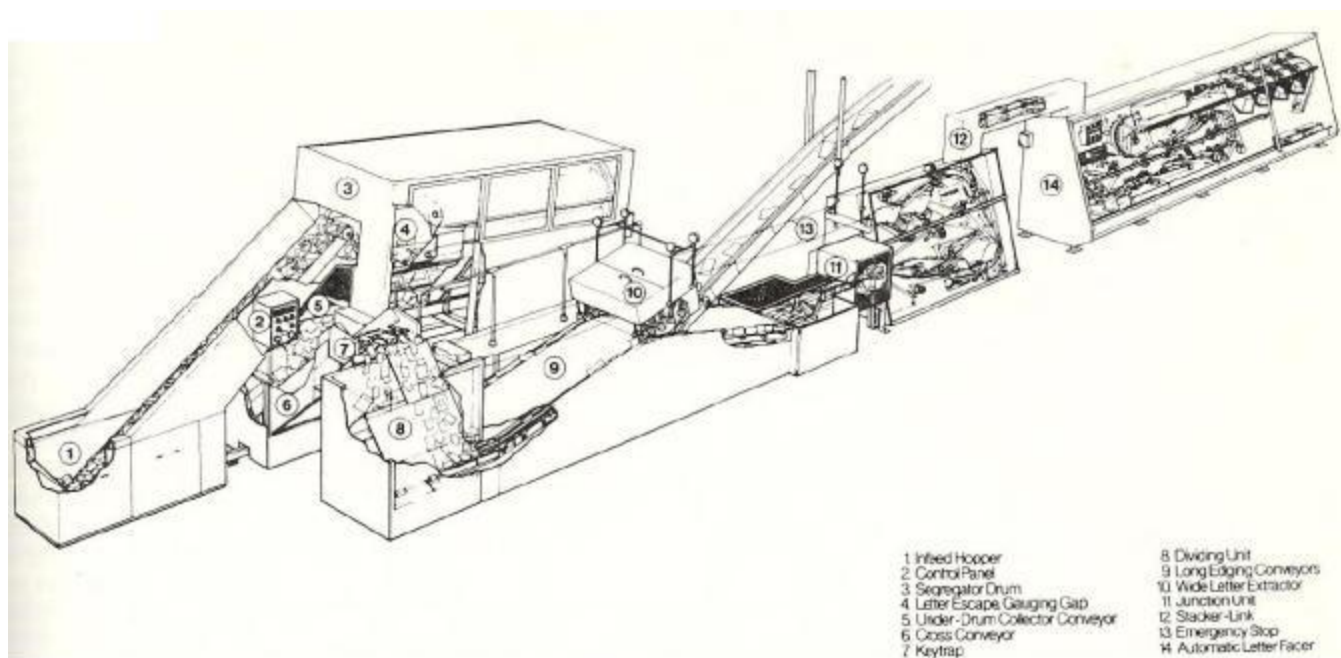


Figure 1.12: Interlinked Segregator and Automatic Letter Facer Destacker<sup>96</sup>



<sup>95</sup> POST 76/173, Specification PR 401, c. 1955-58

<sup>96</sup> de Jong, 'Introductory Paper', p.3.

Spectacular progress in postal mechanisation was achieved in the first twenty years after the war, culminating in this first generation of code-sort machines in the mid-1960s. Duncan Campbell-Smith has argued that this was partly the result of the PO's 'jam tomorrow' philosophy: they could have settled for the original SPLSM in the 1950s, which functioned by using memorised codes in a similar way to the Transorma, but opted instead to search for a design capable of operating the universal postcode. The Luton Trial was a turning point in this regard, when PO engineers succeeded in wiring a SPLSM up with a Translator, proving that the public postcode could work in practice; the coding and sorting functions could be separated, just as W.T. Gemmel had envisioned. On this interpretation, the wider code-sort goal was revived by Copping and Langton, who published a paper detailing the Luton achievement in 1959.<sup>97</sup> Campbell-Smith suggests that there was a disparate, haphazard quality to the various live trials, leading the PO only slowly to put its full faith in the universal code-sort system.

Planning for the adoption of mechanized letter-sorting turned out to mean preparing the postal service for a complete overhaul of its core activity, which would one day necessitate a physical rearrangement (if not rebuilding) of every post office and a conceptual redesign of every postal address. In the late 1940s, the high noon of mechanization was still many years away, and even a sense of what it would entail was going to take a long time to dawn in St Martin's-le-Grand.<sup>98</sup>

It is true that fresh approaches were periodically adopted and lucky breaks occurred.<sup>99</sup> But the coherence of the overall R&D programme, guided by the overarching goal of a national code-sort system, is a striking feature of the MAC papers. Research on the universal postcode was continuous throughout the 1950s and the Interim Machine and SPLSM were developed explicitly in coordination with this.<sup>100</sup> In 1961 K. S. Holmes, Director of Postal Services, went even further in defining the ultimate goal as being the 'perfect sorting machine', one that might read and understand human hand-writing. In an article for the journal *Engineering*, he acknowledged the doubts about whether this would ever be technically or economically feasible, but believed that 'despite the uncertainty, it would be wrong to dismiss the idea of a robot sorter – it must clearly be the ultimate goal, and research and development must be directed towards it'.<sup>101</sup> It was thought that the necessary technologies for this – optical character recognition and

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<sup>97</sup> Campbell-Smith, *Masters of the Post*, pp.398-408.

<sup>98</sup> *Ibid.*, p.398.

<sup>99</sup> The idea for the double-viewing window on the SPLSM came about by chance when, during trials, a panel on the presentation unit was inadvertently removed and higher keying rates were then observed. POST 122/1565... Copping and Langton 'Sorting Letters by Machine', p.23.

<sup>100</sup> Remarks to this effect are littered throughout POST 17/463... Fluorescent Coding Study Group. When the Canadian Deputy PMG visited Britain in 1957 he visited the experimental installation at Southampton. On the way there he talked with S. Scott who reported to the MAC: 'Canada are working on almost identical lines to us with regard to coding and the substance to be used for impressing the code on the letters ... I formed the impression that [they] have still a long way to go'. POST 17/454... MAC, 05/06/57.

<sup>101</sup> POST 122/1565... K. S. Holmes, 'Mechanization of the Postal Services', in *Engineering* (1961).

more sophisticated computing techniques – were decades away from becoming viable (an early paper wondered if it was ‘beyond human ingenuity’),<sup>102</sup> and so the public postcode and the coding desk were, in one sense, interim solutions. The key to making this a success was high throughputs in coding rates. The best means of achieving *this* was to provide coding operators with freedom in their work.

Finally, as the 1962 Annual Report noted, the PO were keen to cast this as a global phenomenon, noting that ‘sorting machines are limited by the speed at which operators can think. Ways must, therefore, be found of freeing them from this limitation... The problem is not confined to Britain’, it continued. ‘All progressive postal administrations are turning to machines for processing and sorting their mail’.<sup>103</sup> The following year a booklet for staff made the link between progressive design and efficiency explicit:

The machine has no set rhythm which the operator must follow; instead, he controls the speed of the machine. This is an important feature. It means that if the operator gets a letter which is badly addressed he can pause while he deciphers it. If on the other hand he gets a run of letters similarly addressed, as frequently happens, he can put on a burst of speed.<sup>104</sup>

This stood in contrast to developments in America, where similar plans were in motion. There, an early decision was made to use the introduction of mechanised sorting to increase managerial control of the labour process. This decision is attributed to engineering studies shown to management in 1961, following which R&D proceeded along a different design path in which operators would not be given control over their pace of work.<sup>105</sup> In Britain, although R&D would continue, the goal set in 1946 of evolving a machine that accommodated freedom for the operator within a system capable of processing publically coded mail seemed, in the early 1960s, to have been realised.

## Conclusion

In summary, it is clear that the R&D necessary for the technology at the heart of the Letter Post Plan took place not in response to a faddish optimism for the technological renewal of industry in the 1960s, but during the 1950s, following the decision in 1946 to vigorously pursue an ambitious, long-term project around which a series of short-term, incremental sub-projects were established. This decision built upon

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<sup>102</sup> POST 69/28... BP 25 (46), Postal Mechanisation, p.3.

<sup>103</sup> POST 92/15, PO Reports and Commercial Accounts, 1960-66, Report for 1962, p.12.

<sup>104</sup> POST 17/210, Mechanisation in the Sorting Office, GPO Leaflet, c. 1963.

<sup>105</sup> Baxter, ‘Process of Change’, p.295. He references the National Association of Letter Carriers’ publication *The Postal Record* (a union magazine), internal operational reports and Peter Rachleff, *Moving the Mail: From a Manual Case to Outer Space* (Morgantown: Work Environment Project, 1982).

insights gained during the inter-war period when experiments with a foreign-designed sorting machine demonstrated the need for an in-house, systematic and scientific approach if a nationally integrated system of mechanised sorting was to stand a chance of success. Thereafter, the concept of “code-sorting” took root. Research committees directed various sub-projects on machines, codes, chemistry and psychology, which were coordinated with this long term goal in mind. Though the ingenuity of engineers and the judgement of management were salient, this was also a corporate process in that, throughout, weight was given to the views of union representatives as well as outside consultants. A major challenge was managing the tension between the pursuit of efficiency and productivity on the one hand, and worker-wellbeing on the other. This was demonstrated in the lengths to which engineers went to create machines which placed control of the pace of work in the hands of their operators. This long-term political choice was built into the design path when the technical foundations were laid. For the technologists at the heart of the process, it has been noted that an evolutionary ‘philosophy of development’ was cultivated as the profession matured, in which schemes for machinery and systems were adapted to their intended environment, often in step-wise fashion. As engineers came to appreciate from the early 1960s, this included a recognition that they were working within a socio-technical system and needed ultimately to defer to the dictates of politics, finance and operational policies if code-sorting was to move beyond the planning table and into wider operation. The next chapter addresses these political and financial aspects.

## Chapter 2 The 1960s modernisation movement and the political and financial aspects of the Letter Post Plan

### Introduction

This chapter continues the assessment begun in chapter 1, of how and why the PO came to adopt the Letter Post Plan in 1969, by shifting the focus from technology to the politics and economics of mechanisation. Many of the necessary technical elements of the 1969 plan were established in the 1950s, but it was in the 1960s that automation and the modernisation of industry came to the foreground of British politics and this had considerable effects upon the Post Office. As Alan Clinton put it:

The new marvels of economic communication that appeared every year were but particular manifestations of the general expansion of high technology industry, which a new generation of scientific technique brought with it a phase of economic growth unparalleled before or since. The ‘white heat’ of the ‘scientific revolution’ promised by Harold Wilson before his election as Labour Prime Minister in 1964 has long since dimmed and disappeared. Nevertheless, such phrases did accord with contemporary perceptions of economic reality, as well as with conventionally approved solutions to the economic problems of the time. They certainly had considerable effects on the Post Office.<sup>1</sup>

In the postal service this meant that mechanised sorting came to be viewed as part of a multifaceted strategy to reduce labour-dependency and increase operational efficiency, all of which fed in to decisions in the late 60s over the scale of implementation. In this period, certain assumptions were applied in the financial and political forecasting underpinning the LPP and critics later claimed that its judgement in this area was undermined by a less than sober enthusiasm for technological change. The approval of the LPP has therefore been linked with an optimistic futurism held to be characteristic of the 1960s.<sup>2</sup>

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<sup>1</sup> Clinton, *Post Office Workers*, p.304.

<sup>2</sup> Dominic Sandbrook, *White Heat: A History of Britain in the Swinging Sixties* (London: Little, Brown, 2006), pp.55-56. Some historians have argued that the “White Heat” was largely rhetorical in appealing to the wider, creeping sense of decline in this period and that, in practice, the 1964-70 Labour government merely continued a trend towards centralised, interventionist ‘Operational Research’ approaches in which massive resources were allocated towards civil R&D. David Edgerton, ‘The “White Heat” Revisited: The British Government and Technology in the 1960s’, in *Twentieth Century British History*, Vol. 7, 1 (1996), pp.53-82; *Warfare State: Britain, 1920-1970* (Cambridge: Cambridge University Press, 2003), pp.230-269; Richard Coopey, ‘Industrial Policy in the White Heat of the Scientific Revolution’, in Richard Coopey and Steven Fielding, *The Wilson Governments, 1964-1970* (London: Pinter, 1993), pp.102-122; M.W. Kirby, ‘Blackett and the “White Heat” of the Scientific Revolution:

This chapter seeks to explain the role this increased focus on technology had on the PO in the 1960s; in particular, the extent to which these conditions influence the scope and content of the plan. The effects of Labour coming to power were immediate for the PO due to the appointment of Anthony Wedgewood Benn as Postmaster General in 1964, who was a strong advocate for the rapid introduction of technology in general and mechanised sorting specifically. This was a period in which the human consequences of automation was much discussed in Britain, and the PO's role in this is traced to show the different opinions on this issue then in existence within the organisation. During Benn's tenure, the American Management consultants, McKinsey's, came to the PO to study its core operations. They proved to be an influential voice in encouraging the PO to view postal mechanisation as part of a wider package of long-term modernisation reforms which included restructuring postal tariffs and combining mechanisation with work-study schemes. Mechanisation and efficiency drives were thus viewed as a two-pronged attack on the problem of low productivity in the postal service. Overall, this chapter continues the argument that the LPP had firm foundations in the depth and scope of the preparations made in this period and also provides important information about the reasons underpinning the approval of the LPP.

### **McKinsey's and the "White Heat"**

Mechanisation research had reached a critical point by the early 1960s, but the political and economic context of the period between 1964 and 1969 also helped to shape the Letter Post Plan. Though the Norwich trial was ongoing, it was clear that an era of widespread code-sorting was a realistic prospect and policies were needed for deciding how to proceed, with the most important questions concerning scale and timing. Should implementation be cautious and gradual, or fall under the direction of a more ambitious, overarching plan? Writing in the automation journal *Control* in 1964, PO engineer T. Pilling pointed out that crossing the technical threshold had raised complex financial and operational questions.

Research in the UK has shown the technical possibility of an almost completely automated system for processing letters, from the time they are delivered at the sorting office to the time they leave, date-stamped, cancelled and sorted. With automatic character recognition, all but packets and large letters could be handled entirely by machine. But economics will decide whether a completely automatic office is ever

built in Britain – it could be cheaper to have manual links at some points, with coding desk operators rather than automatic character-recognizers.<sup>3</sup>

The pattern of implementation would depend not only on the scale of investment in mechanisation, but on a broader range of policy decisions about future investment in buildings and the extent to which the plan for code-sorting should be allowed to dictate pricing, service and structural reforms. Pilling and his engineering colleagues understood that the fortunes of mechanisation were tied up with the politics of institutional reform, a thorny subject in a historically conservative, monolithic bureaucracy. In this respect their timing was perfect, as the Post Office was about to enter a period of unprecedented political and organisational upheaval. This stemmed in part from a shift in the British political climate which itself had connections with a growing faith in new technology.

The question of industrial productivity became an enduring and prominent discourse in post-war Britain in which the PO played its part. When, after the war, the Anglo-American Council on Productivity offered free consultancy as part of the Marshall Plan, thousands of British industrialists, including PO delegations, travelled to America to see first-hand the fruits of scientific management and mechanised production.<sup>4</sup> In 1949 the PO created its own Joint Productivity Council on which the official and staff sides debated the implications for the postal service.<sup>5</sup> However, it has been argued that, in many respects, many British industries failed to fully embrace modernisation.<sup>6</sup> This changed in the 1960s as more sectors of the economy began to feel the effects of technological change. This, in turn, fuelled the public discussion of automation, which turned with ever greater insight to the human problems it posed. Sir Leon Bagrit became a familiar voice on the radio through his BBC Reith Lectures, *The Age of Automation*. His six-part series was published as a book, reviewed favourably in *Technology & Culture* as ‘a group of perceptive, imaginative, and humanitarian essays’.<sup>7</sup> He defined automation as an extension of human thought, action and control. It promised to liberate workers from tedious jobs by taking control of the underlying processes integral to a system, leaving human operators as the overseers and decision-makers.<sup>8</sup> Bagrit was the chairman of Elliot Automation, the largest computing manufacturer outside

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<sup>3</sup> POST 119/494, Summary of all work on the LPP, Articles on UK and US Mechanisation, 1964-1974, T. Pilling, ‘Letter-Post Automation’, in *Control*, July (1964), p.349.

<sup>4</sup> Anthony Carew, ‘The Anglo-American Council on Productivity (1948-52): The Ideological Roots of the Post-War Debate on Productivity in Britain’, in *Journal of Contemporary History*, 26, 1 (1991), pp.49-69.

<sup>5</sup> Campbell-Smith, *Masters of the Post*, pp.377-390.

<sup>6</sup> Nick Tiratsoo and Jim Tomlinson, ‘Exporting the “Gospel of Productivity”’: United States Technical Assistance and British Industry, 1945-1960’, in *Business History Review*, Vol. 71, 1 (1997), pp.56-57, 80-81.

<sup>7</sup> Donald Michael, ‘Review of Leon Bagrit, *The Age of Automation*’, in *Technology and Culture*, Vol. 7, 2 (1966), pp.257-261.

<sup>8</sup> Leon Bagrit, *The Age of Automation: The BBC Reith Lectures, 1964* (London: Weidenfeld and Nicolson, 1965).

America and one of the main firms used by the PO for manufacturing its sorting machines. (Elliot engineers maintained a close collaboration with the PO over the design of machines such as the SPLSM and the sub-systems it used for presenting letters to operators.)<sup>9</sup> Bagrit warned that nations that failed to adapt to automation were dinosaurs doomed to extinction. An editorial in *The Times* was full of praise: ‘His emphasis on the dangers of falling behind in the race for modernization was timely’, it said. ‘The process of automation is evolutionary, not something that occurs overnight. It is happening now. Where Britain goes wrong is in not appreciating its potential and making provision for it’. It went on to criticise all politicians for ‘failing to grasp the nettle of technology’ believing industry, stimulated by government initiative, must thrust forward into the new age.<sup>10</sup>

Charles Smith, General Secretary of the Post Office Engineering Union, spoke too of an “Age of Automation”. His speech to the 1964 POEU Annual Conference surveyed the upsurge of the new technologies: ‘They will affect British Industry as a whole and they will have profound social repercussions’, he predicted. ‘Indeed, it is disturbing that so little has yet been done to forecast the social effects which these technical changes may have. Certainly many occupations and jobs will dwindle in the form in which we know them at present’.<sup>11</sup> The following year the British Productivity Council also took up the theme, sponsoring the Industry ’65 Exhibition Conference “Productivity, Technology, Change”. B.C. Roberts, Professor in Industrial Relations at the London School of Economics and founder of the *British Journal of Industrial Relations*, gave a paper signalling both the necessity and dangers of automation. ‘But we have to change; no society can remain static. If it remains static, in fact, it dies. This is a truism of social organisation just as it is a truism of biological forms of life. Therefore we have no choice in the matter. We have to change’.<sup>12</sup> He continued by arguing that extraordinary technological changes demanded a fundamental re-evaluation of traditional conceptions of industrial relations.

The old view of the worker is outdated having been based on a notion that man is inherently lazy, that he does not want to work and so on. We have devised a stick and carrot method of persuading him to make the effort that is required. I believe we must abandon this view of man in relation to work. We have to look at man as an individual who is prepared to co-operate, be part of a team, who is a social being, who is basically motivated by a need for self-fulfilment and who appreciates and responds to recognition and to

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<sup>9</sup> POST 119/1, Letter Facing in USA, 1909-1965, Reader Feeder Notes, 1962-3, contains detailed notes of problem-solving meetings between Elliot and PO engineers.

<sup>10</sup> *The Times*, editorial, ‘The Dinosaur Age’, 14/12/64, p.11. The following year an editorial highlighted postal mechanisation as an obvious automation project for the PO. *The Times*, editorial, ‘Neddy at the Post Office’, 02/12/65, p.13.

<sup>11</sup> POST 115/912, POEU Journal, 1964, June, Annual Conference, Charles Smith, ‘The Challenge of 1964’, pp.148-9.

<sup>12</sup> MRC, MSS.148/UCW/6/13/2/24, British Productivity Council, ‘Automation and its Implications: Papers given at the Industry ’65 Exhibition Conference on Productivity, Technology, Change’, (1965), B. C. Roberts, ‘Social Implications of Technological Change’, p.28.



status as well as he responds to money or the threat of the sack. This is the fundamental social revolution that we have to bring to British industry if in fact we are going to cope with technological change because we cannot meet the problems of technological change simply by bribery. It cannot be done simply by raising the ante on payment by results systems. That is going to fail... because it is going to create conflict.<sup>13</sup>

From the floor, Mr D.A. Barron of the PO Engineering Department disagreed.

Perhaps I am old fashioned, but I think no matter whatever changes we get in technology, one thing that does not change is human nature. Greed and ambition and selfishness and jealousy: all these things still stay with people and they always will. I am inclined to think that human nature does react to stick and carrot in a good sense and not in a bad sense. Rewards and encouragements at least, I am sure, people need.<sup>14</sup>

Mr. N. Stagg, representing the UPW, defended Roberts, stating that the most important thing was to be involved in policy formation at the earliest stages.

I believe... that attitudes to joint consultation have got to change and change dramatically if we are to meet the challenge of automation... The common objective with management is to ensure that the industry in which my members earn their living is an efficient one. Our attitude to consultation should start from that point.<sup>15</sup>

The influence of unionism on the automation discourse of the 1960s is complex, but, in official pronouncements, a consistent position in support of technical change, while remaining forthright in requesting thorough consultation, was voiced. George Woodcock, TUC General Secretary, frequently voiced his view that while the adversarial union-management relationship was a healthy and necessary institution, most working people were not opposed to new technology in the workplace, desiring instead frank and comprehensive consultation before and during its implementation.<sup>16</sup> This position stemmed from a series of TUC debates in the 1950s which stressed cooperation in principle but the need for early and extensive consultation; a view which predominated equally among TUC executives and shop stewards.<sup>17</sup>

The increasing prominence of debates on the politics of automation was one manifestation of a wider fixation with the role of technology in the economy, and helps to explain the tone of electioneering

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<sup>13</sup> *Ibid.*, p.33.

<sup>14</sup> *Ibid.*, p.42.

<sup>15</sup> *Ibid.*, p.47.

<sup>16</sup> Robert Taylor, "‘What are we here for?’: George Woodcock and Trade Union Reform", in McIlroy et al. (eds.), *British Trade Unions*, p.193.

<sup>17</sup> Bufton, *Britain's Productivity Problem*, pp.48-49.

in the early 1960s. Political rhetoric was adapting to the growing appetite for Americanisation, the mounting acceptance of the benefits of automation and concerns about how the politics of change should be managed. This period is of course remembered for political pronouncements equating technological innovation with economic progress, with Harold Wilson the most vocal proponent of modernisation as a panacea for the ills of British industry. At Scarborough in 1963 Wilson famously stated that the key to economic growth lay in harnessing the white heat of the scientific revolution. It was a theme Labour began cultivating in 1960 when Wilson gave a speech outlining ‘our message for the sixties: A socialist-inspired scientific and technological revolution releasing energy on an enormous scale and deployed not for the destruction of mankind but for enriching mankind beyond our wildest dreams’.<sup>18</sup>

When Labour came to power in 1964, the need for Post Office reform had long been recognised. Wilson made Anthony Wedgewood Benn Postmaster General, his youth and passion for reform making him an untypical appointment. On his first day, having lunched in the canteen with the staff, he found that his office had no Dictaphone or modern office equipment, prompting him to note in his diary: ‘There is no reason why the Post Office should be lumbering on using the techniques and filing systems of the twenties. It is a modern communication industry and should reflect this in its practice’.<sup>19</sup> Straightaway he ordered reviews of all main policy areas including telecoms, posts, broadcasting, banking, administration, staff relations, relations with Government and the new economic development plans. The three most obvious and important areas for reform in the postal service, Benn believed, were tariffs, services and mechanisation.<sup>20</sup> Charles Morris, Benn’s parliamentary secretary, later recalled that ‘within a few months he dominated every aspect of Post Office thinking. He seemed to throw out ideas kaleidoscopically. He had the most incisive mind I have ever encountered’.<sup>21</sup> Duncan Campbell-Smith has portrayed Benn’s tenure as one of tension between an energetic, if at times naive, enthusiast for reform and a resistant conservative establishment.

Benn was predictably driven to distraction by what he saw as the antediluvian practices of the Department. He saw indolent routines, class-ridden attitudes and a general aversion to modernity wherever he looked: the Post Office was almost a caricature, to his mind, of so much that had gone wrong in contemporary Britain.<sup>22</sup>

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<sup>18</sup> Quoted in Sandbrook, *White Heat*, p.50.

<sup>19</sup> Antony Wedgewood Benn, *Out of the Wilderness: Diaries 1963-67* (London: Arrow Books, 1987), p.171.

<sup>20</sup> *Ibid.*, p.173.

<sup>21</sup> Jad Adams, *Tony Benn: A Biography* (London: Macmillan, 1992), p.246.

<sup>22</sup> *Ibid.*, p.441.

Benn joked in his diary that driving through change in this environment was like trying to ‘resuscitate the dying elephant’.<sup>23</sup>

On the one hand Benn recognised the traditional roles fulfilled by postal staff as being diverse and in the service of society. ‘[The Postman] is a sorter of letters, involving a high degree of attention and care. He is a driver of vehicles. He is a deliverer of letters – and in the last capacity almost a social service worker, in country areas at least’.<sup>24</sup> On the other, he wanted to remould these traditions around his modernist, even futurist, hopes for the organisation. His first Annual Report talked of ‘changing the art and shape of communications’ with ‘new inventions and the application of new techniques’. He wanted to redefine the PO as ‘a science-based enterprise on the threshold of a new era of expansion and improvement’.<sup>25</sup> The introduction of computers for managing telephones, accounts, statistics and scientific research was reported, as was the founding of a new department coordinating work-study, productivity programmes and a speeding up of mechanisation research. During a debate on postal services in the House of Commons in March 1965, Benn warmed to his theme. The goal, he announced, was to equip Britain with ‘the most modern communications system in the world’ and he made clear the connections between postal mechanisation and the economic and social wellbeing of the nation.

The Post Office today really is a Ministry of Communications. Its role in society can be understood only if it is thought of in that way. At this moment, as it changes its character, it is finding itself in the middle of an aspect of modern life – communications – which is undergoing a fundamental revolution due to scientific and technical changes. The role of the Post Office in modernising the British economy can hardly be overestimated... If the British economy is to grow at the necessary rate it will be the task of the Post Office in the years ahead to provide the basic communications infrastructure. ...if we are to have modern postal services, increased investment in postal mechanisation is absolutely essential, and, frankly, this has been slow in coming in the past. This year, our investment in postal mechanisation will be nearly £2 million, rising to £4 million in two years and over £6 million two years after that... The postal coding system tested in Norwich will be applied all over the country... These codes will speed the mail and people will become just as accustomed to them as they have become to the London postal districts or the telephone codes... We are anticipating the growth of postal business over the years. It is a great mistake to think of the postal services as a contracting business on its way down and out. It is, in fact, an expanding undertaking and it must be furnished with the machinery and the techniques required.<sup>26</sup>

A few months later, he and the Prime Minister opened the Post Office Tower. Wilson made the inaugural telephone call to the Lord Mayor of Birmingham, where a similar 500ft high radio mast had been erected.

<sup>23</sup> Benn, *Out of the Wilderness*, p.247.

<sup>24</sup> *Ibid.*, p.170.

<sup>25</sup> POST 92/15, Post Office Reports and Commercial Accounts, 1960-1966, Report and Accounts, 1965, p.7.

<sup>26</sup> Hansard, ‘Postal Services’, 30/03/65

Britain's tallest building was the centrepiece of an ongoing process of switching to subscriber trunk dialling, capable of handling up to 150,000 simultaneous conversations and 40 television channels via a microwave radio system.<sup>27</sup> Benn's biographer notes that the tower 'conformed precisely to his ideas for the image of the Post Office of the future', while Dominic Sandbrook has described it as 'an uncompromising statement of technological optimism'.<sup>28</sup> The tower was unveiled soon after the world's largest satellite earth station was completed at Goonhilly in 1962 (an 85 foot wide steerable dish transmitting signals via the Telstar satellite),<sup>29</sup> thus the PO had, by the early 1960s, become synonymous with spectacular displays of engineering. This, alongside Benn's public support of heavy investment in technology, encouraged those hoping for an ambitious national mechanisation programme.

Benn's influence was augmented by another new source of influential support for mechanisation in the arrival of McKinsey & Co, the American management consultants. This was part of a wider influx of American management consultants into both the public and private sectors.<sup>30</sup> Like British Rail and the BBC, the Post Office was one of a number of public institutions to be opened up to such sustained outside scrutiny. Duncan Campbell-Smith has cited this as the key factor that, in his view, made Benn's impact on the PO greater than that of any other Postmaster General.<sup>31</sup> When, in 1966, he left the Post Office to become head of the Ministry of Technology, he had helped set in motion far-reaching organisational changes which formed the background to the drawing up of the Letter Post Plan. From the beginning, Benn was convinced that mechanisation, coupled with operational and pricing reforms, was necessary for the postal service. For the GPO as a whole, he argued that a break with the civil service environment would enable the different businesses to be managed with greater autonomy and efficiency. On both questions he worked to persuade his political and Post Office colleagues, and, on both counts, he found his strongest ally and source of evidence in McKinsey's, known as the 'efficiency experts' for their role in restructuring the largest American corporations.<sup>32</sup> Benn soon found that their views were in close alignment, as Campbell-Smith has observed. 'In McKinsey he had [an] authoritative outsider, voicing precisely his own criticisms of the Post Office – and backing them up with hard evidence that Benn could employ to sweep aside sentimental and ill-considered opposition'.<sup>33</sup>

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<sup>27</sup> POST 122/1172, Post Office Tower: Planning and Clearance, 1959; POST 92/15, Post Office Report and Accounts, 1964, p.7.

<sup>28</sup> Adams, *Tony Benn*, p.247; Sandbrook, *White Heat*, p.42.

<sup>29</sup> POST 92/15, PO Report & Accounts, 1962, pp.7, 24-25.

<sup>30</sup> Christopher McKenna, *The World's Newest Profession: Management Consulting in the Twentieth Century* (Cambridge: Cambridge University Press, 2006), pp.165-191.

<sup>31</sup> Campbell-Smith, *Masters of the Post*, p.440.

<sup>32</sup> Hansard, 'Post Office Reorganisation', Lords Sitting, 03/08/66, Series 5, Vol. 276, cc. 1328-32.

<sup>33</sup> Campbell-Smith, *Masters of the Post*, p.463.

McKinsey were appointed in 1965 by the Sir Ronald German, the Director-General of the Post Office, and Benn defended the decision in parliament against strong criticism.<sup>34</sup> The firm's list of major British clients grew in the 1960s to include British Rail, the BBC and the Bank of England. They also had a hand in advising on large scale technical change and its employment implications, most notably for the British Transport Docks Board, producing a report in 1967 grappling with the radical employment and operational changes associated with containerised cargo systems.<sup>35</sup> At the PO, McKinsey's were tasked with finding ways to increase productivity and profits by 'challenging the basic logic of a major practice rather than its minor details'.<sup>36</sup> They interviewed managers, sat in on board meetings at every level and initiated hundreds of investigations into collection, sorting and delivery at local and network levels. From the outset they argued that technology should be the central feature of long-term planning. All the major issues facing the industry, such as improving efficiency, reducing wages and maintaining levels of service, depended, they said, on 'successfully planning and implementing a major mechanisation programme'.<sup>37</sup> Understanding the economics of mechanisation was vital and Roger Morrison, leading the McKinsey studies, emphasised the need to think carefully about the outlook over both the short-term (to c. 1975) and the long-term (to c. 2000), remembering that the plan would be affected by changes in British transport, demography and technology:

The 'plan is not "frozen" but must be constantly revised and updated: technology will be changing. Public attitudes and environment may change. Decisions should be taken in light of the latest information available... Obviously [there are a] large number of issues facing [the] postal side but only a few are critical: Economics of mechanization and its implication on concentration and circulation; Operational improvement programme; Evaluation of possible tariff or service revisions; Labour relations strategy; Organizational structure and personnel practices.'<sup>38</sup>

Morrison's staff continued by posing a series of questions related to the effects of concentrating mail into larger offices and the relationship with levels of service. They then asked subsidiary questions such as: Is the proposed alpha-numeric code the best solution? How significant would a lower level of public

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<sup>34</sup> The Management Consultants Association complained that British consultants better understood both British enterprise and trade union relationships. Harold Whitehead & Partners Ltd, who had been consulted over the PO's plan for postcodes in 1957, pleaded for this 'extraordinarily unjust' decision to be reversed. POST 122/10228, McKinsey Study of the Postal Services, 1965-1967: Organisation and Methods Project, Correspondence showing suggested objectives of the study, Wood to Benn, 27/03/65; Smith to Benn, 29/03/65.

<sup>35</sup> Willman, *Technological Change*, p.112.

<sup>36</sup> POST 122/10228... Objectives and Issues, 24/02/65.

<sup>37</sup> *Ibid.*, GPO – McKinsey Progress Review, July 1965.

<sup>38</sup> *Ibid.*, A Plan for the Postal Services, November 1965, pp.2-3.

response than expected be to the mechanisation programme? How would concentration affect staff? Would mechanisation enable higher employment of part time female staff?<sup>39</sup>

Much of this fell in line with existing PO thinking, prompting some resentment, and was later described by one senior official as ‘a long and pretentious foray’.<sup>40</sup> However the priority McKinsey’s gave to mechanisation undoubtedly had an impact, especially in placing it in the context of a wider course of efficiency reforms which generated a large body of data on which planners could draw. This strengthened the hand of those pursuing a more rapid pace of change by linking these programmes with the need to take bold decisions over the major policy areas of tariffs, levels of service, logistics and technology. As Campbell-Smith has put it...

...the intensity of McKinsey’s work had unmistakably launched the Post Office on a course that seemed, by the middle of 1966, capable over time of transforming the nature of the postal service. The cost reduction projects instigated the previous summer had triggered a frenzy of data collection, analysis and discussion without precedent in the twentieth century.<sup>41</sup>

Such studies were not of course unknown previously,<sup>42</sup> but the scale of the effort and its focus on working methods in sorting offices was new. McKinsey’s recommended commissioning ‘small, specially selected teams’ to conduct 4-5 month examinations of 68 of the largest sorting offices.<sup>43</sup> An initial study at London’s North West District Office in 1966 encompassed 70% of operating costs and led McKinsey’s to see potential savings both nationally and locally. ‘The local savings’, they reported, ‘arise mainly from reducing excessive grace and casual reliefs’.<sup>44</sup> They offered the Postal Services’ Work Study Department three pointers for making further savings:

First it will be necessary to adopt staffing control systems, based on staffing standards and industrial work measurement, that are more effective than those used at present in evaluating performance and in providing the basis for sound working discipline... Second, there must be a systematic, objective and critical

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<sup>39</sup> *Ibid.*, Stewart to Downes, 10/11/65.

<sup>40</sup> Baker, ‘Problem of Identity’, p.67.

<sup>41</sup> Campbell-Smith, *Masters of the Post*, p.472.

<sup>42</sup> The Central Organisation and Methods Branch was established in 1950 to apply work-study techniques in designing both jobs and buildings. POST 69/48, PO Board Papers, 1950, Volume I, POB (50) 24: Organisation and Methods Department: Structure and Work; POST 92/1183, PO Magazine, June 1964, ‘Conveyor-Belt Office’. COMB’s work was widespread by the early 1960s as Theo Cook of the Engineering Department reflected. ‘1963 saw more moves for increased “efficiency” than I can ever remember. Efficiency groups at Area, Regional and National levels have been in operation, probing, stirring and striking’. POST 115/912, POEU Journal, January 1964, Theo Cook, ‘Reflections’, p.20.

<sup>43</sup> POST 69/80, Board Papers, 1967, POB (67) 3, McKinsey Enquiry into the Postal Services, p.2.

<sup>44</sup> *Ibid.*

examination of all the factors governing operational efficiency in order to effect improvement. Third, there must be staff cooperation.<sup>45</sup>

Discussions at Board level dwelt on how, given that mechanisation could only lead to reducing the workforce, work studies and mechanisation would need to go on hand in hand to ensure the best use of manpower. They looked at other labour-intensive industries and saw a clear trend for hiring more work-study specialists. They concluded that a further 200 specialists should be brought in and that managers and staff should undergo ‘appreciation courses’ to encourage cooperation.<sup>46</sup>

The teams undertaking regional “Work & Staff Measurement” projects were often presented with new challenges when testing their theoretical knowledge against the complex practical and political problems of a sorting office. Mike Berry, a Liverpoolian who during a career in senior management was postal controller of Mount Pleasant and managed efficiency appraisals at several other offices, remembers rearranging sorting work to productive ends, presenting his analyses to his superiors and then (‘quite a frightening experience’) implementing his alternative methods in a particular office. He and colleagues, such as Eric Norman, learned to balance ‘going by the book’ with the cultivation of an ‘instinct’ for postal operations.<sup>47</sup> This type of work built upon a number of meticulous studies of large offices, such as that at Leeds, in which every aspect of work – from the time taken to unload palettes from vans to the political dynamics of motivation and loyalty – was put under the microscope.<sup>48</sup> The resulting “Ripple Programme” of detailed investigations and alterations to postal work was opposed by the largest offices in London and Birmingham. There, staff wished to protect their traditional methods and targets and objected to handing these over to be measured and changed. The scientific study of postal work was agreed to bring benefits but remained politically fraught, especially with radical elements among city postmen such as the UPW’s infamously militant and influential “LDC3” Committee in London who through the late 1960s coordinated numerous obstructions and walk-outs.<sup>49</sup> Work study was publicly accepted and supported by the TUC Executive but shop floor opposition was widespread.<sup>50</sup> In the postal service, “Work and Staff Measurement” was intended to apply traffic measurement, the calculation of workloads, the measure of time spent on different duties and comparisons of output. Various WSM schemes were negotiated during

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<sup>45</sup> POST 69/80... POB (67) 6, Postal Productivity and Work Study, p.1; POST 92/16, PO Report and Accounts, 1967-8, p.17.

<sup>46</sup> POST 69/80... POB (67) 6, Postal Productivity and Work Study, p.2.

<sup>47</sup> BL, NSA, An Oral History of the Post Office, Interview with Mike Berry, C1007/75/01-12, Tape 3 (F12529), Side B; Tape 4 (F12530) Side A.

<sup>48</sup> POST 17/299, Report on postal reorganisation pilot studies at Leeds Letter Sorting Office, January 1970.

<sup>49</sup> Campbell-Smith, *Masters of the Post*, pp.498-9; Corby, *The Postal Business*, pp.50, 116; POST 17/254, Operations Efficiency Seminar, 1979; POST 69/238, Managing Director's Committee: Posts: Committee Papers, 1973, MDPC (73) 6: Service, Cost and Emergencies.

<sup>50</sup> Bufton, *Britain's Productivity Problem*, p.67.

the 1970s, but repeatedly rejected at UPW conferences. After a provisional agreement in 1968, support was withdrawn in 1970 and revised proposals were rejected in a close vote in 1971. During four years of negotiations WSM was stripped back to focus mainly on traffic measurement, but this was overwhelmingly rejected in 1975. The UPW issued a statement in 1976 explaining that they would not put even the latest and much weakened package to conference as it stood no chance of approval and risked endangering EC credibility.<sup>51</sup>

**Table 2.1: The increasing employment of work study specialists in public enterprise<sup>52</sup>**

Organisation	Number of work study staff
British Rail	1800
Imperial Chemical Industries	2000
National Coal Board	800
USA postal system	160
Canadian postal system	80

The Board responded to McKinsey's advice to prioritise their short, medium and long term aims in 1968. The resulting document, *Aims & Objectives of the Postal Business*, summarised its four key points under the heading "System Planning and Engineering":

- (i) To reshape the national letter circulation system by 1979 to gain the maximum economic return from mechanised letter sorting and handling, and make the best use of available transport.
- (ii) To complete the postcoding of the 70 largest towns by 1970 and then to extend as necessary to meet system requirements.
- (iii) To design, install and commission mechanised letter offices to meet the requirements of the new letter plan.
- (iv) In particular to develop the coding desks, translator and automatic sorting machine systems required to meet the national needs and bring them to the stage of operational acceptability by 1971.<sup>53</sup>

<sup>51</sup> POST 151/uncatalogued, former ref: CH/C/0498, Post Office Review Committee - Co-ordination of Post Office evidence - general: Postal traffic measurement proposals.

<sup>52</sup> ICI included for comparative purposes. POST 69/80... POB (67) 6, Postal Productivity and Work Study.

<sup>53</sup> POST 69/81, Board Papers, 1968: Vol. 1, POB (68) 31, 'Aims and Objectives for the Postal Business', p.3.



The process of turning this rudimentary list of expectations into a coherent national plan was already underway. Thinking about the shape of the future system was first addressed in detail during a review in 1966 which targeted completion by 1976.<sup>54</sup> Here, the stated aim was to combine all technical, operational and economic considerations into a single guiding policy document by the end of 1969.

### **The Letter Post Plan and the Corporation Act, 1969**

Amidst the influx of modernisation ideas, momentum on the technical and operational level built up steadily in the mid-1960s. In April 1966 the Engineering Department consolidated all engineering work for the mail services into the Postal Mechanisation Branch (PMB). Throughout the year they collaborated with the Postal Services Department over postcodes, worked on new linking systems between machines and produced a new phosphor code-mark printer. Eighteen SEG/ALF suites were ordered, as well as two translators, 24 coding desks and six ASMs for a trial at London's East Central District Office.<sup>55</sup> In 1967 the pace of this piecemeal approach increased further as Brighton, Dundee, Redhill and Swansea were added to the list. SEGs and ALFs were earmarked for all large offices promising a minimum 20% return on expenditure, the only delays being due to the manufacturers or a lack of space.<sup>56</sup> Meanwhile, the anatomisation of Britain had begun, as that year fourteen large towns were allocated postcodes.<sup>57</sup> This was by itself an outstanding planning achievement. In each case, local and Headquarters teams collaborated, under the guidance of PMB. The geographical area to be coded was determined by research into local mail-flow, postmen's walks, street directories, maps and electoral roles. Streets were then divided into 'links', with known characteristics such as the number of delivery points or the number of heavy deliveries. These were combined into 'units', which were carefully shaped around demographic and commercial forecasts for the rural and urban areas concerned. Units were drawn together to form 'machine towns' which were then divided into sub-divisions. Codes could only be allocated once future mail circulation and concentration levels had been predicted which took into account the local peculiarities of geography, transport, staffing and buildings.<sup>58</sup> Throughout, planners were tasked with building in flexibility so that any future alterations could be accommodated: 'In practice therefore each coding scheme must be devised individually and with great care, employing expert knowledge of postal

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<sup>54</sup> Appendix to the Carter Report, p.326. The 1966 review proposed only 70 MLOs.

<sup>55</sup> POST 76/33, Engineer-in-Chief's Reports, 1966-1967, pp.17-18.

<sup>56</sup> Muir (ed.), *PMSC Handbook*, contains a chronology of piecemeal installations where average traffic volume justified the cost.

<sup>57</sup> POST 92/16, PO Report and Accounts, 1967-8, p.18.

<sup>58</sup> POST 122/12528, Letter Post Plan: Staff Side Consideration, 1966-72, The Technique of Postal Coding, pp.1-3.

coding techniques, postal circulation and of the technical capabilities and design of coding/sorting machines and translators'.<sup>59</sup>

Thus, before 1969, policies were, being enacted in support of a national mechanisation programme. As Martin Daunton has remarked, 'mechanisation, codes, a two-tier service and the introduction of new services, formed a package of reforms in the late 1960s.'<sup>60</sup> The most visible of these, and the most operationally significant, was the launch of the Two-Tier post in 1968, enabling the public to choose between first and second class payment. It was a risky change to the tariff structure which Campbell-Smith has concluded was managed exceptionally from a planning perspective but poorly in terms of marketing.<sup>61</sup> One of the main reasons for its introduction was that it helped to smooth out the morning and evening peaks of letter traffic: necessary if machinery was to be economically employed over the 24-hour cycle.<sup>62</sup>

**Table 2.2: The allocation of postcodes in Britain, 1968-72**<sup>63</sup>

<b>Year</b>	<b>Number of addresses coded (millions)</b>	<b>% of UK addresses</b>
1968	6.5	33
1969	10	50
1970	13	66
1971	15	75
1972	19	95

<sup>59</sup> *Ibid.*, p.4.

<sup>60</sup> Daunton, *Royal Mail*, p.348.

<sup>61</sup> Campbell-Smith, *Masters of the Post*, pp.479-87. See also Cyril R.H. Parsons, 'The Two-Tier System', in *Cross Post*, Vol. 12, 3 (2008), pp. 38-43.

<sup>62</sup> Corby, *The Postal Business*, p.55; POST 23/132, 'Long Term Planning for the Postal Services: First and Second Class Letter Service' Sub Group Report, July 1964; Carter Report, p.74; Appendix to the Carter Report, p.272.

<sup>63</sup> Appendix to the Carter Report, p.341.

**Table 2.3: Installations of letter sorting machinery in 1967<sup>64</sup>**

Place	Segregator	Automatic Letter Facing Machine	Single Position Letter Sorting Machines	
			Push button keyboard	Typewriter keyboard
Crewe	-	-	3	-
Glasgow	1	3	-	-
Liverpool	1	3	-	-
London SEDO	1	2	-	-
London WDO	1	3	-	-
Norwich	1	1	-	6
Preston	-	-	3	-
Southampton	1	1	-	-

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<sup>64</sup> POST 17/145, Joint Group on Postal Coding and Automatic Letter Sorting, First Report, 1967, Annex E (i).

In November 1968, members of PMB presented a draft of the LPP to the Regional Director's Conference, with much of the research having been done over a 2-3 year period by Iain Vallance (later Lord Vallance, BT Chairman) alongside other Headquarters planners such as Ron Clatworthy, who went on to coordinate the first wave of implementation in various regions.<sup>65</sup> The formal plan went to the Board in 1969 and was delivered by Geoffrey Vieler, a City tax accountant who the following year was made Managing Director, Posts.<sup>66</sup> He drew upon a wealth of ongoing research by Assistant Postal Controllers, such as Bill Cockburn, who liaised with others in the regions to begin enforcing the changes.<sup>67</sup> Vieler made the case for a network of 120 Mechanised Letter Offices (MLOs) to replace traditional arrangements in which manual sorting was dispersed over several hundred offices. The labour-saving logic of coding mail as it entered the system was explained by pointing out that a third of all mail was handled at intermediary offices with an estimated average of 3.2 frame-sorts per item. Many letters were handled 5 or 6 times during their journey. The paper set targets. Within a decade, the national circulation of mail was to be wholly concentrated into MLOs, leading to staff savings and increasing the efficiency of unwieldy circulation arrangements. Implementation would be staggered over six phases, beginning with equipping the largest offices and ending in full inward and outward concentration. The new network was to be superimposed on the manual system which could then fall away. Similarly, Travelling Post Offices were to be phased out and replaced by greater use of motorways and lorries, meaning that the historic interdependence of rail and postal networks was to be altered.<sup>68</sup> Once completed, the national backbone of MLOs would distribute the mail among themselves, using local satellite offices for distribution and collection. The same concept was to be applied in London, often referred to as a state within a state,<sup>69</sup> where mechanised district offices would connect with a network of smaller urban offices. The long-term aim was that the vast majority of the nation's mail, some 30-40 million letters per day, would be pressed through coding desks.<sup>70</sup>

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<sup>65</sup> Ron Clatworthy, Interview, 13/01/11.

<sup>66</sup> Campbell-Smith, *Masters of the Post*, pp.489, 518.

<sup>67</sup> BL, NSA, An Oral History of the Post Office, Interview with Bill Cockburn, C1007/56/01-02, Tape 3 (F11498).

<sup>68</sup> PO dependence on railways by the 1960s was extensive, based on contracts with the British Railways Board. In 1961 £18m of the £25m paid to contractors for haulage went to BRB. Mail circulation records were frequently re-aligned with changes to railway services, while management tours of train stations and interviews with senior BRB management were routine for any sizeable service alterations. POST 92/16, PO Report and Accounts, 1967-68, p.17; POST 17/153, Feasibility Study of an ADP Letter Mails Circulation System, 1968, pp.3-4; POST 17/169, Report of the study group on the handling and conveyance of mails between Post Offices, 1961, pp.5-8.

<sup>69</sup> Corby, *The Postal Business*, p.111, describes it as a 'law unto itself'.

<sup>70</sup> POST 17/283, Letter Post Plan: Presentation for the PO Board, 1969; POST 17/329, Papers relating to long term major restructuring of the postal service, The Letter Post Plan, May 1969.

The financial attraction of the plan centred on cuts in staff costs and increased circulation efficiency.<sup>71</sup> The case rested on financial forecasting using discount cash flow analysis (DCF), in line with financial methods outlined by the Treasury and with wider trends. DCF became well established in the 1960s, with the Ministry of Technology reporting in 1970 that 70% of British companies used systematic financial techniques for investment forecasting.<sup>72</sup> The application of performance targets based on five-year minimum returns on investment for the nationalised industries went back to a 1961 White Paper and was intended to encourage profits to be ploughed back in investment for each industry.<sup>73</sup> Returns and expenditure were spread over 25 years and were made for machines and buildings as well as R&D, installation, maintenance, planning, publicity, and training.<sup>74</sup> In doing this, a number of assumptions were made, relating to: the future stability of growth of mail volumes; the rate at which postcodes would be embraced; the productivity of coding staff; the success of industrial relations – all had potential to be hugely disruptive. One of the main criticisms of the LPP made from 1975 onwards was that some of these assumptions were overly optimistic. The Mail Users Association stated in 1976 that...

...the assumptions on which DCF analyses are carried out are more important than the method itself.

Therefore, the results of the exercises should not be thought of in absolute terms. All they show is that for a given set of assumptions certain results follow.<sup>75</sup>

Investment in mechanisation and the pattern of new offices was connected closely with the PO's buildings programme. 'Two things in the main determine the pattern of future postal investment' explained a paper prepared for the board on capital investment in 1969. 'One is the need to mechanise the letter and parcel services, and the other the need to replace the many very old and entirely inadequate large buildings. The main objective is to co-ordinate the achievement of these two requirements'.<sup>76</sup> This was a facet of the PO's wider financial dynamics, increasingly being understood by using econometric modelling around an 'operational systems concept'.<sup>77</sup>

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<sup>71</sup> Staff costs were by this point 73% of total expenditure, 35% of this relating to sorting. Report by POUNC on the PO's proposed increased postal tariffs in POST 53/51, Papers regarding the proposed increase in postage rates and preparation for decimalisation, 1970.

<sup>72</sup> It has been argued that the spread of DCF trivialised labour-relations as just another depersonalised factor in a financial equation. Batstone, *Working Order*, pp.70-73.

<sup>73</sup> *The Times* 08/07/69, 'Rewriting the Targets for State Industries', p.27.

<sup>74</sup> POST 17/283, Letter Post Plan: Questions and Answers.

<sup>75</sup> POST 69/84, PO Board Papers Part II, Minutes of thirteenth meeting, 21/04/69; Appendix to the Carter Report, p.351.

<sup>76</sup> POST 69/83, PO Board Papers Part I, 1969: Board Paper 98, Appraisal and Control of Capital Investment Projects in the Postal Business, May 1969.

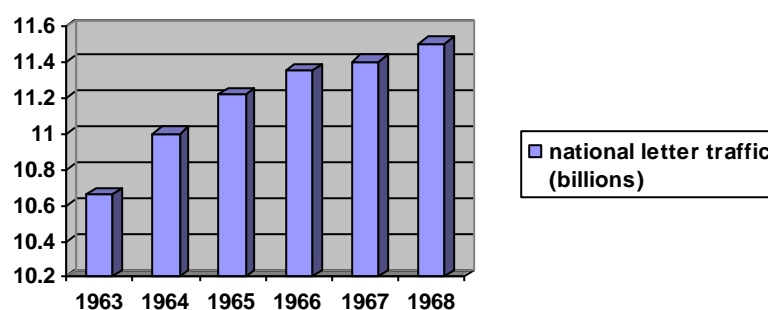
<sup>77</sup> *Ibid.*, Board Paper 21: Long Run Marginal Costs, January 1969.

These complexities meant that predicting overall savings likely to arise from the LPP was problematic.<sup>78</sup> References were made to an initial outlay of £20m, total expenditure of £100m and eventual annual savings of £7m-£10m,<sup>79</sup> but there was recognition that the financial monitoring of mechanisation would go on and that formidable complexities were inevitable. Costing in network industries was unique because individual capital projects could not be evaluated straightforwardly. Forecasters illustrated the problem by using the example of telecoms expenditure, which was split between exchange equipment, line plant and subscribers' apparatus.

Exchange equipment is useless without line plant and vice versa; and neither is of any value without apparatus at each end of the line. It is only when all three elements are complete that the Post Office earns revenue ... [any such] investment represents links in the network.<sup>80</sup>

Similarly, the financial value of the LPP would not be fully known until long after the MLOs were operational, when 'system savings' kicked in. One of the risks was that concentrating mail into MLOs increased long-term fixed costs, effectively putting more eggs into fewer baskets. The danger was that if the longstanding growth in mail volumes were to falter (a trend that was known to be linked with national economic health) there was potential for acute financial and operational difficulties. Given that the figures had been steadily rising for over a century, there were good reasons to predict stability, a point that later accusations of uncritical forecasting ignore.<sup>81</sup>

**Figure 2.1: Annual volumes of national postal traffic, 1963-1968<sup>82</sup>**



<sup>78</sup> *Ibid.*, POB (69) 98, Appraisal and Control of Capital Investment Projects in the Postal Business, May 1969: Annex II: Investment Appraisal and Costing Manual, October 1968.

<sup>79</sup> POST 17/283, Letter Post Plan: Presentation, p.1; POST 69/83... POB (69) 98, Appraisal and Control of Capital Investment.

<sup>80</sup> POST 69/83... POB (69) 98, Annex II.

<sup>81</sup> Corby, *The Postal Business*, p.48.

<sup>82</sup> POST 92/16, Annual Report, 1967-68, p.15.

Equally, there was the question of how the staff and unions might react to the changes, and it was known that this would come at a negotiated price. Based on previous experience with trials, there were good reasons to expect cooperation and the formal position was that this was expected to be forthcoming. There was a longstanding view among staff that investment in the postal side was overdue. Ron Smith, General Secretary of the UPW, explained to Benn in 1964 that staff morale was low, particularly at the older offices such as Mount Pleasant. ‘All the capital investment had gone into telecommunications and the postal services were the Cinderella left to rot’.<sup>83</sup> The support of the Executive Committees of the affected unions was assured in the 1968 Annual Report which went as far as to criticise the Board for not moving quickly enough, though this statement also carried a suggestion of mounting anxiety about the postal service’s future prospects.

The postal services mechanisation programme is running behind schedule and we think this is bad for the morale of the workers involved. Their confidence has been sought and built up to a high degree of expectation and they are now faced with the frustrations of carrying on with the old methods... And we cannot expect those we represent to continue to be enthusiastic about technical progress and innovation with its consequential potential for greater productivity unless such programmes are planned for implementation as well as for experimentation.<sup>84</sup>

Most of the savings were to come through natural wastage equivalent to 17,000 rank and file jobs, but this would be undermined by delays in implementation.<sup>85</sup> As the PO had been reminded at the Industry Exhibition ’65 by Professor Roberts, one of the keys to success in managing technological change lay in the avoidance of strikes and industrial action.

The cost of strikes is going to increase quite dramatically and the measure of the cost of the strikes is not to be found in counting the number of man-days lost... Industrial conflict cost can be measured only in the effect it has on the rate of technological change and the ability of the social institutions, the firm, the enterprise, the industrial society as a whole, to accommodate, to regulate, the consequences of the technological change itself.<sup>86</sup>

The PO was aware that, although they enjoyed the support of union executive committees, a significant element of the workforce might resist. Benn sensed potential problems after his first visit to Norwich in 1964. ‘I met the staff and found them unenthusiastic about mechanisation. They said it destroyed their

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<sup>83</sup> Benn, *Out of the Wilderness*, p.170.

<sup>84</sup> POST 92/16, PO Report and Accounts, 1967-70, Report for 1968, Report by Staff Sides of Departmental Whitley Councils, pp.47-8.

<sup>85</sup> POST 17/283, Letter Post Plan: Questions and Answers.

<sup>86</sup> MRC: MSS.148/UCW/6/13/2/24, *Op Cit.*, Social Implications, pp.29-30.

skill and craft as manual workers'.<sup>87</sup> Since then much had been done to inform and encourage staff,<sup>88</sup> but a confidential memo in 1967 observed that the prospect of concentration schemes and the disruption they promised were 'extremely contentious subjects vis à vis the Staff Side'. The policy until then had tended to be to keep discussion on short-term changes, their local effects, and to defer debate over long-term restructuring.<sup>89</sup> In the summer of 1969, after some hesitancy for fear of a leak, 80 copies of the slides of the LPP lecture were confidentially circulated to UPW executives before official approval was given. This evidently provoked alarm at the absence of Staff Side consideration in an economics-heavy presentation, as an anonymous hand written note suggests. 'Bill, broad basis OK – accent on economics – what about the staff problems in smaller concentrated offices? ... What's in it for the staff?'<sup>90</sup>

In his critique of the 1970s postal service, Michael Corby argued that mechanisation was a poorly managed project that should not have been undertaken. 'Long before corporation status Posts was psychologically committed to mechanising sorting work, and thus assumptions were usually favourable'.<sup>91</sup> Certainly great hopes were placed in automation and there was a sense that the PO had little to lose, as this passage from the 1966 Annual Report on the financial incentives and constraints of full mechanisation suggests:

The rising cost of anything in the nature of a personal service is an accepted fact in developed and sophisticated societies. Moreover, the characteristics of the basic material handled – letters and parcels of all shapes and sizes – severely limit the scope for mechanisation within the sorting office. Even when full mechanisation is achieved in the mid-1970s on the basis of public codes and automatic sorting, the expected economies ... will be less than 3% of expenditure. Postal business expands only slowly, in line with and somewhat below the level of the increase in general economic activity. All these factors make it impossible for the postal service to absorb increased costs in the same way as a technologically-based industry such as telecommunications, and pose the question of the future pattern of the service.<sup>92</sup>

This 3% figure was based on the more cautious estimates made before the arrival of McKinsey and before the more detailed calculations of the full 120 MLO plan of 1969, but it shows that even on the most pessimistic assumptions there was a strong case for code-sorting. Industrial Inquiries, outside consultants, regional postal directors and experienced unionists were all in broad agreement that any reforms that addressed the fundamental problem of high labour intensity and rising wages ought to be embraced. The

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<sup>87</sup> Benn, *Out of the Wilderness*, p.229.

<sup>88</sup> POST 122/12528... A&PRD Circular 107/66 DF110 (31/03/66); Concentration of Letter Mail: Undated draft letter from PHQ to Mr. R. K. Worth (Staff Side Secretary).

<sup>89</sup> *Ibid.*, Communiqué to PSD/PB (07/09/67).

<sup>90</sup> *Ibid.*, Huckerby to McDougall, 05/06/69

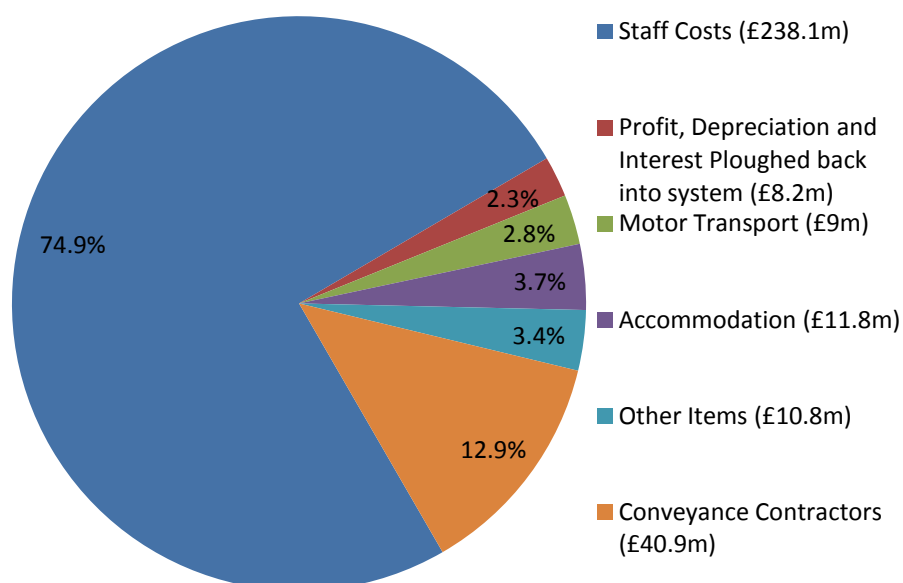
<sup>91</sup> Corby, *The Postal Business*, p.146.

<sup>92</sup> POST 92/15, PO Report and Accounts, 1966, pp.6-7; POST 69/76, PO Board Papers, 1965, Vol. 2, Paper 66, National Plan 1965, pp.5-7.



problem had grown in the post-war period. In 1961 Brigadier Holmes, Director of Postal Services, highlighted the fact that 40% of mail costs were attributable to sorting offices. ‘It is here’, he knew, ‘that mechanization is most needed’.<sup>93</sup>

**Figure 2.2: Postal Expenditure, 1965-66<sup>94</sup>**



Edward Short, the Postmaster General in 1967, believed that £45m expenditure over ten years would yield a 25% return. But, as he explained to the House of Commons on 15 March, the problem of wage inflation would remain because much of the work of the service offered little further scope for automation. ‘We just cannot mechanise the postman who walks up the garden path every morning’, said Short.

Our attack on this problem is two-fold: to mechanise wherever we can with profit and elsewhere to make an intensive drive to improve management and operating methods so that each man employed can make a maximum contribution to output. Mechanisation of postal processes has proved difficult. But we have set on foot an ambitious programme, which makes us a world leader in this field. We have not sought to

<sup>93</sup> Discounting conveyance, this broke down as: 10% collection, 40% delivery, 40% sorting office costs, 10% miscellaneous. POST 122/1565... Holmes, ‘Mechanization of the Postal Services’.

<sup>94</sup> POST 92/15, Annual Report, 1966, p.29.

mechanise indiscriminately, but only where it will show profit... The most dramatic changes in mail handling are, however, just starting with the new coding desks and automatic letter sorting machines...<sup>95</sup>

But it had long been clear that this was a ‘world problem’ and many administrations, including the French, Germans, Americans, Canadians, Russians and Japanese (who regarded the British as pioneers), believed that maximising the automation of their respective networks to be self-evidently worthwhile.<sup>96</sup> Since 1958, twenty or so countries were in active discussions about mechanisation. Many foreign officials visited British sites to observe machines and operations, while the UK, USA and Canada circulated R&D information between them. The PO-sponsored Mechanisation Consultancy Service was established in 1965 to provide expert advice for which there was significant demand, particularly in South America and the middle-east. The largest and richest nations all had postal services afflicted with the same problem of labour intensity and wage inflation. By the mid-60s, the American Postmaster General, for example, viewed labour-saving technology and administrative reform as the key solutions to what he described as a ‘race with catastrophe’.<sup>97</sup> There, a commission of inquiry, on discovering monolithic bureaucracy, inefficient management, dilapidated buildings and a serious lack of investment, recommended the transition to Corporation status with a new commercial ethos. In America, as in Britain, emphasis seemed to be moving from service towards financial self-sufficiency.<sup>98</sup> The Presidential Commission pinpointed the introduction of a more ‘businesslike’ management orientation and the automation of mail processing as two of the most necessary undertakings that a change of status might facilitate.<sup>99</sup> The sociologist Vern Baxter, who later studied the connection between postal mechanisation and the Corporation switch in the US Postal Service, concluded: ‘Two important purposes of the public corporation that was created in 1971 to replace Congress as the primary operating authority for the post office were to facilitate the mechanization and automation of mail processing and to replace political patronage with a more businesslike approach to postal operations’.<sup>100</sup>

In Britain, the PO followed a parallel path in changing its status from a government department to an ostensibly profit-seeking Corporation, first, in appropriating organisational, managerial and financial techniques from the private sector, and, second, in carrying through operational restructuring premised on

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<sup>95</sup> Hansard, ‘Post Office’, Commons Sitting, 15/03/67, Series 5, Vol. 743, cc. 433.

<sup>96</sup> POST 92/14, PO Reports and Accounts, 1957-58, p.6; POST 69/64, PO Board 1958: Board Paper 23: Mechanisation and Buildings Department Progress Report, May 1958, p.1; and on foreign visits see POST 69/77, PO Board Papers and Proceedings, 1965, 3 February; and POST 69/78, Feb 1966.

<sup>97</sup> Wayne E. Fuller, *The American Mail: Enlarger of the Common Life* (Chicago: Chicago University Press, 1972), p.337.

<sup>98</sup> *Ibid.*, pp.331-332.

<sup>99</sup> Report of the President's Commission on Postal Organization, *Towards Postal Excellence* (1968), pp.37-38.

<sup>100</sup> Baxter, ‘Process of Change’, p.283.

automation, referred to by *The Times* as a ‘vast modernisation programme’.<sup>101</sup> The Post Office Act 1969 – the culmination of successive post-war reforms increasing the functional separation of the different PO businesses and their financial autonomy from government – was intended to ‘change the whole atmosphere of the Post Office from that of a Department of State to that of a vigorous business’.<sup>102</sup> Staff were removed from the civil service framework and organised under a new grading structure; there was an influx into senior management of businessmen from private industry; and more rigorous financial targets were set both for posts and telecoms. In 1966-67 a House of Commons Select Committee investigated the Post Office and recommended the change of status. Baroness Phillips explained in the House of Lords the three main reasons for this:

First, the activities of the Post Office are far more akin to those of a nationalised industry than of a normal Government Department; second, the Board will have more continuity of direction and control and have less reason to centralise and so to slow up decision-making; and third, the Civil Service structure and organisation is designed mainly as a regulator and cannot be ideal for a basically commercial task.<sup>103</sup>

The Annual Report, 1969, defined these changes as ‘the most significant in the history of the Post Office since the Rowland Hill reforms of 1840’ and subsequent commentators have hailed the Act as symbolic of a new commercial paradigm.<sup>104</sup>

The LPP was an integral piece of this larger picture. A statement in Parliament portrayed the Corporation Act as a response to the increased scale and scope of PO activity, to new social and commercial needs and as a means to increase efficiency:

In recent years the Post Office has developed into a complex of vast business enterprises. It now faces considerable problems of expansion, modernisation and re-organisation if it is to meet the growing demands of the economy ... The Government believe that this decision to modernise the status and management of the Post Office will make a considerable contribution to its efficiency, and the efficiency of Britain, in the years ahead.<sup>105</sup>

A talk in 1968 at the Management Training Centre made the link between technological change, organisational restructuring and the change to Corporation Status more explicit:

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<sup>101</sup> *The Times* ‘GPO Engineers Threaten Strikes over Pay Claim’, 25/06/69, p.28.

<sup>102</sup> POST 92/16, PO Report and Accounts, 1969-70, p.1.

<sup>103</sup> Hansard, ‘Post Office Reorganisation’, Lords Sitting, 03/08/66, Series 5, Vol. 276, cc. 1330.

<sup>104</sup> Daunton, *Royal Mail*, pp.348-352; Clinton, *Post Office Workers*, pp.304-309; Corby, *The Postal Business*, pp.75-85; Batstone et al., *Consent and Efficiency*, Ch. 1; POST 92/16, PO Report and Accounts, 1968-69, p.5.

<sup>105</sup> Hansard, ‘Post Office Reorganisation’, 03/08/66, cc. 1328-32; POST 73/ uncatalogued, Odd papers relating to Nationalisation, McKinsey etc, 1966-1967, Post Office New Status: Statement in the House of Commons.

Technologically and in its services the Post Office has always been changing but never more so than at present... In the scale of its operations, in capital investment and in rate of technical changes the pace of change will be far greater in the next 7 years than the previous 20... The changes needed for shaking off the Civil Service methods and procedures and the need for reorganisation which could have come anyway have now interwoven. The coming of Corporation status has given an impetus to the other reforms... Many of the practical changes needed to replace Civil Service procedures require the reappraisal of whole systems of working and this gives the chance to modernise them.<sup>106</sup>

Thus the change of status of the whole PO in 1969, and the advancing plans for mechanisation specifically in the postal service formalised that year, shared the same commercial and political rationale, grounded in the pursuit of efficiency and increased productivity. Michael Corby argued that, in empowering the Board with greater financial autonomy, this legislation helped alleviate delays in the spread of mechanisation caused by the Treasury's overly cautious approach to capital expenditure.<sup>107</sup> Section 9 of the Act, sub-section 2 explained there were three things the PO needed to do to meet the needs of society, industry and commerce: invest in 'improving and developing its operating systems'; contribute to advances in societal communications; and commit to ongoing 'efficiency and economy'.<sup>108</sup> When in November 1970 MP David Weitzman asked the Minister for Posts and Telecommunications, Christopher Chataway, whether the Government might offer guidance to the PO in improving sorting office methods he was directed to this passage. The government believed that mechanisation fell within the general aims of systems development and efficiency enshrined in this legislation.<sup>109</sup>

## Conclusion

The transition from planning to implementing mechanisation was fluid and spread over several years without a clear line of demarcation. The LPP was not formally approved until 1970, when some MLOs were already operational while others were being redeveloped to accommodate coding desks and sorting machines. Through trials, staff in Norwich, Southampton, Luton, Croydon and at various places in London, had already gained experience with code-sorting before 1969, while the Head Post Offices of Glasgow and Liverpool each had a permanent installation of the preparatory machines (SEGs and ALFs)

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<sup>106</sup> POST 122/11517, Change of Status: DRoD's Talks at the Management Training Centre, 1967-8, M. O. Tinniswood (Director of Reorganisation Department), March 1968, pp.3-4.

<sup>107</sup> Corby, *The Postal Business*, p.21.

<sup>108</sup> POST 71/308, PO Act 1969, p.9. The Act also went on to stipulate that all staff training was to place an emphasis on promoting efficiency, p.98.

<sup>109</sup> Hansard, 'Mail (Sorting Methods)', Written Answers (Commons), 06/11/70, Series 5, Vol. 805, 481W.

by 1967. Likewise, the postcoding of Britain spanned the years 1967-72<sup>110</sup> and other supporting measures, such as the launch of the two-tier post, had separate but overlapping justifications to do with tariffs and service levels. However, in drawing together so many financial, operational and technological calculations into a single package of targets, the creation of the formal plan, or at least the moment its contents became more widely publicised in 1970, marked the moment at which the Board committed to pursuing a specific radically different future system dependent on automated sorting. It was also the culmination of over twenty years of planning, built upon the vision outlined by Gemmel and Carter in 1946, the great achievement of which was to create a scheme that simultaneously met the needs of workers' wellbeing and system efficiency through the design of the public postcode and of operator-paced machines.

The LPP did contain flaws which contributed to the delays and disputes of the 1970s. However, as R.J.S. Baker later reflected, although some assumptions later proved to be miscalculated, the main causes of subsequent political deadlock were external:

My own impression in the late 1960s and just after was that much more effort should then have gone into the personnel management aspects of mechanisation and more specific reassurances should have been given earlier against unjustified, but nevertheless understandable, grass roots fears of redundancy or insecurity. Otherwise I would not presume to apportion blame for the deterioration of Post Office industrial relations since the 1950s (when they were a model for most other industries).<sup>111</sup>

Moreover, reasonable comparisons with other outside projects casts the work done at the PO in the 1960s in a more favourable light. The Warwick IR Research Unit discovered in 1978 that many large and medium sized firms, predominately in the private sector, did not pay very much attention to IR when making organisational decisions. 'Labour relations factors did not impinge to any significant degree upon management decisions on capital investment and major changes in production methods'.<sup>112</sup> Meanwhile, though planning was a long-term affair, piecemeal implementation began as soon as was practicably possible. Political deadlocks were no less common in the printing industry where the major Newspaper Groups abandoned technological change or recast their plans after immense delays.<sup>113</sup> In the public sector, investment projects such as the planning and construction of the Victoria Line during 1948-1969, were by comparison far less decisive. 'The story of the development of the Victoria Line', state the transport historians T.C. Barker and Michael Robbins, 'shows characteristic features of public handling of investment projects in mid-twentieth century Britain: general acceptance of the intention as desirable;

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<sup>110</sup> The first postcode directory was issued in February 1973.

<sup>111</sup> Baker, 'Problem of Identity', pp.64-5.

<sup>112</sup> Batstone, *Working Order*, p.44.

<sup>113</sup> Martin, *Fleet Street*.

delay for argument on constantly changing bases; final approval under temporary pressures which were largely irrelevant to the arguments'.<sup>114</sup> This meant that years of urban planning often resulted in no decisions of substance. The fact that it took about fifteen years to begin construction supports this and implies that Benn and the modernisers speeded up the process of change at the PO.

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<sup>114</sup> T. C. Barker and Michael Robbins, *A History of London Transport: Passenger Travel and the Development of the Metropolis. Volume II: The Twentieth Century to 1970* (London: Allen & Unwin, 1974), p.344.

## **Chapter 3 The 1971 strike and the Union of Post Office Workers' embargo**

### **Introduction**

This chapter focuses on the aftermath of the UPW strike in 1971, taking in the ways this period disrupted mechanisation planning and implementation. Between the summers of 1971 and 1972 management and unions adjusted to a post-strike climate characterised by a predictable continuation of hostility and suspicion. Some senior managers stiffened their resolve to institute a hard-headed approach to industrial relations, while the UPW turned their attentions to the question of whether they would cooperate with the Letter Post Plan. Their obstructions, combined with a host of financial and operational difficulties accompanying the industry's financial downturn, led first to a series of anxious reappraisals of the wisdom of the mechanisation programme, then became more serious following a stormy conference in 1972 where the UPW voted for an embargo on cooperating with all new installations of code-sort machinery. In return for a resumption of cooperation, the UPW argued that staff should receive an up-front special payment and be provided with a revised, detailed and substantial plan for mechanisation. This chapter seeks to explain some of the immediate and contextual reasons for this embargo. What were the reasons for opposition, and was the UPW united in this? Did the Board's responses to the strike worsen the situation, and how did they manage the prospect of further confrontations? Moreover, why did the LPP's fortunes deteriorate so rapidly? Some answers are offered here by documenting the views of key figures on both sides of the dispute, and by placing these stances in political and economic context. First, the 1971 strike and subsequent parliamentary inquiry are outlined. The management reaction to the strike as it applied to mechanisation is then surveyed, with reference to growing tensions between a strident commercial management ethos and structural changes to PO industrial relations aimed at fostering more inclusive and effective forums for consultation. The UPW's movement towards obstruction is considered by focussing on the content of negotiations over mechanisation including a series of criticisms and protests. This goes some way to documenting the reasons for the dispute as well as displaying several contextual forces helping to shape the strategies pursued by different groups, and again demonstrates the complex interrelation of technological and political issues.

Little has been written on the causes of the embargo. Duncan Campbell-Smith has implied that the embargo may have been close to inevitable given the bitter resentment felt by staff at the time.

After the strike of 1971, slipping the production models of the first-generation coding desks into place without a showdown would have required a miracle, and the UPW did not do miracles. In the event, the 1972 Conference voted to boycott “piecemeal mechanisation proposals” and to withdraw all cooperation until management could offer a perfect solution, covering every aspect of the topic.<sup>1</sup>

Campbell-Smith followed Michael Corby in perceiving union obstinacy as the root of the problem. Staff, states Corby, ‘rejected the system until bribed into acquiescence’.<sup>2</sup> While Corby suggested this was a reaction to management incompetence, Campbell-Smith has dwelt on the rising influence of militant Marxists in London and Manchester. Both make some valid points but underplay the significance of the strike and how it ultimately stemmed from government incomes policy in an inflationary economy. In 1972, Tom Jackson, UPW General Secretary, argued that the historic pay dispute of the previous year had cast a long shadow when he remarked during mechanisation negotiations that ‘the strike in 1971 had changed the attitude of the membership, who now were reluctant to participate in any scheme without payment.’<sup>3</sup> The embargo was what has been categorised as a “non-strike sanction”. The industrial sociologist P.K. Edwards charted its use in the 1970s British economy. ‘Non-strike sanctions’, he stated, ‘are a popular form of pressure, for their deployment can be varied to meet tactical needs and can put pressure on management while involving few costs for workers’.<sup>4</sup> Data for the period shows that this form of obstruction was more common in labour-intensive industries where union density was high, and could range from refusals to work overtime to wider boycotts of new working methods. ‘The use of non-strike sanctions in national disputes, particularly those in the public sector, is still a significant development’, he wrote in 1983.<sup>5</sup> This chapter argues that these interpretations offer a starting point for understanding the embargo, but ignore important contextual factors and a number of reasons not related to pay grievances.

### **The 1971 strike and the Hardman Inquiry**

A period of institutional upheaval was to be expected after the PO was reformed in 1969, as the different parts of the organisation adjusted to new structures and initiatives. The industrial relations implications were debated and discussed across the PO, which, in leaving the civil service, had its wage bargaining traditions opened to reinterpretation. In the light of both Labour and Conservative governments seeking to

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<sup>1</sup> Campbell-Smith, *Masters of the Post*, p.519.

<sup>2</sup> Corby, *The Postal Business*, p.207.

<sup>3</sup> POST 69/92 PO Board Papers, 1972: (304) Letter Mechanisation: Negotiations with UPW: Notes of a meeting between PO and UPW, 28/11/72.

<sup>4</sup> Edwards, ‘The Pattern of Collective Industrial Action’, p.229.

<sup>5</sup> *Ibid.*, p.230.



apply various incomes policies that would cap wage increases in the nationalised industries, the annual wage round on the postal side became elaborately contested. Concerns centred on how the tradition of “fair comparison” would apply to different grades who lobbied with competing, comparative cases. A rising incidence of unofficial strikes and the growth of radicalism in some UPW councils may have led some to expect a period of unsettled politics, but the magnitude of the dispute which followed was not anticipated. This included the industry’s first national strike which brought the mail system to a halt for over six weeks. The central issue was postmen’s pay. Alongside the TUC, the UPW staunchly opposed the incoming Conservative incomes policy in which pay in the public sector was capped to counter rises in inflation. The combination of rising prices and government restrictions rapidly spun the PO into a financial crisis, and when the UPW pursued a wage claim designed to match inflation and recover lost ground with outside comparable wages, the Board, with government backing, refused, instead offering a far lower settlement. The ensuing dispute resulted in a strike lasting from 20 January to 4 March 1971. This event and the wider financial and political crises it symbolised had major, lasting implications for the industry as a whole and for the mechanisation programme in particular.

The strike has been addressed in some detail in Alan Clinton’s 1984 book on PO unionism, *Post Office Workers*. Clinton interpreted its causes and how events unfolded and concluded that its legacy weighed heavily on the shape of the postal service’s subsequent industrial relations. He saw the most significant damage as the loss of solidarity and group morale felt by many to be a strong, historic characteristic of PO employment. In total, 6-8m days of work were lost as around 190,000 workers joined the strike, which included the vast majority of the closed-shop postman grade. It was the longest continuous strike since the General Strike in 1926, the third largest strike of the 1970s and the fifth largest in post-war British history.<sup>6</sup>

Whatever its precise extent, no other national strike can have had so direct and continuous effect on so many people. It was one of the epic battles in the history of the British working-class movement, disciplined and tumultuous. It was also a significant episode in the relations between the social classes in Britain. Those who participated will always remember it as a great experience in hundreds of thousands of lives. There can be no doubt that it will be seen for generations to come as a watershed in the history of the Union and in the efforts to settle wages and conditions in the Post Office. It was the culmination of a significant phase in the life of the UPW and is generally remembered a decade later as a defeat for the Union, although a temporary one. It is therefore seen by those with various points of view as an indication

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<sup>6</sup> David Butler and Gareth Butler, *British Political Facts: 1900-1994* (London: MacMillan, 7<sup>th</sup> edition, 1994), pp.371-72; Clinton, *Post Office Workers*, p.556.

of the need to proceed differently in the future, either without strikes at all, or else by organising them more effectively.<sup>7</sup>

Clinton believed that by mid-February the struggle had ‘reached epic proportions, both in terms of its size and scope and the intensity of feeling that was being displayed’.<sup>8</sup> Indeed the UPW’s leader, Tom Jackson, made some noteworthy addresses during rallies. ‘This is not a strike about pay any longer’, Jackson declared in February. ‘It is a strike about self-respect and dignity. They cannot starve us out, for we will win’. Later, in Glasgow, he described it as ‘a revolution, an explosion of layer upon layer of discontent piling upon the Post Office year after year’.<sup>9</sup> Clearly an event of this magnitude made a sizeable impact on the subsequent state of industrial relations and, for a time, its effects threatened to derail the LPP entirely.

On 6-8 April 1971, one month after the strike ended, a Committee of Enquiry, chaired by Sir Henry Hardman, retired Permanent Secretary at the Ministry of Defence, convened at Church House in Westminster to direct the pay settlement and make a range of recommendations for a postal service widely regarded as being in a state of political and financial crisis.<sup>10</sup> Tom Jackson, UPW General Secretary, argued that postal staff had fallen behind other public sector workers in pay and their case was based on ‘fair comparison’ with outside industry. William Ryland, the newly appointed PO Chairman, led the management presentation, assisted by Dorothy Fothergill, Director Postal Personnel, who succeeded in persuading the committee of the dangerous consequences for national inflation of higher pay. The Committee agreed that a 9% award and a ‘performance linked pay system’ were in the national interest and might serve to revive the fall in postal productivity for which blame was distributed between the PO and UPW. Jackson, whose passionate advocacy was likened by supporters to that of a trial lawyer, afterwards told the press that the Government had leaned on the Committee and that postmen were being made scapegoats for broader economic and industrial relations problems.<sup>11</sup> A contentious pay settlement in favour of management resulted, disputed in a minority report by Professor John Hughes. However, recommendations aimed at increasing postal productivity were backed unanimously by the Committee. The Postal Board was instructed to reduce overtime, increase part-time and female employment in areas with low recruitment, pursue changes in delivery and collection patterns, introduce a work measurement programme and accelerate the use of mechanisation. Much of this was unlikely to be popular with the majority of postal staff, the UPW being opposed to work measurement and the employment of part-time

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<sup>7</sup> Clinton, *Post Office Workers*, p.556.

<sup>8</sup> *Ibid.*, p.563.

<sup>9</sup> *Ibid.*, p.561.

<sup>10</sup> Maurice Corina, *The Times*, ‘Chaos Caused by the Postal Strike’, 23/02/71, p.19.

<sup>11</sup> Clinton, *Post Office Workers*, pp.566-568; Daunton, *Royal Mail*, p.352; *The Times*, 06/05/71, p.14.

and female labour.<sup>12</sup> Given the bitterness of the confrontation and the punitive settlement, repairing the damage and working towards healthier industrial relations was a formidable challenge, recognised by the committee, who recommended wide-ranging reforms in consultative machinery.<sup>13</sup>

Having worked long hours on an emergency executive during the strike, the mood in the boardroom was severe during 1971. The weight was hardly lifted when they came to face the strike's repercussions. The pressure was felt especially by those responsible for postal performance, including the Managing Director, Posts, Geoffrey Vieler, who, just eighteen months previously, had presented the LPP to the Board. Duncan Campbell-Smith has written that this period 'reduced Vieler to a sorry figure, sitting slumped at the table through many meetings with his head in his hands'.<sup>14</sup> Likewise, Dick Hayward, a UPW veteran who had been appointed Director, Personnel, is reported to have had a nervous breakdown.<sup>15</sup> Others in senior positions used these circumstances to assert themselves, none more so than William Ryland who was appointed Chairman in April on the basis of his long experience, forthright character and a deep working knowledge of the service.<sup>16</sup> Ryland was reputed to be a workaholic, known for his assertiveness and, according to Campbell-Smith, a 'fearsome taskmaster' who demanded an unrelenting pace of work from his 'lieutenants' such as Bill Cockburn.<sup>17</sup> Ryland 'shunted aside' Vieler, selecting his ally and confidante Ken Holmes as Managing Director, Posts.<sup>18</sup> (Holmes retired in June 1972 when he was replaced by Alex Currall from the Treasury).<sup>19</sup>

In the 1971-2 Annual Report, Ryland offered a response to the Hardman criticisms, citing mitigating circumstances and arguing that the strike should be viewed in the context of Britain's ongoing political and economic upheavals. He pointed in particular to inflation as the root cause of both the crisis in postal finances and the strike, and reminded Parliament that industrial relations was a 'national problem' as reflected in the furore then surrounding the Industrial Relations Bill.<sup>20</sup>

We seem to be at the beginning of a period of deep social change in industry. Managerial attitudes which were acceptable in the 1950s and even in the early 1960s are no longer appropriate. Stimulated by

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<sup>12</sup> Women were paid less than men in the postman grade. The 1970 Equal Pay Act was not applied generally until 1975.

<sup>13</sup> TNA: LAB 43/704, Post Office Workers Strike: Correspondence and Report of (Hardman) Committee of Inquiry, 1971.

<sup>14</sup> Campbell-Smith, *Masters of the Post*, p.506.

<sup>15</sup> *Ibid.*, p.506.

<sup>16</sup> *Ibid.*, p.510.

<sup>17</sup> *Ibid.*, p.512.

<sup>18</sup> *Ibid.*, p.506.

<sup>19</sup> *Ibid.*, pp.505, 515.

<sup>20</sup> The UPW gave strong support to a TUC-organised nationwide petition against the Bill in January 1971. Warwick Modern Records Centre (hereafter MRC): MSS.148/UCW/5/6/27, UPW Special Branch Circulars, 1971-73, Industrial Relations Bill, 07/01/71.

improved education, the communications media and easier travel facilities, people's horizons are constantly expanding. Leisure and job satisfaction are increasingly important considerations to the new generation of men and women coming into industry.<sup>21</sup>

He warned that meeting these expectations on the postal side required financial stability. To this end he urged the curtailment of some services, raising tariffs and more rapid implementation of programmes to improve productivity, through mechanisation, work study and work measurement schemes.<sup>22</sup>

Management's philosophy, he argued, should embrace 'a more commercial approach' already evidenced by: a new central finance organisation; recruitment of more graduates and experienced businessmen from the private sector; more external training courses; and closer links with business experts from academia. It was hoped a fresh wave of external audits would help cement this new commercial approach.<sup>23</sup> Ryland had been consistent in arguing for this approach even during the strike. He elaborated proposals for a corporate-planning system in a lecture at the Institute of Electrical Engineers in March 1971, the day the strike ended, claiming his ideas would deliver a more commercially robust industry.<sup>24</sup> As will be shown, this shift in management philosophy had a significant impact on the politics of mechanisation. However, other, countervailing changes to the structure and tone of industrial relations were also underway which militated against a full-blooded adoption of Ryland's bullish ethos.

### **Tensions between industrial relations reform and commercial management**

The Hardman recommendations, while emphasising the desirability of commercial management, also dwelt on the breakdown of trust between staff and management, arguing that experienced personnel and IR experts should have greater influence at Board level. This judgement contributed to the formation of a Joint Working Group on Industrial Relations,<sup>25</sup> but the JWGIR was also the product of an ongoing period of reform to IR at the PO, flowing naturally from the PO Act 1969. Having exited the civil service, negotiations over wages and conditions were no longer conducted through the Whitley Council system and, while Whitley norms were carried over for a while, a new framework adapted to the specific needs of the PO was slowly designed. In this respect, PO developments were in line with changes occurring throughout the British economy, stemming from the findings of the 1968 Donovan Commission into

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<sup>21</sup> POST 92/17, PO Report and Accounts, 1970-71, p.2.

<sup>22</sup> *Ibid.*, p.13.

<sup>23</sup> *Ibid.*, p.4.

<sup>24</sup> Campbell-Smith, *Masters of the Post*, p.510.

<sup>25</sup> *Ibid.*, p.506.

British industrial relations. These changes saw large increases in the number of personnel specialists across industry and the formalisation of the rules and procedures of IR in large companies. Tensions therefore developed between two countervailing trends at work in the political economy of the PO: the first towards implementing a commercial ethos which sought to increase management autonomy and minimise protracted negotiations; the second towards the proliferation and formalisation of forums for negotiation and consultation. Both trends gathered momentum by 1971 and help explain some of the contradictions in the political backdrop to negotiations over mechanisation policies, addressed later in this chapter.

A series of historic changes to the structure of PO unionism took place in preparation for, and as a consequence of, the PO Act 1969.<sup>26</sup> The major unions formed an umbrella organisation called the Council of Post Office Unions in 1968 while the Whitley machinery was being dismantled in anticipation of the switch to Corporation status. COPOU comprised five unions, dominated by the UPW and the POEU,<sup>27</sup> and while joint consultation continued on an ad hoc basis in the Whitley tradition, a new framework emerged.<sup>28</sup> COPOU were unhappy with the old informal arrangements for dispute-resolution and wanted formal rules to take disputes higher than Regional Directors and involve more independent parties.<sup>29</sup> When the Whitley system formally ceased on 30 September 1969, an interim committee for national joint consultation (NJC) was formed, with a broad remit of utilising the ideas, experience and resources of staff, and establishing national agreements relating to training and working conditions. It was stipulated that the committee should have a maximum of sixteen members, eleven COPOU and five management.<sup>30</sup> In 1970, Tony Carter was appointed General Secretary of COPOU following the death of Syd Seaton, a respected, lifelong PO unionist. Carter's career had taken him from Executive Officer in the Civil Service to serving on the PO Engineering, Factories and Supplies Departmental Whitley Council. He had been Deputy GS of the Society of Technical Civil Servants since 1960 and was working under George Woodcock on the Commission for Industrial Relations when he came to COPOU.<sup>31</sup> In his first two years he was impressed by the scale of union efforts at all levels in creating new consultation opportunities, which he felt had improved communications over operational problems. COPOU's 1972 Annual Report

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<sup>26</sup> White Paper, *Reorganisation of the Post Office* (London: HMSO, 1967), p.12; POST 151/uncatalogued, former ref: CH/BK/0008.

<sup>27</sup> The five were: UPW, POEU, Association of PO Executives, POMSA and National Federation of Sub-Postmasters.

<sup>28</sup> POST 151/uncatalogued, former ref: CH/BK/0016, Extract from "Red Tape", December 1969; CH/BP/0008, L. N. Hetherington to Mr George, 21/05/70.

<sup>29</sup> POST 151/uncatalogued, former ref: CH/BK/0001.

<sup>30</sup> POST 151/uncatalogued, former ref: CH/BK/0018, Committee for PHQ Chesterfield: Draft Constitution, July 1973.

<sup>31</sup> POST 151/uncatalogued, former ref: CH/BS/0003, Post Office union statistics and biographical information - Council of Post Office unions (COPOU), Extract from Review, August 1970.

stated that joint consultation committees had been set up with the following titles: Buildings and Mechanisation; Marketing; Office Machinery; Training; Operations; and Improvement and Efficiency. Each precipitated a steady flow of correspondence between members on all sides. COPOU publically welcomed these developments in their 1973 Annual Report: ‘The area of collective bargaining in the Post Office has been increased progressively in the last two years and by the end of 1973 there was not much activity undertaken by the Post Office which was not scrutinised and discussed by the unions at all levels’.<sup>32</sup> ‘The result’, Carter believed, ‘was greater efficiency which was of direct benefit to the Post Office’.<sup>33</sup> By the time he retired, much more had been achieved. By 1977, the PO’s joint consultation machinery had developed considerably, integrating COPOU into a four-tier consultative and negotiating structure, operating in tandem with informal arrangements with the separate unions.<sup>34</sup>

During 1971, the first of many steps in synchronising new IR machinery with other organisational changes at the PO was underway. The enormous complexity of the unions, especially the UPW, meant this was a gradual process. There were wide regional differences. Some Head Postmasters’ areas had up to fourteen union branches, almost a branch per place of work, while others had just one branch for twenty places of work and a variety of area committees overseeing different problems. Branch secretaries often had different functions. Some dealt with many senior figures for a region, others represented workers in a single sorting office and liaised predominantly with local management. The formalisation of these forums began with the creation of UPW District Councils. The forming of COPOU and the new joint consultation machinery required the unions to co-ordinate their own internal organisation with wider changes, and new positions and duties were created at all levels. Union representatives undertook a wider variety of work representing local workplaces, acting as branch secretaries and sitting on local and regional COPOU committees.<sup>35</sup> Regional consultation was ‘a completely new idea’ according to Mr R. C. Wall, the General Secretary of the Association of Head Postmasters. In 1970 he made his apprehension known to the Personnel Division, though acknowledging its useful potential.<sup>36</sup>

The Personnel Division was at the heart of IR formalisation and expanded in this period as a consequence. Miss P. Bridger coordinated much of the work needed for formal disputes procedures and

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<sup>32</sup> MRC: MSS.148/UCW/3/10/3, COPOU Annual Report, 1972, pp.32-33. This extended to the creation of new communication lines between different management levels, including a joint committee between management and the management staff association representing headquarters staff in London, Bristol, Rugby and Cardiff. POST 151/uncatalogued, former ref: CH/BK/0026, extract from *The Courier*, February 1973.

<sup>33</sup> POST 151/uncatalogued, former ref: CH/BL/0027, JWGIR, Minutes of third meeting, 29/10/72, p.3.

<sup>34</sup> POST 151/uncatalogued, former ref: CH/BO/0002, File 3, D. A. Richards, “Disputes Procedure”, March 1977.

<sup>35</sup> POST 151/uncatalogued, former ref: CH/BL/0027, JWGIR, “Facilities for Union Representatives: Union Organisation and Functions of Representatives”, April 1972.

<sup>36</sup> POST 151/uncatalogued, former ref: CH/BK/0038, Wall to Bridger, 10/02/70.

looked to the electricity and gas industries for potential models.<sup>37</sup> In the wider economy, particularly in large organisations, the personnel function had grown rapidly during the 1960s, partly thanks to a large increase in mergers, which had increased the division of labour at management level, and partly aided by government support. During the 1970s the profession matured such that by the end of the decade there were about 20,000 practicing specialists, a four-fold increase over twenty years.<sup>38</sup> Academic commentators in the 1980s noticed that the field of personnel management had come to wrestle with two conflicting drives: the pursuit of staff welfare and the pursuit of organisational efficiency. In the postal service, incoming personnel specialists had to manage this middle-man role. On which side their allegiances lay is hard to judge and will have differed, though there is a view that the trend in the profession as a whole was more towards management goals of efficiency.<sup>39</sup> One way to resolve the tension was to view the improvement of staff welfare as a means to operational efficiency over the long term, a longstanding philosophy in the postal service, though one that in practice presented great difficulties in 1971. When responding to an enquiry from an anxious colleague, E. Fennessey, a senior official who represented management on the JWGIR, tried to offer encouragement but acknowledged the difficulties involved in building a disputes framework in the post-strike climate.

Frankly there are no easy answers to your questions and anything said in the immediate aftermath of the UPW strike might have been premature. With the Hardman Report and ensuing pay negotiations with the UPW now behind us... we can now turn more positively to the lessons of the strike and the follow-up of the Hardman Report.<sup>40</sup>

To complement the work of the JWGIR, and as a step towards changing practices in the light of the strike, the Personnel Division sought in 1971 to improve communications between and among PO employees, establishing a working group in January 1972 at which the problem was defined as improving ‘internal “Public Relations”’.<sup>41</sup> This involved consultations across the PO and led to the creation of new policies for in-house publications, day to day communication on IR matters and the promotion of union journals and conferences. In 1972 the focus shifted to improving communications between management and the mass of rank and file staff. Studies were begun to better understand the behaviour and attitudes of line managers, while Regional Directors were asked to promote local newspapers and magazines written by and for staff in an effort to stimulate interest in work matters.<sup>42</sup> The Board asked that these changes apply

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<sup>37</sup> POST 151/uncatalogued, former ref: CH/BO/0002.

<sup>38</sup> Batstone, *Working Order*, p.38.

<sup>39</sup> *Ibid.*, pp.61-6.

<sup>40</sup> POST 151/uncatalogued, former ref: CH/BP/0008, E. Fennessey to Greenlaw, draft letter, undated (c. 1972).

<sup>41</sup> POST 151/uncatalogued, former ref: CH/BT/0006, Internal communications: Internal Communications Study Group, First Report, Consultation with Management, p.1.

<sup>42</sup> *Ibid.*, File 2: R. Corp’s comments on the report ‘Organisation of PR in the Post Office’.

as widely as possible. The working group's first report dwelt in particular on issues of trust, noting that a new wave of communications might raise suspicions amongst staff that management were competing with the unions for their loyalty. It cautioned management to be sensitive to this when discussing "live" issues.<sup>43</sup>

This sphere of activity – aimed at repairing the political damage of the strike and strengthening the staff-side stake in the industry – did not sit easily with the promotion of the commercial approach associated with Ryland and Hardman. On 16 February, during the strike, Ryland met Regional Postal Directors in London where they discussed the need for 'a new overall philosophy', believing that recent crises had presented them with a window in which radical reappraisals could be seriously considered.<sup>44</sup> They expanded on this in their report's opening statement:

Financial criteria clearly indicate that a fresh and total evaluation of the current strategies, risks and opportunities of the business are now called for and the recent strike has provided an unequal opportunity for breaking away from traditional service patterns should investigation show this to be desirable. In current conditions economic considerations must take precedence in any review, providing the social obligations of the business are not ignored, and a reduction in service standards is an obvious candidate for consideration.<sup>45</sup>

Four Directors – Mr G.H. Coates (Northern Ireland), Mr T.C. Carpenter (Scotland), Mr D. Henry (Midlands) and Mr D. Wesil (London) – agreed to prepare a report detailing their views on how to improve overall financial performance with recommendations covering management strategies, pricing policies, staff relations, productivity and mechanisation. The Directors' immediate concern was to reverse a sudden arrest in the historic growth of mail volumes. They judged traffic growth to be singularly important to long term productivity, knowing that future revenues and a full utilisation mechanisation depended on it.<sup>46</sup> Various solutions were suggested. They pointed hopefully to the USA, where marketing drives and mail-advertising were helping to raise the figures. More radically, they believed the time had come to give greater priority to the wishes of big business (who contributed the largest share of revenue), and were prepared to contemplate overhauling the historic principal of universal pricing in favour of market-led a market-led tariff structure: '...we are recommending a move away from standardised

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<sup>43</sup> *Ibid.*, ICSG First Report, Consultation with Management, p.4.

<sup>44</sup> POST 73/465, The Future of the Postal Business: A Report by Directors of Postal Regions, April 1971, pp.1-2.

<sup>45</sup> In the event the only concrete proposal for service alterations was to allow an extra day for 2<sup>nd</sup> class delivery. *Ibid.*, pp.2; 5.

<sup>46</sup> *Ibid.*, p.3.



services and tariffs towards more discretion at the local level to order things in accordance with local demands rather than by reference to universal or arbitrary standards'.<sup>47</sup>

The vision of the future postal service outlined in the 1971 Directors' Report was one focussed on making profits through efficiency and productivity. They claimed that both staff and supervisors harboured suspicions over the complexity of the Headquarters 'superstructure' in London. The regions wanted greater powers devolved to Head Postmasters to turn each office into a 'profit centre' covering its own costs and making 'a maximum contribution towards the cost of the infra-structure'.<sup>48</sup> Looking to the future, measures would be needed to improve rank-and-file job satisfaction, but here shrewdness was counselled. They observed that a large share of the staff devoted most of their working lives to the PO, many in spite of relatively poor pay and conditions. They did not believe there was value in becoming 'market leaders' in personnel management, rather the aim should be to generate 'the maximum degree of job satisfaction' while remaining 'cost-benefit conscious'.<sup>49</sup> In the interim a tougher line was called for with the UPW Branches, even if this came at the cost of further industrial unrest. They believed that only by emphasising profit could any shift take place from a service to a commercial mindset.

In the past the Post Office has placed very great stress on management proceeding by agreement with the staff even at some cost to efficiency. In future we think that this emphasis should be changed, and for our part we are determined that managers should far more often be ready to proceed when they are satisfied that this is justified even though staff agreement is not forthcoming. But it must be accepted that the results of this will not invariably be beneficial to productivity and will often be at the expense of disruption of service to the customer. Some customers might even believe, if they knew all the facts, that the extra 10% or so of productivity that management might achieve in this way was not worth the consequences for them and claim that they would prefer to pay a higher price and do without the productivity improvement efforts. These are risks that must be taken, for in the long-run we believe that if we do not proceed with the firmer management style to which we have referred, the situation will not simply remain as it has been but that productivity will decline still further.<sup>50</sup>

Their attitude towards mechanisation, which they believed to be well-costed, remained fully supportive.<sup>51</sup> They were keen to see the first generation of machines and concentration schemes implemented quickly, leading to an extended period of 'stability in design and system' so that all concerned could become comfortable with the new methods.<sup>52</sup> There was, in their view, no hurry for a second generation of

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<sup>47</sup> *Ibid.*, Appendix, p.22.

<sup>48</sup> *Ibid.*, p.4. Local management's 'primary task' was taken to be 'maximising revenue and minimising cost'. p.6.

<sup>49</sup> *Ibid.*, Appendix, p.16.

<sup>50</sup> *Ibid.*, p.15.

<sup>51</sup> POST 122/12528... B. R. Smith (AHP) to Mr. McDougle.

<sup>52</sup> POST 73/465, The Future of the Postal Business, p.6.

machines or supplementary innovations. Rather R&D should reduce expenditure, focus on figuring out likely long term societal demand for postal communications and consider making more use of the high quality designs now becoming available overseas.<sup>53</sup>

Some elements of this philosophy were formalised in the publication of various national strategy documents, united by their common pursuit of higher productivity. Foremost were preparations for Ryland's Corporate Plan. His proposals in 1970 for a detailed, systematic, long-term plan to be redrawn each year for parliamentary scrutiny – a model analogous to that used in Telecommunications and then under consideration in the other nationalised industries<sup>54</sup> – was taken forward with a period of research delegated to the Postal Management Board and its Director, Ken Holmes. Holmes was also Director of Finance with a long history in technology and operations having chaired the Mechanical Aids Committee in the 1950s and served as Director of Postal Services in the 1960s. The first plan was published in 1972 and its vigorous tone and commercial content made it a key document in the PO's wider rebranding exercise, most publically visible in the creation of new corporate logos, typefaces and signs for the different PO services (just as in America where rebranding around a positive corporate image was under way following the Reorganization Act).<sup>55</sup> The central message was that each business within the organisation needed to adapt to changes in the commercial environment. The primacy of business over public needs, and a stronger focus on profit, was stressed from the preparation stage.<sup>56</sup> When a draft was completed in December 1971 it ran to 58 pages and laid out a number of salient facts affecting the industry as a whole and its subsidiary functions of inland letters, overseas letters, parcels, counters, personnel and finance.

For inland letter mail, a number of threats were recognised which would have knock-on effects for mechanisation policy. Traffic growth for inland letters had been slowing in line with GDP growth, but the events of 1971 had exposed for the first time how vulnerable traffic growth could be. Some believed the rupture with past trends was more than an anomaly, claiming that 'the long established relationship of letter traffic to economic growth may have altered to the Business' disadvantage'.<sup>57</sup> The national figures dropped by 8-10% in the first six months after the strike, far more than predicted, and were expected to take at least four years to recover (telephone traffic rose by 12% locally and 13% nationally over this

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<sup>53</sup> *Ibid.*, Appendix, p.19

<sup>54</sup> TNA: CAB 164/1334, White Paper, *The Regeneration of British Industry* (1974), Cmnd.5710, p.5

<sup>55</sup> Baxter, 'Process of Change', p.294.

<sup>56</sup> POST 69/236, Managing Director's Committee: Posts: Committee Papers, c. 1971, MDPC (71) 15: Corporate Planning – Preparation of a Postal Corporate Plan, 1971, Appendix A

<sup>57</sup> POST 69/237... MDPC (72) 14: 1973 Corporate Plan: Traffic Growth Assumptions; POST 122/8943, Human Factors Research Committee, 1964-1972: 'The relative acceptability efficiency of letter mail and alternative means of communication', by S.G. Young, R14, 24/04/70

time).<sup>58</sup> They speculated that this was indicative of future trends and the role of postal communications would shrink as the use of telephone, fax and telex services spread. Falling traffic levels were known to have contributed to the real decline in productivity criticised in the Hardman Report, but understanding the problem beyond this was difficult. Forecasting future trends in the communications market needed to take into account the fact that letter writing was a more considered form of communication than telephone, offering a range of unique benefits. It was thought that young people used telephones in many cases where the older generation chose to write, but this was a hunch and so fresh research was requested.<sup>59</sup> A second phenomenon thought to be critical was labour intensity, which was higher than ever at 72% of expenditure and being exacerbated by the increasingly inflationary economic climate, making the need to reduce manpower more urgent than ever.<sup>60</sup> These were judged to be the most damaging trends affecting financial performance, for which the plan outlined counter-strategies. One was to continue to push for extremely high tariff increases and to strike the right balance between first and second class mail to come closer to meeting the industry target of 2% return on expenditure. However, this could only be viewed as a longer term goal as the Government and the CBI – both having major interests in maintaining existing service levels at low prices – placed limits on PO freedom of action.

Through these struggles, much was learned about the complexities and constraints of tariff alterations, in particular their interrelatedness with operational matters. The aforementioned clamour for sharp increases was offset over the longer term by an awareness of the risks involved in sudden change and a view developed that experimentation with gradual, conservative alterations was more politically and operationally prudent. In 1976, the Carter Committee heard of how a balanced ‘Letter Tariff Philosophy’ had been forged, aiming not only for higher revenues, but greater control over issues such as mail circulation, attendance patterns and shift-work.<sup>61</sup> Moreover, there was a growing knowledge among postal engineers that the relationship between tariffs and operations raised questions in the R&D of sorting machines. Cliff Wicken, a Senior Executive Engineer, raised this point in at the 1970 Postal Engineering Conference:

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<sup>58</sup> POST 69/236... MDPC (71) 26: Review of Productivity and Performance, pp.1-2

<sup>59</sup> POST 69/237... MDPC (72) 1: Postal Business Corporate Plan, p.4. As we will see, a steady growth in mail volumes was an important assumption determining the shape of the mechanisation programme in general, but it also had more immediate effects on productivity because while revenue fell and the number of addresses continued to climb, the levels of staff required remained static. In other words the cost of handling each letter increased.

<sup>60</sup> *Ibid.*, Corporate Plan, p.5. It was further stated that special productivity payments agreed with staff in the past had, because of UPW policy, been drained of their power to incentivise by being spread too thinly over the entire workforce. p.45

<sup>61</sup> POST 151/uncatalogued, former ref: CH/C/0501, Post Office Review Committee: Post Office Notes, 1976-77, Letter Tariff Philosophy and the Balance Between First and Second Class, p.4.

I would stress the importance of not only designing the machine to handle the letters but also of making the letters suitable for handling by the machine. It is important because it is with both these sides of the problem with which the engineer must struggle and this is very much bound up with the tariff structure. Tariffs at the moment are based on weight. Some of our machines weigh 5 tons and mail weight is negligible. What is important to the engineer is the length of the letter, the height of the letter and the thickness of the letter. Ideally tariffs should be structured to encourage the use of machineable mail.<sup>62</sup>

The other longstanding economising measure, subject to similar constraints, was to make cuts to the range and frequency of deliveries and collections. In consequence, the frequency and intensity of the debates surrounding both tariff increases and service cuts increased during the 1970s. There was little room for manoeuvre with tariffs increases. ‘The overall picture is not hopeful’, explained Holmes in November 1971. ‘The CBI restrictions on price increases have led to the Post Office putting forward proposals for tariff increases and service cuts which are grossly inadequate as a means of enabling it to meet its financial target’.<sup>63</sup> Negotiations between Board, Government and POUNC took about nine months, and Government retained veto power anyway: anything above a 1p increase on first and second class stamps, the equivalent of about £85m extra revenue, was simply ‘regarded as unacceptable’.<sup>64</sup> Nevertheless, following debates about the relative political merits of smaller, more regular vs. larger less frequent tariff increases, the strategy favoured in the Corporate Plan was to streamline the negotiation process with Government while pushing for as much as 5½p (1<sup>st</sup> Class) and 4½p (2<sup>nd</sup> Class).<sup>65</sup> Beyond this, the strategies outlined by the Regional Directors of more vigorous marketing and higher value concessions to bulk business users were included.<sup>66</sup> Finally, there was the longer term pursuit of productivity covered by the Letter Post Plan and the latest proposals for a contentious work study ‘information and control system’ pencilled in for the largest 92 sorting offices.<sup>67</sup> These were termed ‘remedial measures’ and required formal agreement with the UPW, the securing of which had become more problematic.

In summary, a bullish attitude was encouraged among senior management by the events of 1971. It was embodied in a corporate planning system which portrayed mechanisation as a central plank in a raft of controversial, profit-oriented reforms, which were viewed with suspicion by many rank and file staff. Moreover, the thrust of the commercial approach appeared to stand in contradiction to the comprehensive restructuring of industrial relations and the improvement of internal communications gathering

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<sup>62</sup> Discussion during Session 1(a), in Institution of Mechanical Engineers, *British Postal Engineering*, p.39.

<sup>63</sup> POST 69/237... MDPC (71) 28: Financial Review: November 1971, p.3

<sup>64</sup> *Ibid.*, MDPC (72) 29: Postal Prices – Letters, pp.1-3; Appendix A.

<sup>65</sup> *Ibid.*, Corporate Plan, p.55

<sup>66</sup> *Ibid.*, p.19

<sup>67</sup> *Ibid.*, p.17

momentum since the formation of COPOU in 1968. In attempting to please the government and other external interests by couching mechanisation in a commercially-minded reform package, Ryland and Holmes inadvertently encouraged a view among many rank and file staff that there was something insidious to the Letter Post Plan, seeds that landed in fertile soil in the post-strike political climate. The first Corporate Plan forecast the completion of letter mechanisation by 1980 and outlined a schedule which referred to the original 1969 LPP proposals – complete with the eventual target of the equivalent of 16,000 jobs cut. Michael Corby later wrote that corporate planning was insufficiently cross-examined by the government ‘The indications are that the sponsoring department had neither the will nor the expertise to challenge Posts’.<sup>68</sup> He also argued, with the benefit of hindsight, that the first Plan was naive in its predictions, especially regarding the public uptake of postcodes and the extent to which traffic levels could be increased by marketing, both appearing when he wrote in 1979 as over-optimistic. However, both initiatives fared far better in the 1980s and, moreover, the 1972 plan did in fact make it clear that ‘considerable doubts’ existed over mechanisation and that, in light of the strike and difficult financial climate, revalidation of mechanisation policy was already in hand.<sup>69</sup>

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<sup>68</sup> Corby, *The Postal Business*, p.146; pp.152-4.

<sup>69</sup> POST 69/237... Corporate Plan, p.16.

Figure 3.1: Forecasting the effects of mechanisation and productivity schemes on staff numbers<sup>70</sup>

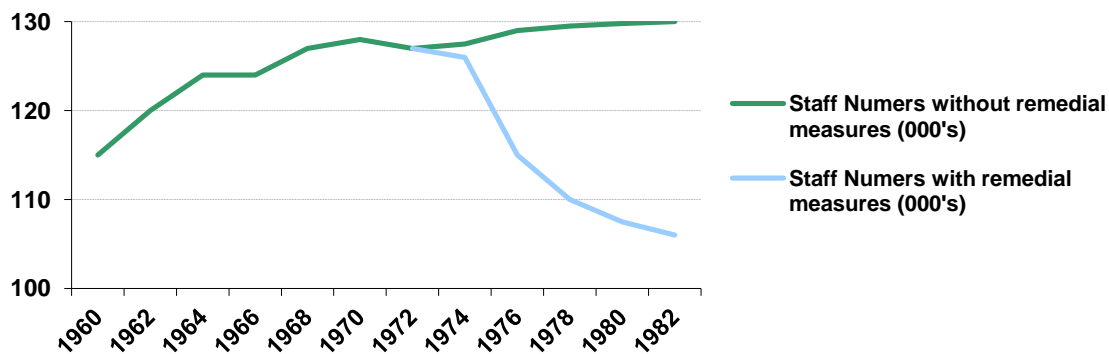


Figure 3.2: Corporate Identification for Posts – the 1974 iteration of standardised branding<sup>71</sup>



<sup>70</sup> POST 69/237... Corporate Plan.

<sup>71</sup> Of the four design consultancy firms commissioned c.1972, Banks and Miles' submissions were judged best to 'express the personality and character' of each part of the new PO. This was one aspect of an increased focus on marketing and a public expression of the new commercialism. POST 69/240... MDPC (74) 40: Design identification of the postal business; POST 69/238... MDPC (73) 1: A New Design Identification for the Postal Business, pp.1-2.

## The effects of the crisis on mechanisation policy

As was later acknowledged, the doubts about mechanisation outlined in the Corporate Plan stemmed largely from the 1971 crisis and a worsening commercial climate characterised by rising inflation and industrial tensions.<sup>72</sup> This led to what was described as an ‘initial’ and ‘inconclusive’ phase of revalidation which was one part of a wider-ranging reduction in capital expenditure imposed while the Board tried to understand the post-strike financial situation more accurately.<sup>73</sup> ‘Postal finances are in the present state for three main reasons’ wrote Nick de Jong, Director of Postal Mechanisation, in an investment review co-authored with the Finance Department. ‘Firstly, because of underpricing, compounded of chronic political tinkering with the business, in the past; secondly, because of the vulnerability of the postal services to wage inflation; thirdly, because demand for postal services is more or less static’. Nick de Jong was then nearing the end of his career having become a figurehead for British postal engineering and a leader known for his ambitious and conceptual views on the place of mechanised sorting in the wider political economy of the organisation. His complaints about economic and political constraints were made following discussions with the Government in which the PO was instructed to make immediate and substantial reductions in capital expenditure with larger cuts to follow, raising ‘a fundamental question about the future of the postal capital programme, if not the future of the postal services’.<sup>74</sup> This feeling was compounded by fears expressed by experienced officials that the fall in mail volume represented more than just a momentary dent in an upward trajectory. Some saw it as a measure of the damage done to national confidence in the postal service; as doing harm to immediate revenue and possibly signalling the beginning of decline.<sup>75</sup>

The following year, in a financial memo to the Managing Director, Mr C. L. Crump reflected on how although management and the Government ‘won’ the strike, its potential for financial damage had been underestimated. ‘No-one forecast a 6 ½ week strike, and the cost of the strike, with the consequences of the catastrophic fall in traffic, is probably more than the cost of settlement would have been’.<sup>76</sup> Information was urgently sought on the likely effects. With around 25 new buildings scheduled for construction each year, and buildings costs rising by 10% in 1970 and 16% in 1971, it was important

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<sup>72</sup> POST 69/99, PO Board: Papers and Proceedings, Paper 201 ‘Review of Postal Mechanisation’, October 1973, Appendix 1

<sup>73</sup> POST 17/317, PO Board Paper: Review of Postal Mechanisation, 1973: Annex 1: Code/Sort Costing Studies, p.1.

<sup>74</sup> POST 69/236... MDPC (71) 5: Investment Review, pp.1-2.

<sup>75</sup> *Ibid.*, MDPC (71) 11: Financial Review: March 1971 – Posts, Annex V.

<sup>76</sup> POST 69/90, PO Board Papers: Part II, Paper 193, Economic Indicators for Financial Reviews, Brief for MDP by C.L. Crump, 18/08/72.

to understand the likely impact of changing traffic levels on space requirements.<sup>77</sup> For example, assuming a permanent 10% loss of traffic, Heads of Division in the London Postal Region were asked to quickly calculate the operational implications and report back on traffic levels, revenue, staff numbers, personnel and promotion policies, buildings programme and effects on Mechanised Letter Office (MLO) schemes. The Inner London area was expected to lose 8.4m items of mail per week with a further 3.8m in the Outer London Area, which translated into a reduction of capital expenditure from £33.3m to £29.7m. Some proposed MLOs were quickly earmarked for amalgamation into single, larger offices, such as joining Sutton with Croydon. Other local amalgamation studies were abandoned, yielding to the need for quick decisions. Combining Dartford and Bromley, for instance, offered good prospects but building work for separate MLOs had already ‘reached the point of no return’. A general memo on capital requirements for mechanised offices in London stated that loss of traffic had redirected planners to earlier ideas involving six fewer MLOs calling for more detailed thought about the difficulties inherent in controlling larger bodies of staff on a single site.<sup>78</sup> Meanwhile, as similar reports were received from the Regions, planning staff at Headquarters were reassessing the broader shape of capital spending in anticipation of sweeping government-imposed cuts on the £35m annual budget allocated to Posts, £18m of which was set aside for MLOs and mechanised parcel offices. Some sites were shelved despite continuing to suggest long term savings,<sup>79</sup> while, nationally, orders of code-sort equipment for nine offices were delayed at the manufacturers.<sup>80</sup>

Delays to the LPP which began during the pay crisis were therefore extended while a review of buildings policy took place in the summer of 1971. All Head Postmasters were given ten days notice of local revalidation studies and were asked to inform staff. ‘You will, I am sure, recognise how important [this] is ... at a time when the finances of the Postal business are in a critical state’ wrote Regional Director A. H. Woodland in a circular to South Western Postmasters. ‘Many investment decisions closely affecting building and mechanisation schemes in this Region will have to be held in abeyance until these studies have been completed’. Woodland asked that Postmasters feeling this might spell trouble for their local code-sort hopes refer to paragraph 10.3 of the Hardman Report which warned that ‘the scope for accelerating the programme’ might need ‘re-examining’.<sup>81</sup> Nationally, the largest share of mechanisation-related expenditure (60%) was for new buildings and renovations, for which ‘commercial criteria’ were

<sup>77</sup> POST 122/12529... Minutes of the 1<sup>st</sup> Meeting of the Buildings and Mechanisation Committee, 28/04/72, pp.2-3.

<sup>78</sup> POST 73/243, London Postal Region Letter Post Plan post strike review: possible 10% reduction of MLOs, 1971: ‘Post Strike Traffic Situation’ by E. A. Lovegrove, Controller Planning, 02/03/71; Memo: Re-appraisal of Capital Requirements for Letter Mechanisation in the LPR, 1971-86, 12/03/71; and DRD draft Minute (0), May 1971

<sup>79</sup> POST 69/236... MDPC (71) 5: Investment Review, Annex 1, pp.1-3

<sup>80</sup> *Ibid.*, MDPC (71) 35: 1971 Investment Review: Posts, paragraphs 13; 25

<sup>81</sup> POST 122/12528... Circular to all Head Postmasters, South Western Postal Region by A. H. Woodland (Director, SWPR), 15/06/71



applied in all practicable cases. New building proposals were expected to factor in post-strike traffic levels, whilst project justification had to display realistic prospects for a minimum 10% return on the initial investment using discounted cash flow techniques.<sup>82</sup> In practice this meant further, delays to the ten year backlog on bringing dilapidated buildings in line with contemporary standards. As Tom Jackson had pointed out to the Hardman Committee, some buildings had been in use since the nineteenth century, complete with loading bays designed for horse and cart.<sup>83</sup> Much of the least satisfactory accommodation was originally built to accommodate the Victorian explosion in mail volumes. R.J.S. Baker, head of buildings investment in the 1950s and of the postal staffing division in the 1960s, later reflected on the three most important considerations in regenerating postal buildings: the need for adequate capital, sufficient planning by engineers and securing the good will of staff.

The first and second suffered from the general under-investment malaise of our generation and from the priority given to telephones when the two services were under one management. (You can sort letters somehow in a crowded building but you cannot connect a new telephone without space for a new bit of equipment.) We were giving a high priority to big postal buildings in the 1950s but there was a great time-lag in getting them planned and built. There were vicious circles.<sup>84</sup>

Adequate capital was not made available until 1960s but in the early 1970s the backlog persisted. Such underinvestment, coupled with long-term traffic growth, created poor working conditions in a number of large offices. Wary of the longstanding campaigns of unions who expected conditions to compare well with outside industry, it was recognised that some new buildings, even without meeting the 10% DCF criteria, were so urgent as to be unavoidable.

A second effect of the financial crisis coinciding with the first revalidation of buildings and mechanisation was a cut in the postal R&D budget. de Jong scaled down his department's annual request for funding by 9% to £1.36m, distributing funds in such a way as to retain all 38 major staff but to curtail the overall research programme, confining R&D to those projects offering the best prospects for immediate return on expenditure. Blue skies (or 'free rein') work was now largely shelved. He outlined the situation more fully in a statement to the Board:

The first objective of R&D in the current financial climate is to provide the technical support, improved equipment and methods (capable of the earliest exploitation) which are required to implement the mechanisation programme with increasing financial and operational efficiency. The broad aims are to

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<sup>82</sup> POST 69/236... MDPC (71) 10: Building Policy in the Postal Business, pp.1-4

<sup>83</sup> POST 115/513, *The Post*, 1971, May issue.

<sup>84</sup> Baker, 'Problem of Identity', p.64; R.J.S. Baker, 'The Carter Report on the Post Office', in *Political Quarterly*, Vol. 48, 4 (1977), p.490; See also POST 69/236... MDPC (71) 10: Building Policy in the Postal Business, Annexes 1-2.

maintain, review and implement an R&D programme within an annual budget, covering basic system studies, the design of new and improved machinery and the development of code sorting equipment and associated electronic systems so as to meet the long-term future needs of the business and its possible new services, with a view to productivity improvement, reduction in manpower dependence and increased cost effectiveness; to attempt the early invention of the first prototype automatic address/postcode reading machine, and to recommend on the standardisation of mail required for a viable system. Additionally, there is a need to foster in-house competence and thereby assist the penetration of technology wherever it will benefit the business; the professional R&D staff have a vital part to play in the resulting radical changes. The level of competence must also be such as to ensure that the PO remains authoritative in postal mechanisation theory and practice.<sup>85</sup>

He went on to remind the Board of the central role of mechanisation to the future of the industry: ‘Mechanisation, substantially based on R&D work in the PO, is the key factor in the rationalisation of the Letter Post. It is capable of providing a highly desirable reduction in sorting office manpower which... over a 20 year period ranges from 15-30% [return on expenditure]’.<sup>86</sup> The pre-eminence of British postal engineering had bestowed de Jong with an influential voice on the Board, and he naturally offered a robust defence when faced with the threat of cuts to the design budget. Britain’s reputation as a pioneer in postal mechanisation derived mostly from being the first nation, alongside America, to attempt total network restructuring based on a coherent, national code-sort system. The PO’s first generation of machines was highly regarded by foreign postal administrations and well received among professional electro-mechanical engineers globally. As an export, the machines were proving successful and, within Britain, their operational use had spread during an initial wave of implementation (though, as we shall see, with many teething problems). By mid 1971, 33 offices were operating a total of 44 segregators and 80 automatic letter facers (ALF). A further thirteen offices operated a total of 248 coding desks and 107 automatic sorting machines (ASM). On this basis Alex Currall, Managing Director, Posts, presented Government with a case for British pre-eminence,<sup>87</sup> meanwhile the Board observed that elements of the British plan were being imitated in the USA, Canada, France, West Germany and Japan in what was termed a ‘strong move towards a rational systems approach’.<sup>88</sup>

In restating the department’s short, medium and long term plans, de Jong’s emphasis was first focussed on the live performance of first-generation machines and improving their efficiency and cost in the light of operational experience. Although ‘design stability’ had been reached there remained much

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<sup>85</sup> POST 69/236... MPDC (71) 8: Postal Engineering Research and Development, 1971, p.2.

<sup>86</sup> *Ibid.*, p.4

<sup>87</sup> POST 122/12528... MDP to DPMB (Director Postal Mechanisation Branch), cc. David Stewart, DPO, DPPG, May 1972, Annex A; B.

<sup>88</sup> POST 17/317, Review of Postal Mechanisation, pp.1, 15, and Appendix 14.

scope for technical fine-tuning in the face of problems arising from particular schemes for mail concentration, transport alterations and staff reactions to the new working methods. Second, looking ahead, work was underway on a “second generation” of machines, designed to reduce production costs and improve ergonomic performance, as well as the creation of machines and systems for training coding staff. Finally, long term investigations were ongoing into the possibility of remote coding using CCTV and the ever elusive application of optical character recognition (OCR) and artificial intelligence.<sup>89</sup> These R&D questions are addressed further in later chapters. For now, it is worth noting that although the general direction of R&D was left largely unaltered by factors such as marginal changes in mail volume, its scale was limited at times of financial crisis. The budget for R&D, like the capital available for new buildings, tended to rise and fall in line with the national economy.

A third and more enduring consequence of 1971 was the rise of staff hostility to management initiatives. For many postal staff, mechanisation came to be viewed with suspicion and became strongly aligned with an attack on their rights, wages and the traditional values of the service. This was also linked to class struggle and the national dispute occurring between the unions and government, as the new commercialism on display at the PO had become associated with the Conservative Government’s unpopular industrial policies. For example, COPOU stated in 1973 that the ‘difficult negotiating environment’, was, at root, a product of the government’s incomes policy.<sup>90</sup> And at UPW debates and in its newspaper, strenuous opposition was voiced to the government’s interference in the postal service and its attempts to control the legal status of PO unions and the wages of its staff. The question of mechanisation therefore came to be affiliated with the suspicion that the rights and incomes of UPW members were being threatened by a government determined to foist a profit-oriented, commercial mentality onto the management of a public service institution. The Hardman Report had implored both sides of the industry to work together towards raising productivity, but the post-strike political climate made this impractical. The first notable dispute came in November when the Minister for Posts and Telecommunications, Christopher Chataway, announced proposals to save money such as abolishing second deliveries, raising certain tariffs and targeting staff cuts of 25,000 before 1979. In *The Times*, Tom Jackson, UPW GS, characterised Chataway’s position as ‘paying more for less’ suggesting that staff cuts would actually be closer to be 7,000, and that service cuts, from which business users were exempt, would anger the public and be rejected by the Post Office Users National Council (POUNC).<sup>91</sup> Chataway told the Commerce and Industry Group of the Law Society that postal services were worse than they used to be, that deliveries and collections needed trimming and that telecoms would monopolise rapid

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<sup>89</sup> POST 69/236... MPDC (71) 8: Postal Engineering Research and Development, 1971

<sup>90</sup> MRC: MSS.148/UCW/3/10/4, COPOU Annual Report, 1973, pp.1-2

<sup>91</sup> *The Times*, 04/11/71, p.1.

communications in the future.<sup>92</sup> Jackson again responded that these were knee-jerk, long-term reactions to a short-term economic depression, and, in private, told Holmes that staff were aggrieved by ‘such a fundamental change that ... could affect the whole nature of the postman’s job’.<sup>93</sup>

At a Special Conference in December the UPW membership voted down a number of the Hardman proposals, including extending the employment of women and part-timer workers and management’s proposed work-measurement system. Speaking for a motion dubbed the ‘Manchester Alternative’, Jean Jacque made a scathing attack on the UPW GC for being timid, on POUNC for favouring the interests of the Confederation of British Industry and on low pay, equivalent, he said, to ‘starvation wages’. He had to wait for the applause to subside before turning to mechanisation. ‘Two-hundred million pounds have been wasted on the monstrosities in our offices’ he claimed, adding that staff wastage would not cover the redundancies recently outlined in parliament. Others who spoke accepted the inevitability and even desirability of mechanisation, and suggested the UPW should scrutinise the plans to ensure they improved services and as well as profits, ‘but before the little offices were swallowed up’ commented an editorial in *The Post*, ‘they wanted a decent productivity deal out of it. They wanted improvements in the service, and they knew that they must accept change’.<sup>94</sup>

Meanwhile, union and management leaders entered more regular and progressive discussions in the Joint Working Group on Industrial Relations, at which mechanisation featured prominently. At management briefings from late 1971 (held privately in the mornings before the JWGIR sat) efforts were made to come to terms with the UPW challenge during discussions covering a range of new ideas and research about industrial relations. IR on the postal side was understood to be unusually tense, meaning that ‘any decision mishandled could blow up into more of a crisis than if the climate were less volatile and staff morale higher’.<sup>95</sup> Mr Gowen, Director South Western Postal Region, traced this back to the introduction in 1968 of the two-tier post ‘when the service fell so low in public esteem that staff morale became badly affected. The blame for the present PO troubles was’, he believed, ‘placed by the staff on the men at the top, rather than on local management’.<sup>96</sup> All accepted that the industry’s politics had been heavily strained by numerous factors, including the introduction of two-tier, organisational restructuring, regrading, the strike and uncertain traffic levels. However they were divided over how to fix things and, again, showed signs of the tension between pursuing commercial goals while also attempting to include the unions in decision-making. The dominant line of thought was for fostering mutual understanding

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<sup>92</sup> *The Times*, 03/11/71, p.4.

<sup>93</sup> MRC: MSS.148/UCW/5/6/27... Postal Services, 03/11/71; Special Report on Postal Restructuring, 04/11/71

<sup>94</sup> POST 115/514, *The Post*, 1972: Special Conference December 1971 Report, January Issue, pp.22-29

<sup>95</sup> POST 65/134, Joint Working Group on Industrial Relations Minutes, 1971-1975: Minutes of Official Members Meeting, 16/12/71, Item 6.7.

<sup>96</sup> *Ibid.*

between staff and management through more open and regular communication, including the concept of ‘imaginative consultation’, meaning to go further than required by the “rule book” in entering into thorough and early communication with unions during policy planning. Nevertheless there remained those who, on certain issues – such as the extent to which the Board should encourage the UPW to streamline its overabundance of representatives and unwieldy branch structure – continued to argue for a ‘divide-and-rule’ approach.<sup>97</sup> Such tactics were said to be widespread among Head Postmasters and evidently had apologists at the highest levels, but Mr W. Pounder, Director of Industrial Relations and sometime Chairman of the JWGIR, declared the concept ‘outdated’ and encouraged a forward-looking attitude of cooperation.<sup>98</sup>

By the time of these discussions a number of offices were operating code-sort machinery. In each case, a process of local consultation was followed and, though informal, the PO seems to have offered flexibility and timeliness in handling different human dilemmas as they arose. For example, those working in areas likely to be affected were assured in advance that any relocation of jobs to different offices was subject to two-way discussion. The postal official R.J.S. Baker wrote in *Journal of Management Studies* in 1971 that...

...when a man’s job disappears owing to area reorganization, he may be considered for transfer to the office to which the work has been transferred provided he is considered suitable and local circumstances allow. Alternately he may be transferred to some other comparable type of work elsewhere if he himself wishes and at the discretion of management - and certain other alternatives may be open.<sup>99</sup>

However, wider implementation of the LPP required formal agreement with the UPW. Given the uncertain financial and political situation, management wished to avoid, for a period, committing to any detailed, long term deal with the workforce. Conversely, UPW negotiators needed a convincing case to take to the membership that the plan was financially and operationally viable, and that the workforce would share in the savings. Much of the discussion of mechanisation on the JWGIR during 1972 dwelt on these matters.

Management’s post-strike reappraisal had culminated in a computerised costing forecast based on data from local studies which produced a promising five year forecast again confirming that code-sorting was sound in principal. But doubts had surfaced over its underlying assumptions, raising questions over the scale of implementation.<sup>100</sup> The Board had confidence in the overall plan, but had come to favour a

<sup>97</sup> *Ibid.*, Minutes of Official Members Meeting, 19/04/72, Item 7.7.

<sup>98</sup> POST 65/134... Minutes of Official Members Meeting, 29/09/72, p.3.

<sup>99</sup> Baker, ‘Tasks and Processes’, pp.30-31.

<sup>100</sup> POST 17/317, Review of Postal Mechanisation, Annex 1: Code/Sort Costing Studies, p.1

step-by-step timetable for implementation, committing only to commissioning a handful of unquestionably profitable MLOs per year. David Stewart (management) later told Carter (COPOU) that higher costs and less availability of new buildings contributed to a policy of equipping ‘the key ones in the system’ first.<sup>101</sup> Senior Management was reluctant to share their findings with staff during the initial revalidation studies. Following requests from COPOU for more information, Stewart wrote to Headquarters colleagues, ‘I see no real difficulty in excluding staff participation in these studies as we have done in the past. They will, I am sure, be more concerned with the results than the preparatory work’.<sup>102</sup> Realising that UPW Branches would likely become suspicious at staff and resources being diverted to a secret revalidation, regional planners warned Stewart that the UPW would have to be informed. The following Monday, he wrote again to Carter with notification that studies into current and projected traffic, buildings expenditure and staffing levels would commence immediately. Reluctance to share costing information with staff remained strong until at least March 1972.<sup>103</sup> COPOU made their dissatisfaction plain during a meeting in January 1972 where Mr Failes (UPW) voiced his ‘disgust’ with the delays. He told them that the late submission of piecemeal proposals was unlikely to satisfy the UPW membership and ‘did not constitute a proper plan’. He and his negotiating colleague Bill Wolfenden called instead for a formal plan detailing financial viability, environmental conditions, a timetable for installation and immediate special staff payments. They reminded Stewart that there was an element of the rank and file who wanted to abandon mechanisation entirely. The mood worsened after an episode of *Tomorrow’s World* aired on the BBC before Christmas which, based on information from Telecoms engineers, speculated that OCR might soon make the Postman obsolete.<sup>104</sup> In response, Stewart carried on negotiations in a step-wise fashion, following a strategy prepared immediately after the strike when the Board made staff-side acceptance in the abstract (or the ‘operational concept’) the first goal, followed later by practical negotiations such as special payments, working conditions and matters arising from implementation and timing.<sup>105</sup> As one senior engineer wrote to a colleague in February 1972, ‘...the [official] view seems to be, “let’s get an agreement in broad terms and then negotiate the details

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<sup>101</sup> Uncatalogued: 2<sup>nd</sup> Review: PHBS/BG/0048, Buildings and Mechanisation Committee of the Postal Business Joint Council (COPOU), 1972-1981: Minutes of the 2<sup>nd</sup> Meeting of the Buildings and Mechanisation Committee, 01/08/72, p.5

<sup>102</sup> Emphasis in original. POST 122/12528... Confidential note to SDPS by D. Stewart, 22/06/71. See Stewart to F. E. Jones (SDP), ‘Letter and Parcel Post Plans’, 20/07/71

<sup>103</sup> POST 122/12529, Letter Post Plan: Staff Side Consideration, 1970 -1972: Stewart to Carter, 26/07/71; and F. E. Jones (SDPS) to DPMB, 06/03/72

<sup>104</sup> POST 122/12529... 6th Meeting of the Joint Group on Postal Coding and Automatic Letter Sorting (Administration/COPOU), 03/01/72, paragraphs 84-98

<sup>105</sup> POST 122/12528... Joint PO/COPOU Group on Re-shaping the Letter Post Service: Chairman’s Brief, c. April 1970, p.3

afterwards!’”. In particular, there were concerns about striking a deal with the UPW that did not tie special pay for coding to productivity from the outset.<sup>106</sup>

In the aftermath of the strike, the strategy of nudging the UPW towards official cooperation started to look shaky in April 1972, one month before the mechanisation debate scheduled for the Union’s Summer Conference. Wolfenden and Failes composed twelve probing questions about the mechanisation programme and sent them to Alex Currall, who had by then succeeded Holmes as Managing Director, Posts. They wanted to know: why a step-wise implementation policy was now being pursued in favour of the systemic 120-MLO plan originally proposed? Which offices could expect what types of new equipment? Was there a timetable for installations and mail concentration and how was this expected to affect staff? What was the basis of decisions in selecting offices? How should local consultation proceed? What were the long term prospects for OCR? And how did British automation compare internationally?<sup>107</sup> The initial answers provided partial explanations but left Currall dissatisfied. ‘I’m afraid some of these answers just won’t do’ he wrote to those drafting the official response. Some questions had been misunderstood and certain answers were cursory, misleading or vague. In relation to a question about the minimum traffic needed to justify code-sort installations, he advised thinking again about their response:

If the answer as drafted were trotted out from the platform at the UPW Conference, I suspect the immediate riposte from the floor would be “It is all very well talking about an office which handles about 2 million items per week posted and delivered. But what type of office is this? What class? And can you give half-a-dozen examples of the kind of office by name?”<sup>108</sup>

Currall demanded ‘more clarity of thinking’ in explaining the improvements to machine design expected in the future.<sup>109</sup> This had some effect, as at the end of the month, a new joint committee was established devoted wholly to buildings and mechanisation, where more detailed questions could be addressed and the nature of capital investment, engineering and design could be probed.<sup>110</sup>

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<sup>106</sup> *Ibid.*, John to Mike, 04/02/72

<sup>107</sup> *Ibid.*, Letter Post Plan: Questions and Answers, First Draft, c. April 1972

<sup>108</sup> *Ibid.*, MDP to DPMB (Director Postal Mechanisation Branch), cc. David Stewart, DPO, DPPG, May 1972.

<sup>109</sup> *Ibid.*

<sup>110</sup> POST 122/12529... Minutes of the 1<sup>st</sup> Meeting of the Buildings and Mechanisation Committee, 28/04/72

## The UPW Embargo

The PO submitted a report before the May 1972 UPW conference. It documented the different machines including segregators, ALFs, coding desks and automatic sorting machines, and described how they were joined into a system which integrated into the workings of a sorting office. The logic of the code-sort concept was placed in the context of the national plan of postcodes, mail concentration and MLOs, including diagrams and a timetable for regional implementation. It also outlined how future savings would be shared with the staff, and made assurances about new working conditions and security of employment. Finally, the Board's report underlined the operational and financial benefits of the LPP and went on to acknowledge the challenge posed to all affected by the changes.

[The PO] believes that mechanisation opens up the prospect of building a modern technologically-based, efficient postal system... Mechanisation also means less drudgery and more interesting jobs. What it does not mean is people being thrown out of work... But mechanisation does mean change – and facing up to the problems of change.<sup>111</sup>

After debating a new postal grading agreement, the future of the telegraph and giro services and establishing some new directions for wage negotiations, all 1,450 delegates filled the Empress Ballroom in Blackpool for what *The Post* labelled 'the big one': whether or not to accept the EC's recommendation to extend formal cooperation with the LPP. It was known beforehand that a motion would be put forward for an embargo on the introduction of new technology which had first been proposed by union members at London's Eastern District Office, where there had been industrial action over newly installed conveyor systems. After the strike, the situation escalated and a number of London branches offered their support.<sup>112</sup> During the debate, they combined in opposition, arguing that their dissent was 'no flat rejection of mechanisation' but was designed to enable further scrutiny of plans for substantial redeployment and loss of staff, new working methods and changes to the working environment. Moreover, promises of higher pay from future savings was not a fair deal. Staff, they said, wanted to establish a payment scheme in advance of cooperation. Indeed, Jackson and the EC – having made their agreement with the Board's report clear – were questioned as to whether their faith in the advantages of the incoming technology was naive; that they had a...

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<sup>111</sup> POST 69/92, PO Board Papers, 1972, (276) Postal Mechanisation

<sup>112</sup> Ron Clatworthy, Interview, 13/01/11.



...child-like faith... that we should all emerge into an age graced by a mechanised postal service, producing a high level of profitability capable of sustaining good conditions and paying good wages – in fact, a mechanical golden goose laying golden eggs.<sup>113</sup>

Some delegates worried that accepting the plan on the back of the Hardman recommendations would be ‘playing into the hands’ of a Tory government, and likened their problems to those of mineworkers and railway workers. Others denounced the financial prospects of mechanisation, refusing ‘to pay the price of the shovels with which we are expected to dig our own graves’. Delegates who had experienced the new mechanised conditions and had spent time operating code-sort machinery added their testimonies. Freddie Page of London’s West Central District Office:

The sorting office you know is certainly not the office we work in... We are like Charlie Chaplin in “Modern Times” – caught up in the machinery. Like a sausage factory, the work comes in at one end and goes out the other. You get no natural light or ventilation. You are working in excessive noise and dust... We must see that our destiny is determined by us, and not by the machines!<sup>114</sup>

Another delegate, from Norwich, asked whether the technologists who had designed the machines also sufficiently understood sorting office life:

We need control not the machines, but the so-called experts in the POMB [Post Office Mechanisation & Buildings Department] who, in our experience, plan installations and yet have no knowledge of sorting office procedures, for the simple reason that they’re rarely inside one, and have never worked one! ... The POMB can no longer be allowed to charge around like a bull in a china shop, putting bits of equipment here, there and everywhere. There must be a re-validation of the mechanisation exercise, and that is why we support the amendment.<sup>115</sup>

Others worried that the introduction of code-sort posed a threat to small offices and to the respectability of postal services:

If we don’t have this review and revalidation of mechanisation, with what will the small branches be left? Loss of jobs. Loss of promotion opportunities. Variation of tasks. All leading to part-time labour and Adpost.<sup>116</sup>

A thread running through the debate was that even the most outspoken pessimists were keen to distance themselves from perceived Luddism, stating caveats about their support for the principle of technological progress. However there remained overwhelming hostility. Jackson later said that the

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<sup>113</sup> POST 115/514, *The Post*, 1972, July: Special Conference Report, pp.8-22.

<sup>114</sup> *Ibid.*

<sup>115</sup> *Ibid.*

<sup>116</sup> *Ibid.*

debate was framed by a ‘fear of the new’, and at its end there was a note of resignation in his plea to not turn away from modernisation. He warned that to do so would ultimately lead to ruin because the only hope for the service was to become more productive and for this to happen, the sorting process needed to be modernised. His colleague, John Taylor, admitted that he had ‘faith’ in mechanisation, ‘because on that single word, I believe, hangs the future of the members we represent’.<sup>117</sup>

In the event, the conference voted against the EC and instructions were passed to all members to work only existing equipment, not new installations. Jackson returned to PO Headquarters with a list of conditions for renegotiation. These included the union’s full involvement in an extensive revalidation exercise and drawing up a new five-year plan; an assurance based on new costings of financial viability; and, above all, a substantial ‘lead-in’ payment to compensate staff for the upheavals of reallocation and changes to their work.<sup>118</sup> When he met the Board privately, Jackson stressed that a failure to engage with these requests could result in a complete rejection of mechanisation. Currall told the Board that: ‘The Post Office would be forced to abandon mechanisation, at least for a period, and would face considerable public odium, particularly over postcodes’.<sup>119</sup> Implementing the LPP by executive action was not an option owing to the scale and longevity of the proposals and the ruinous effect a strike over mechanisation would have on the credibility of the Post Office.

Comparable embargos over technological change occurred in other highly unionised industries in this period, in which similar arguments were heard. In particular, Fleet Street experienced halting attempts to introduce web-offset printing of national newspapers such as *The Times* and *The Mirror*. Joe Wade, General Secretary of the National Graphical Association, used familiar, combative imagery in the union journal *Print* in April 1976: ‘What frightens me is the way in which some national newspapers are rushing into new technology with all the verve and suicidal tendencies of a kamikaze pilot’, he said. ‘If unions and their members are to accept changes in technology – and I agree they have no alternative – the employers must equally accept the social costs involved’. Those who thought the ‘revolutionary scheme’ at the *Financial Times* would ‘cure all past evils’ were, he warned, ‘living in cloud-cuckoo land’.<sup>120</sup> Like the UPW, the NGA was the largest rank and file union, though in a privatised, and more hostile bargaining environment where cautious acceptance of the need for change was distinguished by greater cynicism. Their official position was summarised as follows: ‘We go along with the introduction of new technology if only because the alternative is worse. But we demand that the threat to our members’

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<sup>117</sup> *Ibid.*

<sup>118</sup> POST 69/92, PO Board Papers: (296) Letter Mechanisation: Offer to UPW, November 1972.

<sup>119</sup> *Ibid.*, Offer to UPW, November 1972.

<sup>120</sup> Martin, *Fleet Street*, p.234.

employment that this necessarily entails is dealt with in just and humane social terms'.<sup>121</sup> They too sought a package deal, with terms which included a reduction in the working week alongside improved pensions and sick terms. As with the UPW, Wade tried to persuade the more sceptical members of the necessity of new technology, arguing for a joint approach between workers and management. This advice was likewise comprehensively rejected by the membership.<sup>122</sup>

For the duration of the embargo at the PO, the UPW prohibited all members – effectively all staff in the grades Postman and Postman Higher Grade (PHG) – from operating any new code-sort installations. However this injunction was in practice open to interpretation, revealing further the connections mechanisation had with wider industrial and political resistance. After the conference the reaction of staff varied, with stronger support for the embargo at some offices and in certain regions. In general, UPW representatives stayed united over the issue. UPW House issued a special circular on 16 June 1972, also published in *The Post*, with instructions not to work any new installations of machinery or cooperate with new concentration schemes. Staff were to continue operating equipment already in use and to cooperate where concentration schemes were already underway.<sup>123</sup> However the wording “in use” left room for local interpretation and led to some disputes. At Birmingham where staff had just moved into a new building still being mechanised, Mr Hood, the local UPW Branch Assistant Secretary, told Mr Proctor, the Head Postmaster, that although he personally regretted the embargo, having opposed it at Conference, their branch intended to uphold union solidarity by taking the toughest possible position on borderline cases, such as packet machines being trialled and on the brink of formal operation, and by interpreting all local concentration schemes as part of the LPP. Much time and money had been invested in bringing Birmingham up to full MLO status and every week with code-sort machines not in use cost the office money. Anticipating severe disruption during the Christmas rush, Proctor proposed a number of local circulation changes and the suspension of the Saturday afternoon collection, but these were immediately opposed by the staff who valued the overtime that would disappear. Proctor acquiesced, worried about ‘a confrontation on the sorting office floor’, and sent a memo to Headquarters warning that other branches would likely be obstructive.<sup>124</sup> Similar scenes occurred across the country, with special problems in London. At West Central District Office, where packet-sorting machinery lay idle, staff went as far as to distinguish between peg-coded trays and ordinary trays on a conveyor belt, refusing to use the latter. Dorothy Fothergill highlighted this as a particularly troubling case when she warned the Director of

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<sup>121</sup> *Ibid.*, p.95.

<sup>122</sup> *Ibid.*, pp.94-110.

<sup>123</sup> POST 122/12528... UPW Special Branch Circular on Postal Mechanisation by Tom Jackson, 14/06/72

<sup>124</sup> *Ibid.*. Report on Birmingham PLSO: UPW Withdrawal of Co-operation, by D. H. Loosemore (Director Midland Postal Region), 23/06/72. See attached memo and notes of meetings.

Pay and Grading to expect this behaviour elsewhere.<sup>125</sup> Concern about such ‘blacking’ of lifts and conveyors was heightened at PO Headquarters. Mr V. A. Huckerby wrote in with news of resistance in the London Inland Section, advising that, under the circumstances, further confrontation was to be avoided:

The severity of the effects of a UPW embargo would vary with the degree of non-cooperation; delaying or obstructive tactics by staff ... could quickly bring offices to a standstill... The general attitude of non-cooperation which would prevail would almost certainly create problems not at present foreseen with adverse effect on costs, service and productivity. Notwithstanding any reluctance to yield to staff pressure, the consequences of failure to reach agreement could well be out of proportion to the money at stake.<sup>126</sup>

The question of what was and was not defined as part of the mechanisation programme became subject to local and national negotiation. In the months following the conference, a wide range of policies and initiatives were drawn in. At a meeting with Tom Jackson in September, Ryland challenged the UPW interpretation that the long term withdrawal of Travelling Post Offices should be formally recognised as part of the LPP. He pointed out that £1.5m of equipment had been ordered, with a further £2m on hold, and, with no resolution to the embargo in sight, placing further orders was risky. However, prolonged delay was a major problem because it would take the PO out of the market for machine manufacturing. Ryland knew that by putting off orders indefinitely, they risked allowing a fragile, specialist manufacturing sector upon which the PO depended to fall away.<sup>127</sup> Jackson agreed and reassured the Board that he and the EC supported mechanisation, but it was, he said, no good ignoring the groundswell of opposition. Many staff were, he said, ‘seriously perturbed about the inadequacy of the information the Business was able to give them about its mechanisation programme and would need something firm on this before they were prepared to ask their Conference to reverse its decision’.<sup>128</sup> He argued that the main reason for the embargo was that staff simply judged the ‘human implications’ of mechanisation to be ill-considered, and wished to reduce the risk of mechanisation leading to deteriorations in the working environment and loss of pay.

The other side of the embargo dispute revolved around pay. Much was said about the human implications of mechanisation, and this formed the thrust of the UPW case, but, equally, cooperation had its price. Both sides understood that staff were entitled to some share of the long term savings expected of mechanisation, firstly as incentive to cooperate as stakeholders in the industry’s future and secondly as compensation for the disruptions caused. Union negotiators therefore wished to secure the best possible

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<sup>125</sup> *Ibid.*, Fothergill to T. Scott, 21/08/72.

<sup>126</sup> *Ibid.*, Memo by V. A. Huckerby, 29/12/72.

<sup>127</sup> *Ibid.*, Brief for Chairman’s Meeting with Tom Jackson, 12/09/72, p.1.

<sup>128</sup> *Ibid.*, Discussions with UPW: Summary of meetings held between 13 July and 5 September 1972.

deal for their members, particularly in light of hardships suffered during and since the strike. Jackson told the Board he viewed the twin driving forces behind the embargo – human implications and pay – as two sides of the same coin:

UPW members [can] only be persuaded to accept letter mechanisation if the Post Office [can] demonstrate that it [is] profitable and that a share of the profits [will] go to them. Without a thorough, detailed plan for mechanisation and comprehensive local studies at more than a handful of offices, it [is] possible that Conference would refuse to work all existing mechanised equipment.<sup>129</sup>

Wolfenden was slightly more accommodating but also advised that advanced “lead-in” payment would be necessary and that there was no chance of a reversal without credible assurances on environmental conditions, redundancies, loss of promotion and loss of pay. Although rank and file attitudes varied – ranging across unawareness, ambivalence, enthusiasm, and outright hostility – and a significant minority of Union Branches were ill at ease with the embargo decision, the UPW at large gave support to Jackson and Wolfenden as they made their two part request. First, for more involvement in the shaping of long term decisions about the pattern and content of their members’ work. Second, for a quantifiable and immediate share of the financial benefits of mechanisation.

The management reaction was at first similar to that following the strike. An urgent request was made to all Regional Directors to send reports on the expected financial consequences, with special reference to likely loss of savings and the abandonment of machinery and concentration schemes.<sup>130</sup> The annual cost in working hours for each region was then estimated. By far the highest figures were for regions with most industrial unrest. These were Wales, the Midlands and London (Table 3.1).<sup>131</sup> This again suggests that opposition to mechanisation was linked to wider occupational grievances. Mr Colgan, Director North Western Region, offered views in support of the impression given by the national figures:

...the main losses derive from the often lengthy negotiations which are necessary before cost savings schemes are implemented. The delay ...is mainly a function of the degree of militancy displayed by particular staff sides and usually the larger the unit, the greater the militancy. Hence, offices with the greatest potential for cost savings have the biggest problem in achieving them and, while targets are generally met, it is against a background of management having to adopt a realistic attitude when designing cost reduction programmes.<sup>132</sup>

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<sup>129</sup> *Ibid.*

<sup>130</sup> *Ibid.*, Letter Post Plan: Staff Side Consideration... A. Heaton (PHQ) to Director, LPR, 23/08/72.

<sup>131</sup> *Ibid.*, Estimated loss of savings due to UPW withdrawal of cooperation – totals; and D. J. Bartlett (Controller, Operations, Midland Region) to PHQ, 04/09/72.

<sup>132</sup> *Ibid.*, M. W. Colgan to PHQ, ‘Loss of Savings Due to UPW Withdrawal of Cooperation’, 05/09/72.

As these definitional boundaries began to settle, the Management Board thought through their strategy for obtaining staff cooperation. On the one hand they believed some of the UPW plans to be unrealistic. ‘It is no use the Union expect[ing] to be given firm costing figures for a programme which spends capital now and recovers the savings to pay for it over a long period’, read a brief prepared for Ryland before a meeting with Jackson. ‘It is immensely difficult to forecast all the circumstances which could obtain years ahead.’ However, there was growing acceptance that there were legitimate concerns over advance staff payments, working conditions and redundancy and a real need existed for fresh discussions:

There could never be certainty about building and equipment costs; staff costs; traffic forecasts; or future service patterns. Changes in any of these substantially affect outturn... The policy of non-co-operation in mechanisation and concentration is costing the Postal Service money it can ill afford and is doing nothing for UPW members; a way should be found to end it as soon as possible.<sup>133</sup>

It was felt a more relaxed posture in their dialogue with UPW and COPOU leaders might be more productive in reaching disaffected staff, or as one official put it: ‘...it is not the Union Executive we aim to convince but through them the UPW Membership’.<sup>134</sup>

**Table 3.1: Estimated loss of savings from Embargo<sup>135</sup>**

<i>Region</i>	<i>Annual Loss of savings (working hours)</i>
Scotland	40,180
Midlands	95,450
Eastern	7,800
South Eastern	22,464
Wales	62,138
London	219,144
South Western	13,990
<b>Total</b>	<b>461,166</b>

<sup>133</sup> *Ibid.*, Brief for Chairman’s Meeting with Tom Jackson, 12/09/72, pp.1-3.

<sup>134</sup> *Ibid.*, Comments on proposed document to be presented to UPW by A. Heaton, 09/11/72.

<sup>135</sup> *Ibid.*, Estimated loss of savings due to UPW withdrawal of cooperation – totals

The developments leading up to the embargo were among the reasons for the inauguration in April of the Buildings and Mechanisation Committee to provide a forum for discussions between Management and Unions. The BMC was at first chaired by the Director of Buildings and Mechanisation N.C.C de Jong and from November by his successor, R.O. Bonnett. Together with operational, finance and personnel directors they outlined to COPOU the problems of creating reliable costings under prevailing economic conditions and the limited use of detailed timetables while capital expenditure was being curbed.<sup>136</sup> As mentioned, their temporary policy for mechanising offices had fallen back to equipping ‘the key ones in the system’ but this was not a stance likely to gain any sympathy with the staff.<sup>137</sup> PO Executive T. Scott elaborated on his position in a letter to Jackson in November, adding that the question of a lead-in payment was also complicated by government incomes policy:

...we just do not know at this point in time how the economics of code/sorting might work out – for the very simple reason that we lack sufficient experience and practical information for a sound assessment of its actual or potential viability... Hence the need for the further intensive study period to make sure we get things right, not only for code/sorting, while we are about it, for mechanisation as a whole... The timing of the pay element of the suggested basis for a resumption of full co-operation is naturally subject to Government policy for controlling inflation.<sup>138</sup>

Unable to commit to a definite long-term plan, Bonnett agreed to commission a nine month revalidation which he defined as ‘a critical appraisal of the information gained from past experience... required to ensure that future action [is] in the right direction’. Running in parallel with this, he said, planning for future implementation would continue and engineers would bring a second generation of machines to higher standards of cost and ergonomics.<sup>139</sup> The revalidation was to begin in the New Year headed by Mr M. J. Reed<sup>140</sup> with Union scrutiny led by UPW Assistant Secretaries Bill Wolfenden and Maurice Styles, and EC member Bill Tracey. Jackson told *The Post* this would involve ‘the complete opening of all books and access to every statistic upon which decisions would be taken, plus a share in the decision-making process’.<sup>141</sup> We turn to this project in the following chapter.

<sup>136</sup> PHBS/BG/0048... 6<sup>th</sup> Meeting of the BMC, 13/11/73, p.6.

<sup>137</sup> *Ibid.*, Buildings and Mechanisation Committee of the Postal Business Joint Council (COPOU), 1972-1981: Minutes of the 2<sup>nd</sup> Meeting of the BMC, 01/08/72, p.5.

<sup>138</sup> POST 122/12528... T. Scott to T. Jackson, 15/11/72.

<sup>139</sup> PHBS/BG/0048... 3<sup>rd</sup> Meeting of the BMC, 23/11/72.

<sup>140</sup> *Ibid.*, 4<sup>th</sup> Meeting of the BMC, 05/02/73

<sup>141</sup> POST 115/515, *The Post*, 1973: February Issue, p.5.

## Conclusion

In reviewing the impact of the strike on the fortunes of mechanisation it is apparent that, considering the acrimonious outcome of the Hardman Committee, the resulting hostility and loss of trust significantly contributed to perpetuating antagonistic attitudes and heated denunciations, culminating in the 1972 embargo. This stand-off, which would last for three years, in some respects represented the continuation of the strike's confrontation over pay by other means. However it also provided an opportunity for reflection and the rehabilitation of consultation, as the long process of resolving the dispute got underway, and any attempt to explain the UPW embargo should accommodate these two motivating factors: the desire for higher pay and the desire for a say in the changes underway. Certainly, the pursuit of higher pay favoured an obstructive stance. It was in the union's interest to emphasise the inadequacy of management plans because, the more persuasive they could make this point, the more credible their arguments for a higher share of financial compensation. It should also be noted that from 1973, under stages II and III of the government's incomes policy, limits were established applying to postal wage settlements. Bargaining groups were free to distribute settlements as they saw fit, but the UPW was unified in equal distribution of pay awards across the membership. These conditions made the pursuit of a lead-in payment all the more attractive.<sup>142</sup> However the evidence suggests there was more to the embargo than merely playing a long game to increase the price of cooperation. Concerns about lack of information and the need for management to substantiate its future plans were consistently and widely voiced, and sincerely felt by many. This was particularly evident in the pertinence of detailed questions about the human repercussions of technological change posed by the UPW, and the Board's inability to give adequate answers, even if their hands were tied by the unprecedented financial crisis into which the industry had been plunged.

Overall, it should be recognised that the internal politics of postal services was shaped by outside forces and in discourses gripped by a fear that, as with the struggles over technological change in newspaper printing, the industry was battling decline. The course of the mechanisation debate in the postal service during 1972 was complicated by its entanglement with the broader political and financial contradictions of the early corporation period which sprang from its incongruous status as an ostensibly profit-seeking, nationalised utility. On this view, industrial unrest in the postal service after 1971 – including the mechanisation embargo – was as an outgrowth of contradictions inherent in the hybridised corporation emerging after 1969.<sup>143</sup> This found expression in the ambiguous understanding of what mechanisation was intended to do. Its purpose was reinterpreted variously as a question of who would

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<sup>142</sup> Hunter, 'British Incomes Policy, 1972-1974', pp.68-69.

<sup>143</sup> Baker, 'Carter Report', p.490.



control the labour process, as a new vehicle for wage bargaining, or as an effort to be jointly embraced for its future operational prospects. Thus the wider tensions between commercialism and IR reform found in the embargo a paradoxical combination of conflict and political reconstruction. It is the efforts to foster the latter to which the next chapter turns.

## **Chapter 4 Resolving the impasse: from revalidation to the package deal**

### **Introduction**

This chapter asks how the mechanisation programme changed during the 1972-1975 embargo. During this time a major joint review of the Letter Post Plan took place – known as the “revalidation” or “the review” – with contributions from management, unions and engineers. This entailed a wide-ranging investigation into all aspects of mechanisation, covering finances, working conditions, the reactions of the staff and the public, and the state of the British programme in global context. The revalidation report responded to union requests for a revised plan in which substantial changes to the original LPP were made. Part of the revalidation involved improved consultations with staff over issues of pay, conditions, productivity, staffing and hours. This formed the basis of a string of negotiations to resolve the impasse over mechanisation, leading to an agreement in 1975 which linked together three issues – the length of the working week, the employment of women and part time staff, and a special payment to staff for their cooperation with mechanisation – into a package deal which ended the embargo in the summer of 1975. This chapter therefore considers a period in which mechanisation was reassessed, leading to changes in its character and scope, and involving the main stakeholders in a common task of remodelling the programme. I will explain the key areas of inquiry and the outcomes of the revalidation, with particular reference to financial and political aspects. I will demonstrate that this had wider value than resolving the deadlock over the LPP in that it contributed to the ongoing innovation of systems modelling in the postal service. However I will show that the principal accomplishment of the revalidation was delivering a credible, revised programme which was combined with a substantial up-front payment in which the savings expected of mechanisation were shared with postal staff. I will show how the interests of the different stakeholders were promoted and will document the course of negotiations behind the 1975 agreement, leading to the conclusion that, on balance, the revalidation and subsequent package deal represented a successful, if drawn-out, measure for restarting the LPP on a realistic foundation.

Michael Corby has argued in strong terms that the revalidation presented the PO with an opportunity to abandon mechanisation altogether and that its continuation resulted from a fear of ridicule and a stubborn refusal to accept that the enormous investment in code-sorting had been an error. He concluded that ‘...too much ego was at stake’ and ‘there was a willingness to mechanize at almost any

price'.<sup>1</sup> Duncan Campbell-Smith has offered a brief and less acerbic summary, to which I return in the conclusion, but agrees that there was 'some justice' in Corby's conclusion and that this was 'tacitly acknowledged' in the 'monumental' scale of the revalidation.<sup>2</sup> I argue that this is an unduly negative reading of both the reasons for the revalidation and of its findings. This chapter therefore begins with a summary of the nature and scope of the project. An alternative interpretation of the revalidation as a joint exercise in model-building is then presented, which focuses on the role of engineers as problem-solvers in operational, financial and political matters. The point here is to demonstrate that the revalidation was considered by senior officials to be part of a wider, ongoing commitment to devise a dynamic model of all postal operations. One aspect of the revalidation was a reassessment of the machines used for code-sorting and the R&D philosophy guiding their design, which is treated in more depth in the following chapter. Here, the wider influence of engineering on the PO's reappraisal philosophy is considered as it related to operational management and commercial strategy. In the second half of the chapter attention is turned to the effects of this on industrial relations and the ways in which ending the embargo involved political considerations beyond the immediate concerns of new technology. The context and course of negotiations to end the embargo is discussed alongside an account of how this fitted with the wider rehabilitation of formal consultation. The chapter concludes by returning to question the criticisms made of the 1975 settlement.

### **The revalidation in outline**

Despite the uncertainty created by the problems of 1971, the Board remained committed to pushing ahead with machine installations and concentration schemes on a piecemeal basis, hoping the storm might be weathered and the 120 MLO plan revisited. However the UPW embargo greatly complicated matters. The Board first tried to persuade the UPW executive council to cooperate by showing the results of fresh costings which gave a promising five year forecast, but the special payment to staff was considered far too low and it was clear that the majority of the membership wanted a full reappraisal.<sup>3</sup> Ryland and a group of senior managers accepted this and began coordinating the broad-ranging review, which began in January 1973 and was later scheduled for completion in October to coincide with a special report on the postal service requested by the Minister for Posts and Telecommunications, Christopher Chataway.<sup>4</sup> The

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<sup>1</sup> Corby, *The Postal Business*, p.202.

<sup>2</sup> Campbell-Smith, *Masters of the Post*, p.519.

<sup>3</sup> POST 17/317, Review of Postal Mechanisation, pp.1-2.

<sup>4</sup> *Ibid.*, p.20.

revalidation was a joint effort in a number of respects. The unions were invited to contribute their own views and to scrutinise the evidence gathered. Many individuals representing many departments made contributions, and research was undertaken at dozens of locations across Britain.

At the beginning of 1973, a study team was established at the Headquarters department for Mechanisation & Buildings (POMB) in London, headed by Martin Reed and including Ron Clatworthy and Harold Davis, who coordinated the research being undertaken in the regions. They were instructed to keep COPOU informed as the revalidation advanced.<sup>5</sup> Their central goal was to establish a detailed and well-evidenced policy for the future of mechanisation and as basis for negotiations to resolve the impasse with the UPW. In particular, their work was to take into account the deterioration in the postal service's economic environment as well as the reservations that existed about the Letter Post Plan formulated in 1969, meaning that a more cautious approach was advised, especially regarding underlying financial assumptions. The core of this review involved three steps. First, regional studies were conducted at eighteen of Britain's major sorting offices in which large quantities of data about traffic levels, mail circulation, staffing and duty arrangements and the likely effects introducing code-sorting and concentration schemes would have in each case. Second, this data, once collected, was fed into a computer costing model built using similar methods to those devised during the original LPP costings in the 1960s. The aim was that this would produce a range of scenarios for the future of mechanisation, each with their own financial and operational forecasts. Third, the raw data from the regional studies was handed to outside consultants who were asked to run similar multiple regression analyses, yielding an independently derived set of forecasts for the different scenarios, or "options", proposed by the PO.<sup>6</sup> This took around eight months and was completed in September. Much of the hard work involved writing programmes for the mainframe to process the data, as this was then pushing the boundaries of computer-aided modelling.

This was a major undertaking involving many people throughout the industry. POMB had a total staff of about 430 at this time, about one-eighth of all Headquarters staff. Of these, around 80 were dedicated to the administration of the LPP, 20 to overseeing changes in training (Chapter 6), and the rest devoted to buildings, drawing office work, vehicles and other forms of mechanisation. In addition, each region had 3-4 people permanently engaged on local administration of the LPP.<sup>7</sup> However, the numbers involved in the revalidation in one way or another went well beyond this due to consultations with regional directors, leading figures in the different research areas, postmasters and union representatives

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<sup>5</sup> Uncatalogued: 2nd Review: PHBS/BG/0048... 4th Meeting of the Buildings and Mechanisation Committee, 05/02/73.

<sup>6</sup> POST 17/317, Review of Mechanisation, pp.1-2.

<sup>7</sup> Appendix to the Carter Report, pp.333-334.

recruited in assembling the data, not to mention the outside consultants and other effected departments such as Personnel and Finance. The resulting report ran to several hundred pages and its findings were presented to a special UPW conference in 1975 in support of a proposed deal to resume cooperation. It comprised sub-reports on several interlocking studies covering financial forecasting, technology, the effects of automation on employment, the role of outside industry, and the British scheme in international context. Its main conclusion was that the LPP should be reduced in scale from 120 to a total of 81 MLOs.

A number of these findings are examined in more detail below, particularly those relevant to industrial relations. However, the revalidation also came to be viewed by some senior engineers and managers as an example of the broader progression of systems-modelling at the PO and so this is briefly discussed before returning to the specifics of the report and subsequent negotiations, in order to appreciate the revalidation in its full context. This contributes to the argument by demonstrating that the revalidation's concern with financial forecasting was not a knee-jerk reaction to changing conditions but was rooted in sophisticated traditions of financial monitoring at the PO and, moreover, was instrumental in strengthening a wider sphere of much needed operational know-how in this period.

### **The revalidation as model-building**

The central model of the revalidation was built from the financial forecasting machinery used to cost the original LPP in 1969. The financial realm of mechanisation thus became a full-time field of study at the PO in the 1960s. By 1972 the problems were obvious and it was clear that Britain's economic problems had undermined some assumptions behind the early figures. Financial questions were central to the revalidation, having ties to all other aspects from the number of MLOs, to the types of machines used, to the amount staff could expect in special payments. Research therefore focussed on how to improve existing knowledge in order to better predict the financial effects of the LPP. An unstable, inflationary and strike-prone climate made this all the more difficult, as doubts over traffic growth, the increased cost of capital borrowing and industrial unrest all led to costly delays, rendering the already knotty task of financial forecasting highly complex. During 1973, several lines of research were pursued, both conceptual and empirical, and by 1974 the PO could fairly claim to have undertaken the most sophisticated exercise in financial modelling of any capital project in the mail system's history. This resulted in significant revisions to the original plan and a refinement of the LPP's conceptual framework. To explain how this unfolded it is first necessary to say more about how the financial apparatus of mechanisation was created in the late 1960s, the key elements of which worked in combination and were

used again, in modified form, during 1973. These techniques were discounted cash flow analysis (DCF), the use of computers and audits by private consultants.

The use of DCF at the PO followed a 1961 White Paper outlining its use in the Nationalised Industries, recommended by the Treasury for its subtlety in balancing many variables for investments where returns were spread unevenly over decades.<sup>8</sup> DCF was first used in the postal service during five years of trials and research on modernising containers, fittings and equipment in sorting offices.<sup>9</sup> Such analyses for mechanisation began in the mid-1960s and were refined by a 1967 White Paper, which differentiated between the returns expected of the PO's different businesses, with 8.5% overall return on expenditure targeted for telecoms and a more modest 2% for Posts, reflecting its special problems with wages and tariffs.<sup>10</sup> For capital projects, including the LPP, a minimum 10% yield over a 25 year period was the 'required rate of return'. This meant substantiating estimates for a plan's long-term savings by showing why it was expected to exceed the interest that sum of money would otherwise have accrued by a minimum of 10%. This established a benchmark for approving capital investment, although full commercial criteria were tempered where social obligations applied. Although the 1967-1969 figures appeared to fit easily within Treasury criteria, the unusual scale, complexity and long-term nature of the LPP meant that even the most thorough forecasting was open to doubt. The first phase of budgeting for the 1969 LPP combined the costs of buildings and machinery as well as R&D, installation, maintenance, planning, publicity, and training. Costs were weighed against the expected savings remaining after a proportion had been shared in special payments with the staff. The majority of savings were expected from a reduction in staff hours to the equivalent of 17,000 staff, and, once the full MLO system was in place, through 'system-savings' only accruing once sufficient numbers of MLOs came on-stream enabling the wider automation of national mail-flow and other expected but difficult-to-quantify benefits.<sup>11</sup> Phased implementation meant that redundancies could be avoided through natural wastage, agreed with COPOU from the outset.<sup>12</sup> Still, the need to anticipate the degree of stability in industrial relations remained paramount because the proportion of savings to be shared with staff, and their ongoing participation, was vulnerable to negotiation and veto respectively. Moreover, the best use of capital

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<sup>8</sup> Corby, *The Postal Business*, pp.203-207.

<sup>9</sup> POST 17/143, Working Party on Modernisation of Sorting Office Equipment, First Report, 1966, pp.1-3, 30.

<sup>10</sup> White Paper, *Economic & Financial Objectives for the Nationalised Industries*, Cmnd 3437, (London: HMSO, 1967); David Heald 'The Economic and Financial Control of UK Nationalised Industries', in *The Economic Journal*, 90 (1980), pp.243-65; POST 92/16, PO Report and Accounts, 1967-68, p.5; POST 53/51, Papers regarding the proposed increase in postage rates and preparation for decimalisation, 1970, POUNC report, p.6.

<sup>11</sup> POST 17/283, Letter Post Plan, Questions and Answers.

<sup>12</sup> *Ibid.*; POST 122/12528... Development of the Letter Post System: Joint Statement by the Post Office and the Staff Associations comprising COPOU; POST 115/512, *The Post*, 1970, 11 April Issue; *The Times*, 'Automated sorting for Post Offices', 02/04/70, p.19.

placed a premium on time: the quicker and more comprehensive the implementation, the more the rate of return increased.

Uncertainty about how a DCF model's variables interacted had long been accepted, and any conclusions derived were tempered by judgement born of experience. For example, the strategy of aligning investment in buildings with mechanisation – and determining the scale, order and timing of implementation – was based on both the prevailing climate of management opinion as well as on the outcomes of financial analysis. However the purpose of forecasts was to provide evidence of sound planning for parliamentary scrutiny and to create a tool for predicting financial outcomes under different potential scenarios and for the ongoing measurement of performance against targets. At its heart, DCF made use of detailed assessments and forecasts for staff hours, duty patterns and traffic statistics. Informed assumptions were then made about future trends in the key areas of annual mail volume, the cost and availability of capital, the public uptake of postcodes and stability of industrial relations. Outside trends such as inflation were also beginning to be modelled, working from such observations as the apparent link between mail volumes and general economic activity in Britain.<sup>13</sup> All of this data was fitted into a computerised, mathematical simulation which was built up and amended over time and used for monitoring progress through to completion; a 'major task' utilising 'fundamental research' into such fields as computer simulation and network theory,<sup>14</sup> and was similar to methods being used in the 'parallel fields' of electricity, gas and railway networks.<sup>15</sup> An optimistic return for mechanisation of 31.3% had been shown to the Select Committee on Nationalised Industries in 1966, but even the most pessimistic assumptions returned 17.5% at that stage.<sup>16</sup> These and subsequent figures were audited by independent outside bodies, primarily with the consultants Peat, Marwick, Mitchell & Co., with whom a long-run marginal costing model was constructed in 1969 in which the main elements of the postal system were studied in situ and from a statistical perspective. On the back of this, ideas for a total model of postal finances began to circulate, based on a systems research concept (Figure 4.3).

Although flexibility was built into the 1960s models – in their emphasis on rolling appraisal and a degree of inflation-sensitivity – by the end of 1972 the political and financial context had changed considerably. Developments such as the apparent plateau in growth in mail volumes, the pay crisis and the UPW embargo exposed the weakness of some assumptions. New data was needed, as were alterations in the general planning approach, developing what was best about existing mechanisms and re-evaluating others. After the embargo announcement in 1972, the Directorship of the Mechanisation and Buildings

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<sup>13</sup> POST 69/222, Managing Director's Committee: Posts, 1968, 05/07/68.

<sup>14</sup> POST 69/83... POB (69) 21, Long Run Marginal Costs, January 1969.

<sup>15</sup> Gourvish, *British Railways, 1948-73*, pp.503, 505, 513-520.

<sup>16</sup> Corby, *The Postal Business*, p.204

Division passed to R.O. Bonnett, formerly Director of R&D, while de Jong became Director of Postal Mechanisation. Both would have a significant influence on the revalidation. Bonnett took the lead in the revalidation and sought to make the costings programme more cautious, more objective and more open to the UPW, discussed below. Meanwhile, although de Jong's focus returned to R&D, his ideas and concepts continued to inform the PO approach to modelling.

In November 1972 de Jong was asked by the Board to review how financial and systems models could be put to use in improving the postal service. Assisted by informal discussions with people inside and outside the industry interested in this 'new thinking', he wrote a report detailing his thoughts on what he called 'one layman's view of the science (or art) of modelling'.<sup>17</sup> He referred to the forthcoming revalidation of mechanisation as one of the most important examples of systems-modelling at the PO. In postal R&D, a huge variety of models had been used for different purposes, ranging from manikins representing the average size and shape of a postman<sup>18</sup> (Figure 4.2) to computer programmes designed to simulate the internal workings of a sorting machine. Sorting machine models (Figure 4.1) helped identify ways to increase the speed, timing and accuracy of letter flow in a machine, and provided data for judging staff levels and wider operational problems<sup>19</sup> Though de Jong conceded that even the best models did not perfectly reflect the complexity of the real world, he knew their benefits from postal R&D in refining machines and components. At the commercial-strategic level, elaborate abstract models ('where the mind starts to boggle') provided a framework which minimised errors of judgement. This enabled important decisions to better express the 'corporate view', while, he believed, tending to favour the interests of management. 'Models', he concluded, 'in fact serve as focal points which bring coherence to what would otherwise be differing opinions and judgements from various vested interests'.<sup>20</sup>

Modelling had a long history in postal decision-making, taken to a new level in the 1970s by Walter Simpson who was then experimenting with computerised simulations for pricing, pay, capital planning and pensions.<sup>21</sup> In each case, the value was measured according to its accuracy in predicting future events and trends, which, in turn, depended on the quality of the research and the skill of professional modellers.<sup>22</sup> In its simplest terms the postal system could be thought of as a 'black box', where well understood inputs and outputs were processed by an unexplained inner system (Figure 4.4). In

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<sup>17</sup> POST 119/142, Models of the Postal Business: Use and potential, Report, Nick de Jong, December 1972, Introduction.

<sup>18</sup> In 1961 it was claimed the average postman was 174.3cm tall (with shoes), weighed 158.3 pounds and had thighs 37.6cm wide. POST 119/253... 'Physical Dimensions of the "Average" Postman', Survey Report 5 by Physiology Unit, 25/10/61.

<sup>19</sup> POST 119/29, Postal Engineering Research Annual Reviews, 1975-6, 1975, p.9.

<sup>20</sup> POST 119/142... Models of the Postal Business, pp. 1-2; 12.

<sup>21</sup> Ron Clatworthy, Interview, 13/01/11.

<sup>22</sup> *Ibid.*, pp.4; 7.



reality, simple reductions were of limited value because inputs and outputs in a postal system are highly variable and complex. What de Jong wanted was a ‘total systems model’: a scaled representation of the real world system, simulating every letter, postman, and transport link, and all the operational rules guiding them. Among the industries judged to be in the ‘system model club’ was Telecoms, where an automated, standardised, integrated network combined with far higher levels of capital expenditure in justifying the technique. This was a more difficult ideal for a system as variegated as a postal network. Nevertheless the value of developing the existing models emerging from data processing and costing projects was clear.<sup>23</sup>

One of the computers used in the mid-1970s for these purposes was the IBM 370/168, described as ‘the largest single timesharing installation in the country’.<sup>24</sup> PO scientists saw this as the culmination of two lines of development in the post-war period: computing and operational research. The operational use of computing began when a punched card accounting system was introduced in the early 1950s, and was followed by computers installed in 1958 for payroll processes which became the largest procedure of its type in Britain. ‘Large scale operations... characterised computing in the Post Office ever since’, stated a PO document submitted to the Carter Committee in 1976.<sup>25</sup> This included the launch of Data Processing Services in 1970 and, in software development, the writing of thousands of programmes. The design practices utilised in this were incorporated into the computer industry’s first Code of Good Practice. The other side of the coin, Operational Research, dated back to the entrance of statisticians into the running of the mails system after the Second World War.<sup>26</sup> By the mid-1970s, professionals in statistics, economics, forecasting and market research formed two divisions of the PO’s OR Department, where the goal was to build ‘Total Postal System Analysis’.<sup>27</sup> This was complemented by plans laid in June 1972 for an independent “Long Term Planning Unit” to conduct specialist research up to the end of the century, tasked with predicting the future ‘socio-economic, commercial and technological environment’ for the postal service. The mechanisation programme was an important consideration in their work. The LTPU was asked to focus on issues such as the effects of inflation and the likely direction of communication technology by working with outside organisations and academics. The aim was to build a better framework for medium-term mechanisation and marketing strategies, while assessing prospects for

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<sup>23</sup> *Ibid.*, pp.3; 12; 22.

<sup>24</sup> POST 151/uncatalogued, former ref: CH/C/0498... Development of DPS paper, p.3.

<sup>25</sup> *Ibid.*, p.2.

<sup>26</sup> POST 76/79, Research Report No. 13639, ‘The determination of letter correspondence statistics by sampling methods: a sampling technique’, 1955; POST 17/130, Report of the informal group on the size of postal units, by S. Wood (Chief Statistician), 1956.

<sup>27</sup> POST 151/uncatalogued, former ref: CH/C/0501, Post Office Review Committee: Post Office Notes, 1976-77, Postal Research and Development, Operational Research and Long-Term Planning, October 1976, p.3.

personal computers equipped with electronic mail (referred to as a 'multi-purpose terminals') and their expected rate of penetration into homes and businesses in the early twenty first century.<sup>28</sup>

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<sup>28</sup> POST 69/237... MDPC (72) 24: Long-term Planning in the Postal Business, June 1972.

Figure 4.1: The first working model of sorting machinery, 1972<sup>29</sup>

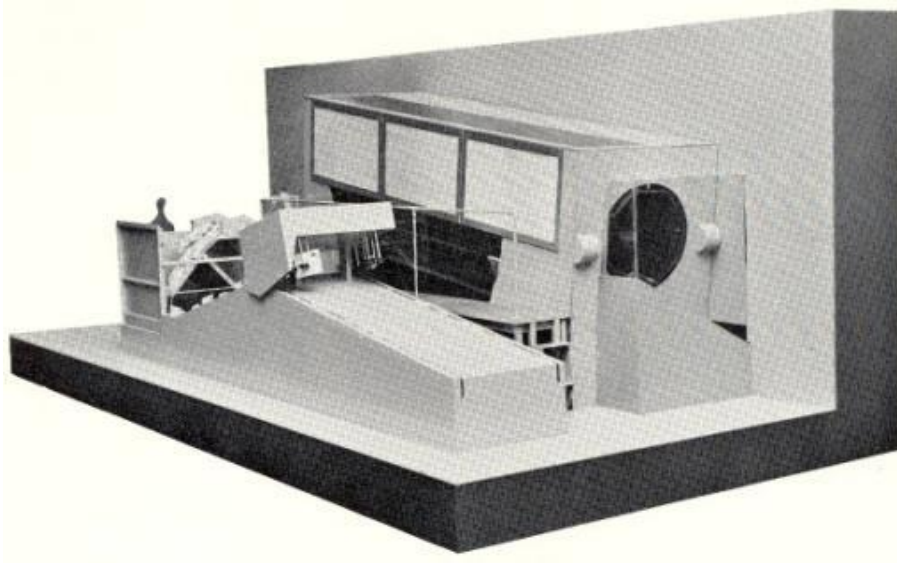
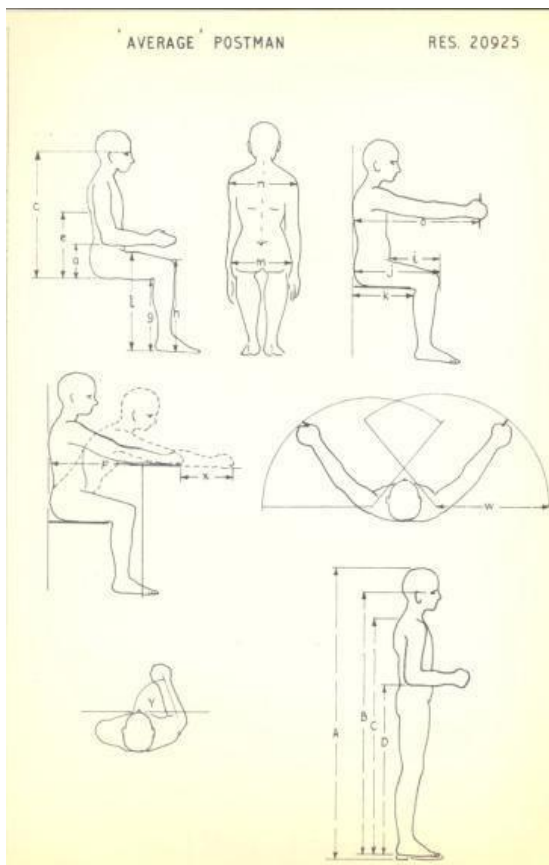


Figure 4.2: Modelling the 'average postman', 1961<sup>30</sup>



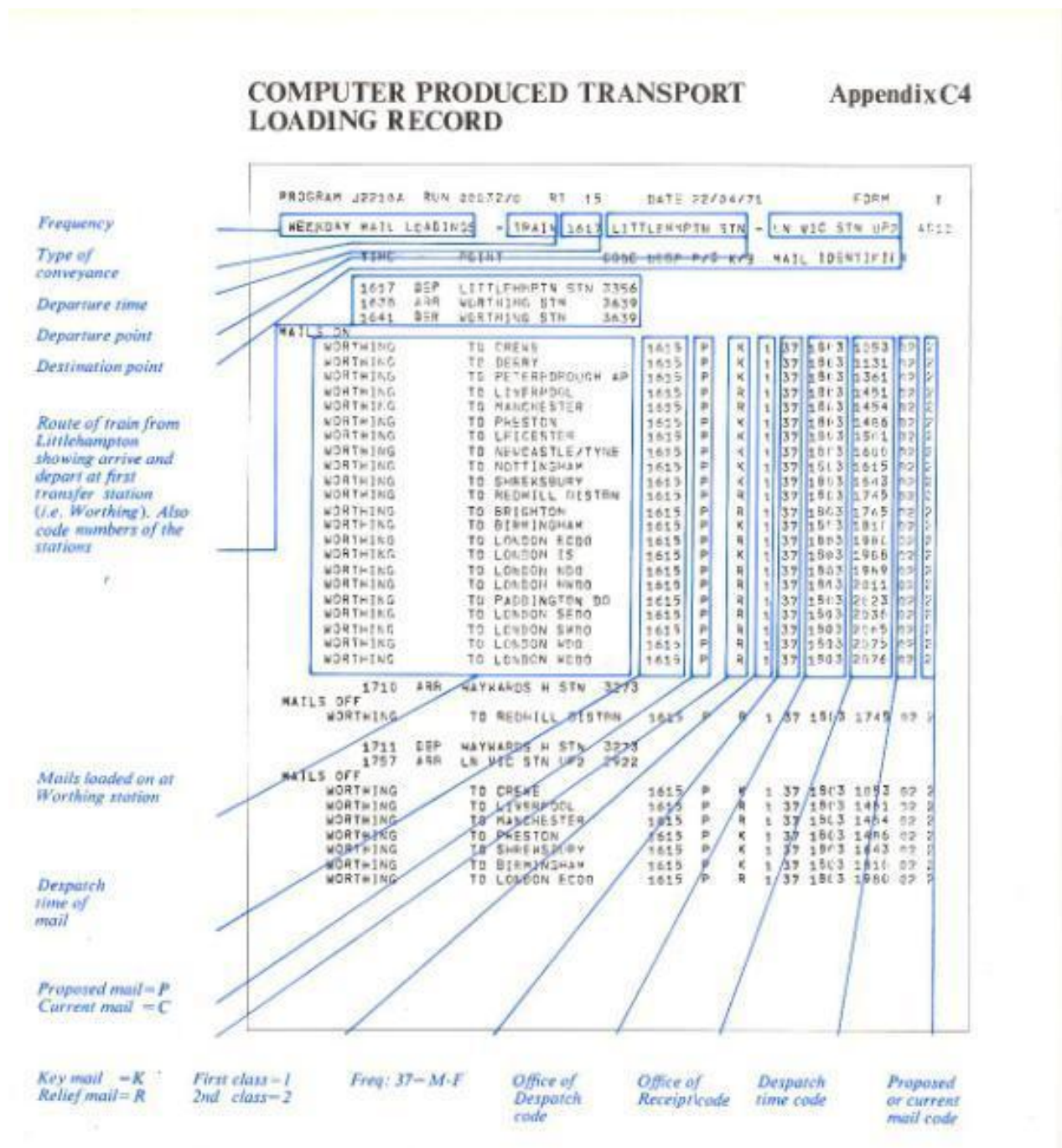
<sup>29</sup> POST 119/142, Models of the Postal Business

<sup>30</sup> POST 119/253... Average" Postman.





Figure 4.5: A record from the mails circulation ADP system<sup>33</sup>



<sup>33</sup> POST 113/33, Mails Circulation ADP Project: final report and conclusions, October 1971

Taken together, this activity resulted in several practical applications of computerised modelling in the postal service and provided useful precedents upon which both future system simulations and the more immediate needs of the LPP's revalidation could draw. For example, the mails circulation automatic data processing system (ADP), designed between 1967 and 1972 was thought of as a potential foundation for a future total model. This automated the information used to organise mail circulation and was implemented over a phased programme which transferred all timetables of the 700 dispatch offices to a unified computer system. It was the first circulation database to not only update day-to-day records but also provide a wide range of management information, such as inter-regional mail statistics, again, useful in the revalidation (Figure 4.5). Mail routes were planned using information on all haulage and train timetables taking into account dispatch and transfer timings. A set of instructions was generated within a framework of constraints which included standards of service, the use of intermediate offices, the timing of despatches, transport availability, and local circulation arrangements. Transport schedules benefitted from a statistical simulation 'in which all vans, drivers and their work history are represented by corresponding model elements'.<sup>34</sup> The ton-mileage figures helped settle multi-million pound contracts with British Rail.<sup>35</sup> Likewise, by 1972, the mechanisation programme's costings had computerised discounted cash flow procedures that included 20 year inflation-sensitive forecasts. 'It also allows for the adjustment of significant variables in the installation plan and expresses those costs which are important and the degree of their importance'.<sup>36</sup> Therefore, by 1973, the Board was able to draw on a well-formed body of knowledge derived from the most advanced modelling techniques then available to the network industries, valued for their uses in predicting future trends, simulating real-world operations and helping to unite differing views in planning change. Certainly, senior engineers such as de Jong recognised and supported mathematical and conceptual modelling as effective tools for solving a wide range of problems, from financial forecasting to agreeing compromise solutions over contested issues, and viewed the revalidation of the LPP as part of broader developments in computer-aided forecasting apparatus.

## **The revalidation report**

The main conclusions of the revalidation report were based on the computer-aided modelling described above. However this was combined with discursive reappraisals of the main areas involved and a consideration of the different economic context in which the organisation existed in 1973. The overall

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<sup>34</sup> POST 119/142... Models of the Postal Business, p.10.

<sup>35</sup> POST 113/33... ADP Project... A.E. Jammeson to D.E. Roberts, 16/11/71; Note on the MCR ADP Project, pp.3-6.

<sup>36</sup> POST 119/142... Models of the Postal Business, p.10.

tone was measured in acknowledging widely held reservations and that conditions had changed, but purposeful in providing a thorough defence of the continued importance of the LPP, albeit in revised form. Coming to more modest predictions about the financial savings expected of mechanisation was a natural reaction to the deteriorating trends in the industry, to outside pressures, and to the pay crisis and UPW embargo. Michael Corby later argued that, on DCF grounds alone, mechanisation should have been scrapped at this juncture on the basis that had the level of profit sharing with staff been factored in correctly, future savings would be wiped out, leaving a loss of £50m. The ‘fundamental weakness of the revised plan was that it increased fixed costs at a time when it appeared mail volumes were in terminal decline.’<sup>37</sup> As will be shown, these figures are disputable and growth of traffic later recovered, but it is true that the threat was a cause for concern in 1973 and it was trends like these that resulted in more cautious assumptions being used in the revalidation.

Committing to substantial, fixed investment in 25 year plant when the future level of business was in question carried risks. This, coupled with years of efficiency programmes, increased the likelihood of operational imbalances and failures. The phrase “more eggs in one basket” was a term used by the Managing Director’s Committee in early 1973.<sup>38</sup> This fragility had been exposed during the 1972 Christmas period, when a flu epidemic caused a spike in staff absence of 26% above the previous year, resulting in 9 million letters and cards not being delivered by Christmas. The failure is said to have ‘deeply scarred’ Ryland and cemented his determination to make changes to postal services thereafter.<sup>39</sup> The prevailing view on the Board was that high inflation was at the root of the problem and, though it provided good reasons for added caution, it was not nearly sufficient reason to consider abandoning the LPP altogether. This position was supported by the government and the Treasury. However, during 1973, a new wave of financial constrictions was placed on the PO and this also helped set the tone of the report. Like other nationalised industries, the PO had a direct line to its sponsoring government department and to the Treasury, who passed on economic indicators and confidential commentary tailored to PO needs. This was supplemented at PO Headquarters by monthly forecasts supplied by in-house economists, by the consultants Morrell and Associates Ltd. and by the National Institute of Economic and Social Research. In all of this, the most important indicator was inflation because of its wide-ranging effects. In 1973 the Treasury instructed the PO to lift its minimum rate of return on large capital projects in the postal service from 10% to 16%.<sup>40</sup> By this time the Board had already accepted that they had been wrong to suppose, in

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<sup>37</sup> Corby, *The Postal Business*, p.207

<sup>38</sup> POST 69/238... MDPC (73) 6: Service, Cost and Emergencies, p.1.

<sup>39</sup> BL, NSA, An Oral History of the Post Office, Interview with Bill Cockburn, C1007/56/01-02, Tape 3 (F11499), Side A; POST 69/238... MDPC (73) 11: Performance Review, p.4; POST 92/17, PO Report and Accounts, 1971-72, p.13.

<sup>40</sup> POST 17/317, Review of Postal Mechanisation, p.4.



the late 1960s, that inflation could be controlled by the state.<sup>41</sup> In May 1973 the Chancellor of the Exchequer announced a 4.5% cut in PO expenditure.<sup>42</sup> While Regional Directors supplied new cost-cutting lists, the brunt of savings came from deferring new buildings, in keeping with Phase III of the Heath Government's incomes policy, in which the nationalised industries were asked to reduce their demands on the construction industry. The PO promised, where possible, to delay new constructions by three months and reduced the buildings maintenance budget for the year.<sup>43</sup> £750,000 was saved by delaying the Coventry MLO for a year, and, with the embargo keeping new mechanisation on hold, Alex Currall acknowledged the fortunate timing. 'With reassessment of mechanisation generally', he told the General Purposes Committee in July 1973, 'the need to delay placing certain orders would not be a hardship; it would provide the opportunity for a clearer assessment of requirements. Some £700,000 might be saved here'.<sup>44</sup> The mixed blessing of the delay exemplified how the reappearance of high inflation could affect costing policy in contradictory ways. On the one hand, greater pressure on wages played 'an important role in the justification for mechanisation' with its labour-saving promise.<sup>45</sup> On the other, doubts over future trends in mail volumes and the effects of pricing caps made for an uncertain future which favoured downscaling the number of MLOs. The prudent response to this and to outside pressures can be seen in the more demanding standards set for DCF forecasting and its core assumptions. Indeed, no growth in mail volume was assumed in the revalidation.

In considering the revalidation report itself, a more measured strategy than that found in the original LPP costings is evident. A set of four options for the future programme was laid out along a continuum, ranging from the complete cessation of the programme, through intermediate levels of implementation:

- Option 1: 'Baseline' in which the existing system would continue with minimal changes
- Option 2: 81 MLOs with full concentration and no change to service standards
- Option 3: 31 MLOs for second class traffic only with Day D delivery
- Option 4: 50 MLOs for most second and some first class traffic with present service standards

Options 2-4 were tested against each other and against the baseline manual option for a 25 year period to see which gave the best results. The data came from a number of sources, including eighteen regional studies which assessed mail-flow and staffing trends. In each case the likely effects of the different

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<sup>41</sup> POST 69/90, PO Board 1972, Board Papers, Part II, PO (72) 193, Economic Indicators for Financial Reviews.

<sup>42</sup> POST 65/109, General Purposes committee correspondence and minutes, 1973-75, 7<sup>th</sup> Meeting of the General Purpose Committee, 17/07/73, pp.1-2.

<sup>43</sup> PHBS/BG/0048... Minutes of the 6<sup>th</sup> Meeting of the BMC, 13/11/73, p.6.

<sup>44</sup> *Ibid.*, 7<sup>th</sup> Meeting of the General Purpose Committee, 17/07/73, p.4; Minutes of the 5<sup>th</sup> Meeting, 19/06/73, p.4.

<sup>45</sup> POST 17/317, Review of Postal Mechanisation, p.4.

implementation options was projected. Each regional study related to a major sorting office already or soon-to-be mechanised. The projections related to the varying demands made upon staffing, transport and administration for different proposed ‘concentration areas’ (i.e. the varying extents to which mail might converge on a given office) and ‘catchment areas’ (i.e. the geographical coverage of collections and deliveries). The mail-flow research was used to simulate the inward and outward sorting processes of all affected offices, amounting to a major sampling exercise in which 2 million letters were examined and their data analysed by computer to construct ‘a matrix showing the potential flows of traffic between mechanised offices’.<sup>46</sup> Some of this analysis was based upon data about the overall mails system. However this was combined with findings on the ground in the eighteen regional studies at major sorting centres. The report explained: ‘The work involved the examination and recasting as necessary of all duties involving sorting work in all offices in the potential concentration area of each MLO, as well as at the main office’. The traffic matrix study was used to assume a national pattern of year-on-year concentration as a rough guide to the hypothetical staffing and duty arrangements at a given office over the long term. As with the national study, a 25 year forecast for each option was compared against the baseline option using DCF.<sup>47</sup> The outcome in each case was a report containing the cash flow statements, a narrative description of the study, machine employment charts, traffic-flow maps, demographic information and changes proposed for staffing and duties. The financial results were mixed, with larger offices tending to show more promising figures than the smaller offices, although these were expected to make system savings by reducing reliance on GFOs, DOs, and TPOs.<sup>48</sup>

Once the data was assembled in London, the final stage was its incorporation into a new computerised DCF model, developed from the central costing model used on the original LPP. This comprised a synthetic, multi-module computer programme with five sub-modules, each linked by the transfer of data. Its purpose was to express the relationship between the different factors involved with predictive reliability and provide final forecasts for the four revalidation options. (The Board regarded it as a significant achievement, noting that the French postal administration had attempted something similar, occupying a small team of programmers for eighteen months and costing 2m Francs before being abandoned due to difficulties in handling their own varying, complex, local factors). Sub-model 1 handled data for traffic and hours for all offices; Sub-model 2 calculated machine requirements derived from the traffic data; Sub-model 3 calculated staff hours saved due to outward concentration, taking into account handling times, reject rates, unmechanisable traffic etc; Sub-model 4 used 80 algorithms to do the same for inward concentration. Traffic flow sampling and predicted postcode uptake was here used to arrive at

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<sup>46</sup> *Ibid.*, p.3.

<sup>47</sup> *Ibid.*, p.2.

<sup>48</sup> Annex 4: Results of the Code/Sort Studies at 18 Individual Offices, p.3.

likely proportions of code-marked mail; and, finally, Sub-model 5 amalgamated the findings of 1-4 and converted them into cash sums for buildings, changes to circulation, equipment, commissioning, and maintenance. The computer took about twelve hours to run the tests.

To ensure the results' credibility, the same raw data from the regional studies, along with the wider systems data, were supplied to P.A. Management Consultants Ltd. They performed their own DCF forecasts using multiple regression techniques.<sup>49</sup> Both sets arrived at similar figures, although the consultants' forecasts were slightly lower. The PO returns were 31.2% for Option 2, 31.7% for Option 3 and 32.9% for Option 4. The consultants' figures were 29%, 22.5% and 26.3% respectively (Table 4.1). Both groups recommended scaling down the original plan for 120 MLOs, favouring Option 2 as showing the best financial outcome with a still substantial 81 MLOs and adjusted schedule of concentration schemes. This was eventually the option taken forward, constituting a significant revision of the original plan in the capital required, in network restructuring and in staff savings, which were now limited to the equivalent of 6,000 full time staff.<sup>50</sup> The model itself, built using the PROSPER financial analysis computer package, with elements written in BASIC, was then built upon to monitor the ongoing performance. This enabled the generation of rolling regional performance targets which, it was hoped, might eventually contribute to a total systems model.<sup>51</sup>

**Table 4.1: Forecasts for returns on expenditure for different revalidation options<sup>52</sup>**

	Capital Costs (at 1973 prices)		DCF Return	
	Buildings	Equipment	Computer Model (A)	PA Consultants (B)
Option 2	£10.4m	£25.9m	31.2%	29.0%
Option 3	£0.4m	£10.2m	31.7%	22.5%
Option 4	£1.8m	£16.2m	32.9%	26.3%

<sup>49</sup> *Ibid.*, Appendix 1: Code/Sort Costing Studies.

<sup>50</sup> *Ibid.*

<sup>51</sup> *Ibid.*, Annex 1: Code/Sort Costing Studies, p.10; Appendix 2: National Computer Costing, p.1

<sup>52</sup> POST 17/317, Review of Postal Mechanisation, Board Paper (PO/73/201): Review of Mechanisation Policy, p.4.



In the revalidation report the PO claimed Options 3 and 4 seemed attractive at the outset but that evidence gained from the regional studies proved that a higher number of wide concentration areas brought the largest returns over the long term, with the fullest savings only arriving once the final offices came on stream and a complete system was in motion. Option 2 promised a high return on capital and offered best long term prospects in numerous respects. It was firstly amenable to two long phases of implementation, mechanising first outward and then inward sorting. It promised to handle more of both first and second class mail, and eliminated the need for Travelling Post Offices. Just as phasing out TPOs coincided with the Board's conveyance policy of increasing motorway haulage, it also showed a better fit with the postal building programme and the rationalisation of administration costs. Another attraction was its greater palatability to the UPW whose Executive expected the 81 MLO arrangement to bring a reduction in late duties, unpopular with the membership.<sup>54</sup> Finally, as the 'more fundamental change' being tabled, Option 2 was the closest to a 'total system' option in providing a sound technical basis for the future integration of OCR technology. Interestingly, the final report went on to state that the Board still saw merit in the more limited Option 4, mirroring the views of those who still believed a less committal, step-wise implementation was the best immediate strategy. 'However', the report concluded, 'from a psychological standpoint, and also a practical one in negotiations with unions, a clear decision in favour of option 2 would carry more conviction with both postal and engineering staff and give management more confidence in taking long term decisions'.<sup>55</sup>

The overall conclusion was therefore that the new assumptions were well reasoned and, even though real risks existed, even the most pessimistic costing made the enacting of Option 2 well worthwhile.<sup>56</sup> The most important assumption was that the financial savings remained on a sure footing – the retrospective view from the mid-1980s simply posited 'economic reasons' to explain the 81 MLO decision.<sup>57</sup> A number of characteristics of the costing process described – greater attempts at caution and objectivity, the flexible and sophisticated use made of financial modelling and the foundations laid years previously – are at odds with the critical judgements of rash naivety made by the PO's critics. However it is also clear that another of its functions was to appease the rank and file membership of the UPW and the Post Office Engineering Union (POEU), who made plain their desire to see a thoroughgoing plan for mechanisation. In this sense, the costings had clear significance for the ongoing fortunes of industrial relations, a point that was raised repeatedly at the time. The revalidation's findings were made available

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<sup>54</sup> POST 17/317, Review of Postal Mechanisation, pp.3-7.

<sup>55</sup> *Ibid.*, Annex 1: Code/Sort Costing Studies, pp.9-10.

<sup>56</sup> POST 17/317, Review of Postal Mechanisation, p.5

<sup>57</sup> G. S. Worwood, 'The Evolution of a third generation of letter coding desk', in *Postal Automation Conference Proceedings published by the Institution of Mechanical Engineers* (London: Institute of Mechanical Engineers, 1986), p.94.

for union scrutiny and actively involved union input and cooperation. The ways in which the staff and their unions were involved, and the extent to which this marked a break with their past involvement in network planning, is described in more detail below. Here it is worth re-emphasising that the role of engineers in mechanisation went far beyond that typically associated with the institutional technologist. An important feature of the revalidation was that its assumptions and conclusions existed within a functional systems framework inspired by engineers. Theirs was the favoured conception of the postal system: an organic entity in its need to adapt to a shifting economy and society, but in practice a giant machine whose components should work in harmony towards the ultimate purpose of turning inputs into outputs with the maximum efficiency.<sup>58</sup> Their views as experts were sought on how to construct models of the postal system to simulate its major elements (traffic flow, scheduling, tariffs, costing, industrial relations etc.) and how to use this to predict future trends and make informed decisions – an approach which was applied to the reappraisal of mechanisation policy.

### **Union involvement**

A distinguishing feature of the revalidation was a more pronounced and open involvement of rank-and-file staff through their unions, principally the UPW and the POEU, building on the traditions of union consultation over mechanised sorting which stretched back to the inter-war period. Nevertheless, the shift towards more openness had to overcome a countervailing element of management hostility to union involvement, which had roots deeper than the reactionary views fostered by the strike.<sup>59</sup> Traces of an exclusionary approach to planning were present at Board level in the 1960s. For example, the question of staff-side cooperation over the long-term was not included in the main part of the formal presentation outlining the LPP to the Board in 1969, but discussed only in the question- and-answer session. The notes for this session reveal that consultation was then limited regarding the overall plan. ‘We are ... under considerable pressure from Staff Associations to disclose our plans to the staff and on a number of occasions recently we have been embarrassed by our inability to reveal our future intentions for a particular office’.<sup>60</sup> A similar impression is made by certain passages in the PO’s correspondence with McKinsey’s in 1965, who encouraged their client to debar the unions from participating in both short-

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<sup>58</sup> This idea remains influential among management consultants. See for instance Brook Manville, ‘Complex Adaptive Knowledge Management: A Case Study from McKinsey & Company’, in John Henry Clippinger III (Ed.), *The Biology of Business: Decoding the Natural Laws of Enterprise* (San Francisco: Jossey-Bass, 1999), pp.89-111.

<sup>59</sup> POST 73/465, The Future of the Postal Business: A Report by Directors of Postal Regions, 1971, Appendix, p.15; POST 65/134... Minutes of Official Members Meeting, 19/04/72, Item 7.7.

<sup>60</sup> POST 17/283, Letter Post Plan, Questions and Answers.

term productivity and long-term planning studies. ‘It was also agreed that they would not be told that the objectives of these projects were to identify how cost savings of 25 per cent could be made’ noted A.K. Stewart of McKinsey’s. Staff side cooperation would ease the process of change but, he warned his PO contact W.A. Wolverson, this risked compromising decision-making.<sup>61</sup> The PO’s civil service culture had, in McKinsey’s view, led to ‘an atmosphere (encouraged by parliamentary control) that accentuates the tendency of management to debate both sides of the question and thus postpone decisions, and to observe the rule book at the expense of initiative’.<sup>62</sup> Though in outline the LPP was widely known by 1969, and although supportive individuals on the UPW EC, such as Tom Jackson, had been well appraised, it is equally clear that designing the LPP had been a one-sided affair to that point. How did this change during the revalidation?

From the outset, R.O. Bonnett signalled the Board’s intentions to make the revalidation a corporate project. In January 1973, Bonnett publicly invited the UPW to come on board this ‘far reaching enquiry’.<sup>63</sup> *The Post* reported the programme of research, listing its distinct investigations, outlining plans for the eighteen regional studies, the costing exercise, a reappraisal of code/sort working, and of R&D and outside industry. It was explained that a study into the experiences of other countries was underway, as was research on environmental conditions in mechanised offices. The twin aims of the revalidation – to establish the relative merits of the different implementation options and to regain the full cooperation of the staff – were also made clear.

The information gathered during the regional studies had dual significance in forming the basis of financial reappraisal as well as facilitating the close involvement of local staff and union branches, helping all parties to better appreciate the complex realities of staff attitudes to mechanisation. Except for Northern Ireland, two offices were chosen for each region, following discussions with the affected managements and staff associations. All regarded this as an adequate sample from which to draw useful conclusions, comprising existing MLOs, General Forwarding Offices (GFOs) and District Offices (DOs), which represented the full spectrum of office size and local operational arrangements then existing in Britain, serving different types of rural and urban areas. The offices selected were Aberdeen, Brighton, Bristol, Cambridge, Cardiff, Chelmsford, Chester, Glasgow, Guildford, Leeds, Liverpool, London South Western District Office, Nottingham, Preston, Sheffield, Southampton, Watford and Wolverhampton.<sup>64</sup> Lengthy instructions were given to each office and these were made available to the staff through copies

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<sup>61</sup> POST 122/10228... A K Stewart (McKinseys) to W A Wolverson, 27/08/65.

<sup>62</sup> *Ibid.*, GPO – McKinsey Progress Review, July 1965, pp.2-3.

<sup>63</sup> POST 115/515, *The Post*, 1973, February Issue, p.5; April Issue, p 10.

<sup>64</sup> POST 17/317... Review of Postal Mechanisation... Annex 4: Results of the Code/Sort Studies at 18 Individual Offices, p.1.

sent to the COPOU, who had the opportunity to comment. In each case, planning staff from London made frequent visits with advice on how to compile the local costings for the four revalidation options. Instructions from Headquarters were flexible in offering general guidelines over the numbers of machines required, their expected levels of performance, maintenance costs, and staffing requirements, but the details of implementation were left to local discretion.<sup>65</sup>

In matters of immediate concern to staff such as changes in duty patterns and overtime levels, the local variation in both existing and projected arrangements was such that useful trends were difficult to discern:

Regions were instructed that proposed changes [‘vast numbers of duties’] should produce new duty patterns which were realistic and of a type which would be likely to be acceptable to local staff... Naturally the pattern of changes varies greatly from office to office, just as does the pattern of duties at present. No overall summarisation of the information provided by the studies would be very meaningful. For example, some MLOs have wide concentration areas covering many tiny offices, others cover a few larger ones, and some have no concentration at all; some schemes involve considerable changes to forward sorting or to transport organisation, and some no changes in these respects. Information was collected during the studies on matters like the balance between ordinary time and over-time, numbers of early, late and night duties and other similar points.<sup>66</sup>

In spite of this, some provisional conclusions were possible. More Postman Higher Grade (PHG) working was inevitable as the UPW expected to succeed in keeping code work for this grade only. More coding for first class mail would take place in the afternoons and evenings, while second class mail would be focussed more on mornings, with an overall reduction in night duties. Staffing levels would on average fall at non-MLO offices although some of the larger offices were expected to lose the greatest numbers, easing recruitment problems in certain cities, although this was dependent on different levels of regional concentration and other factors, making this conclusion more tentative. In general, the magnitude of the changes under Option 2 was acknowledged along with an acceptance that many difficult staffing problems lay ahead.<sup>67</sup>

Beyond the gains in operational knowledge, the regional studies provided an opportunity for a much closer, sustained and more personal interaction between Headquarters departments and regional offices than regular, everyday operations would ordinarily permit. Though this entailed some tensions and disputes it is clear that a more nuanced mutual understanding of the different parties’ attitudes and

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<sup>65</sup> *Ibid.*, p.3.

<sup>66</sup> *Ibid.*, p.4.

<sup>67</sup> *Ibid.*, p.5.



interests was gained. In the final report, management wanted to display empathy with staff about the changes affecting them. It was admitted that some of the disruptions would be painful and that an increased awareness of the value of good working conditions had been encouraged by mechanisation. However it was the variability in staff attitudes from region to region and across the grades that was chosen for special emphasis. ‘They range from welcome, through wariness, to hostility’, the report concluded, listing widespread sentiments they had observed:

- Suspicion of change in general
- The idea of using mechanisation to gain more money
- Mutual suspicions between postal and engineering staff
- Some fear of redundancy
- Concern over changes in duty patterns and types of work
- Concern over possible loss of work and reduction in take home pay especially in offices from which work will be withdrawn
- Growing awareness of environmental issues
- Enthusiasm about operating new equipment
- Realisation that machines reduce hard or boring work

It was hoped that in providing COPOU with access to all information in the final report, and because of their involvement in its compilation, many of these problems might be alleviated.<sup>68</sup> Part of the purpose of bringing together so much information into a coherent picture of past, present and future mechanisation was to convince those outside Headquarters that the programme for which their cooperation was sought was worthwhile and well thought through. As the final report put it, ‘a firm declaration of Post Office commitment to mechanisation’ was needed to generate the required staff-side support.<sup>69</sup> The staff embargo was seen as a ‘symptom of the general issue’ of management not adequately appreciating the subtleties of staff interests and attitudes. ‘The present stalemate will be hard to resolve partly because the real fears and requirements of the union membership are so ill defined’.<sup>70</sup> To reach a resolution, the revalidation needed to be seen in the context of the wider effort to improve industrial relations, and this would include a demonstration of good will over the crucial question of special payments.

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<sup>68</sup> POST 17/317, Review of Postal Mechanisation, pp.16-20.

<sup>69</sup> *Ibid.*, p.16.

<sup>70</sup> *Ibid.*

## **The package deal: pay, productivity and the employment of women**

There is a good case to be made for the importance of the revalidation to the staff, primarily via the involvement of COPOU in contributing towards a number of its different studies and in scrutinising the whole. The entire project served the purposes outlined in de Jong's writings about modelling, going some way to rehabilitating the corporate spirit between the management and staff sides: a by-product of the joint planning and data-gathering, the greater degree of staff-side participation and the fact that conciliatory rhetoric from officials in London could now point to something of substance in its support. Re-modelling the LPP, therefore, acted as a statement of intent by providing credibility to financial and operational forecasts and, in so doing, softened the ground for the resumption of staff-side negotiations by weakening the line of criticism that mechanisation was an ill-conceived, authoritarian imposition. The widespread concerns about how code-sorting worsened the working environment – by atomising and deskilling the worker and bringing more noise, heat and dust – were also addressed in the revalidation. In the next chapter we see how this was achieved by co-opting a separate but parallel programme of machine and building redesign into its remit. But these advances could only go so far in resolving the embargo which was, after all, very much about pay: both in the straightforward sense that the UPW were seeking the maximum share of savings from mechanisation before cooperating, and as a form of industrial action which extended the strike and its grievances; waters were muddied by a host of issues beyond that of pay. This final section therefore traces the history of negotiations which led to an agreement in 1975 and begins by summarising some of the contextual issues that had a bearing on questions of pay, and, over mechanisation, the development of a "package deal", touching on the length of the working week, the employment of women, the Conservative's incomes policy and the change of government in 1974.

Firstly, the deal that was arrived at in 1975 needs to be understood in the context of a general improvement in the sphere of union-management negotiations and with the limitations imposed by the government's incomes policy in mind. Although serious tensions clearly continued over this period, industrial relations did improve in certain respects after 1972, as a result both of the revalidation and the more general repair work required after the strike. When members of COPOU's EC met with the PO in April 1973 they pressed for further steps to improve mechanised working conditions but also acknowledged that good progress was being made in addressing their wider mechanisation concerns.<sup>71</sup> Ryland told the General Purposes Committee of his belief that IR had improved greatly during the preceding year,<sup>72</sup> while Will Paynter, an outside observer with a reputation for impartiality and who had

<sup>71</sup> POST 115/515, *The Post*, 1973: April Issue, p.10.

<sup>72</sup> POST 65/109... 6<sup>th</sup> Meeting of the General Purpose Committee, 12/04/73, p.3.

monitored the JWGIR since 1972, withdrew his membership in June on the grounds there was little more for him to contribute. The PO, in his generous view, now had ‘no major industrial relations problems’.<sup>73</sup> Moreover, COPOU and the Board found that there could be common causes resulting from severe economic conditions, namely their joint opposition to the government’s pricing caps, spending cuts and incomes policy.<sup>74</sup> Amidst a terrible financial outlook, the second half of 1973 saw both the Board and the Unions begin preparations for Stage III of the Government’s Incomes Policy, due in October, the terms of which, Ryland believed to be of the greatest significance and that this was a common interest for all PO stakeholders.<sup>75</sup> Notwithstanding a still considerable dissenting element of the UPW, its executive council and members of the Board both appear to have leavened their protests to Government with recognition of the national significance of counter-inflation measures.

On 3 October 1973 Tom Jackson joined with COPOU colleagues in meeting Prime Minister Edward Heath, alongside Ministers for Employment and Posts and Telecommunications, to remonstrate about the fall in pay, requesting special treatment under Stage III of the government’s incomes policy. In person, Heath’s response was muted: ‘No promises’.<sup>76</sup> The following week, he wrote to advise he was rejecting their case: a ‘bitter disappointment’.<sup>77</sup> Other COPOU Unions reacted with selective strike action without consulting the UPW. Jackson had outlined his pragmatic philosophy on incomes policies in an address to the *Financial Times* Conference the previous summer. Incomes policies, he argued, were doomed to failure because sectional self interest was a ‘rocklike fact’ of modern society. Whether it was wages or profit, everyone first pursued their share. This took primacy over all proposed ‘abstract’ ideals of the greater national good. Wage claims were shaped, he said, by two factors:

Firstly, evidence and, secondly, expectation. The most important of these is expectation. A General Secretary worth his salt will have a very good idea of what expectations his members will have at any particular time. Expectation is composed of many factors. The nightly bombardment of television commercials, keeping up with the Jones’. A continuing demand for an increase in real wages, what the firm or the industry can bear, cover for increased living costs and perhaps - most important of all, the general level of settlements being made elsewhere and particularly the better of these settlements.<sup>78</sup>

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<sup>73</sup> POST 65/134... Minutes of Official Members Meeting, 13/06/73, p.1.

<sup>74</sup> POST 65/109... 10<sup>th</sup> Special Meeting of the General Purpose Committee, 25/01/74, pp.1-2; 8<sup>th</sup> Meeting, 30/10/73, p.7.

<sup>75</sup> *Ibid.*, 5<sup>th</sup> Meeting of the General Purpose Committee, 23/01/73, p.2.

<sup>76</sup> MRC: MSS.148/UCW/5/6/27, UPW Special Branch Circulars, 1971-73: Meeting with Prime Minister, 05/10/73.

<sup>77</sup> *Ibid.*, 18/10/73.

<sup>78</sup> MRC: MSS.148/UCW/3/5/23, “Incomes Policy”, Speech by Tom Jackson to the *Financial Times* Conference, 18/05/72, pp.4-5.

These were among the pressures felt by Jackson during the annual wage round, applying equally to the special payment for mechanisation which, as the situation then stood, was expected to be restricted under the terms of Stage III. This changed in January 1974 when the Board, anxious to end the embargo, made representations to the Government and succeeded in securing an exception to Stage III for the special mechanisation payment, which was by then referred to as the ‘lead-in payment’. £10m above the Stage III pay code was granted.<sup>79</sup>

Jackson and the UPW Executive strongly supported the revalidation and continued to argue for its merits with the membership’s dissenting element, while recognising that the best chances of ending the embargo lay in securing a high lead-in payment. Following the government’s rejection of special treatment in the annual pay round, it was realised that the lead-in payment was the best medium-term lever in pay negotiations.<sup>80</sup> Events at the UPW Annual Conference in 1973 gave a good indication of how far they still had to go. There, a number of questions were posed about the amount of lead-in pay the EC were seeking in their negotiations. The ensuing debate revolved around two issues. First, there was disquiet over the code-sort grading policy, whereby both Postmen and the senior PHG grade operated the coding desks, with the former receiving increased pay whilst on coding duties. This was thought to undermine the PHG grade where postmen could end up earning more than their senior colleagues.<sup>81</sup> A grading agreement was settled a year earlier and, because since then no further offices had been mechanised, it was agreed to let the issue wait for the final negotiations. Either way, this was bound to be a thorny issue. As the COPOU representative, T.C. Carpenter, remarked in a joint meeting in 1970, re-grading risked unbalancing the complex operations of the sorting office where staff ‘had been conditioned by the past twenty years to accept the present Postman/PHG differential as justified’.<sup>82</sup> Second, discrepancies were apparent in the coding rates achieved at the operational MLOs because of differences in equipment, experience and the nature of the mail being processed. It was widely felt that the guideline figure of 2,100 items per hour was too high, that some offices reaching this target were abusing shortcuts in the system for measuring the work rate and it was agreed that a lower rate should be sought.<sup>83</sup> The

<sup>79</sup> POST 69/108, PO Board Papers, 1974, (214B) Postal Mechanisation – Payment to the Staff, October 1974.

<sup>80</sup> MRC: MSS.148/UCW/5/6/28, UPW Special Branch Circulars, 1974: Special Conferences 1974: Postal Mechanisation – Withdrawal of Saturday Delivery, 08/08/74.

<sup>81</sup> A 1974 report on sorting office grading structures defined the Postman grade as involving ‘collections, deliveries facing and stamping, inward sorting, outward primary sorting, conveyance of mails, and loading and unloading of mails at sorting offices, stations, docks and airports’. The PHG grade covered ‘Outward secondary and distribution sorting, registered letter work, ticking of mails, and... quasi-clerical duties’ as well as Postman duties when needed. Postmen and PHG’s ‘constitute the rank and file of the sorting office hierarchy’. POST 65/150, Report and recommendations of Joint Study Group on sorting office restructuring, PO Staffs Association booklet, March 1974, pp.7-10.

<sup>82</sup> POST 151/uncatalogued, former ref: CH/BP/0028, “Postal Grading Structure”, Minutes of a meeting held at PHQ, 20/04/70, p.2.

<sup>83</sup> POST 115/515, *The Post*, 1973, August Issue, pp.37-38.

Board opened with 30p per week extra pay in an initial offer before the conference and a motion arguing the EC should increase their demand for 50p was at this stage rejected. Speaking for those in its favour, John Taylor explained that they did not oppose the new technology. ‘We want the conditions and the safeguards for our members before we go into mechanisation. That’s what the issue is all about’. He continued,

On the postal side we are going to face an upheaval that will be far, far greater than anything we have had to face in the past. This upheaval will mean drastic cuts in manpower in hundreds of our smaller offices, completely new environmental conditions, domestic upsets, possible loss of earnings to thousands of our members. This is the cost that this Union’s membership must bear as the price of mechanisation.<sup>84</sup>

Tom Jackson replied that the EC was not in fact demanding 50p, it was demanding a ‘detailed comprehensive plan and the lead-in payment’.<sup>85</sup>

In 1973 the UPW held another special conference on mechanisation. The most significant outcome was that the embargo was widened to include the Parcel Post Plan (the parcel service’s equivalent of the LPP, only on a much smaller scale and with far less opposition) and the employment of female and part-time staff. This was a pre-emptive strategy intended to pave the way towards an overarching agreement which might combine all special issues into one package and avoid dealing with them piecemeal, thought to be the most direct route to better pay and conditions.<sup>86</sup> Women and part-time staff were paid less than full-time men and comprised a very small proportion of total postal staff. The Postman and PHG grades were either entirely or mostly male dominated, depending on the office, and the UPW had a vested interest in the status quo, fearing the effects of an influx of cheaper labour on wage claims.<sup>87</sup> This was connected with a complex history of gender relations in the postal service in which strong views about the distinctions between men’s work and women’s work persisted. This culture of exclusion was typified by the UPW’s 1955 statement: ‘The work of Postmen is proper to a male grade and should be performed by Postmen.’ Only when severe staff shortage could be shown, it continued, should women or part-time staff be temporarily employed.<sup>88</sup> In 1965, a ‘thermostat’ agreement for London prohibited the recruitment of women or part-time staff unless total vacancies for the city exceeded 5%. Following the strike the Hardman Committee advised these restrictions be lifted in areas of

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<sup>84</sup> *Ibid.*, pp.55-56.

<sup>85</sup> *Ibid.*

<sup>86</sup> POST 17/317, Review of Postal Mechanisation, 1973, p.10; MRC: MSS.148/UCW/5/6/28 ...Postal Mechanisation – Withdrawal of Saturday Delivery, 08/08/74.

<sup>87</sup> Leeds Head Post Office employed over 1,000 full-time male staff and 83 part-time female staff. POST 17/299, Report on Leeds postal reorganisation study, p.13.

<sup>88</sup> POST 69/241, PO Board Papers, 1976, MDPC (76) 37, The Employment of Part-time Postmen/Women, 1976: Annex, Appendix A, p.1.

acute staff shortage, but the UPW rejected this at their December 1971 Conference. The 1973 decision therefore corked an already slim bottleneck in labour supply pending the comprehensive deal, prompting the PO in April 1974 to urge reconsideration, reminding the EC of forthcoming equal-pay legislation ‘and also the social climate’.<sup>89</sup>

Privately, senior management recognised the opportunity code-sorting presented for raising the part-time contingent and bringing more women into the rank-and-file grades, though women at this time were not eligible for coding work. Because PO policy was to replace temporary with full-time staff wherever possible, it was thought ‘pointless to train women at great cost if they are likely to be replaced (if only in theory) by new, established, male employees, and at short notice’.<sup>90</sup> A study group looking into this question noticed several other problems. Although they entertained the idea that ‘tradition and social circumstances’ could make women better typists and therefore better coders, the big difficulties would be in altering grading and shift structures. Shift work for women would have to be arranged around their husband’s working pattern and their domestic responsibilities, while young single women were judged less reliable with higher turnover. Pregnant women and mothers were also deemed problem categories, but older married women (ideally ex-typists) were thought to be the best segment of the female market. The general view was that although mechanisation promised a long-term rise in part-time working, the issue could be shelved in the short-term on account of the sparseness of this portion of the labour market and the inflexibilities of existing staffing structures.<sup>91</sup> Nevertheless, beyond code-sort working, the PO retained a strong interest in loosening the unions’ grip on employment restrictions as their negotiations over the lead-in payment developed.

The PO planned to submit the revalidation report in time for the 1974 UPW conference, with the hope of having a lead-in offer with a realistic chance of success. The general election and change of government complicated proceedings and a postponed special conference was scheduled for the autumn. In the event, this too was postponed as negotiations drew on, becoming exceptionally complex. In total there were four stages of negotiation between the EC and the PO between November 1974 and May 1975 when the special conference convened ahead of its annual conference. In its simplest terms, they offered a package comprising an offer to end their embargos on mechanisation and the recruitment of women and part-time workers in exchange for the abolition of Saturday deliveries, and to a minimum two hour reduction in the working week. The shorter working week was preferred to a lead-in payment in this

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<sup>89</sup> *Ibid.*, Annex, Appendix A, pp.2-3.

<sup>90</sup> POST 63/82, Report of young executives course examining the present business strategy for staffing code sorting work, October-November 1974, Section 4.3.

<sup>91</sup> *Ibid.*

scheme.<sup>92</sup> However as negotiations unfolded, a variety of permutations were aired. The PO heard the original package proposal on 19 July 1974 and responded cautiously pointing to a number of ‘formidable’ problems, though agreeing to analyse the operational and financial implications. When negotiations resumed in November, the PO would not accept the two hour reduction *or* the five day week. They instead raised their lead-in offer from 65p to 80p and offered to increase pay for Saturday work. The EC spent a month considering the offer before coming back to the table on 13 December. Tom Jackson told Alex Currall that their membership would prefer to trade the lead-in payment for a two hour reduction. The summary of this meeting published in *The Post* has Jackson outlining his reasoning to the Board:

Whilst UPW agree that mechanisation was in the long term interests of the Postal Business the changes it would bring about were massive, involving not only loss of jobs, changes in men’s office of employment arising from concentration schemes, a loss of earnings in overtime and Night Duty Allowances, but also substantial changes in office environment and working techniques... Working conditions were substantially altered in a mechanised situation and the staff was entitled to compensation in return. In the Union’s view, reduced hours were a far better compensation than money, since this bought physical relief from the increased stress arising from mechanisation.<sup>93</sup>

The board rejected this proposal, positing unacceptable damage to the level of service at a time of tariff increases. In its place they offered a choice between a one hour reduction or £1 lead-in payment. The UPW response was to point out that the one hour was worth more than £1 and asked for the lead-in offer to be increased accordingly. Further meetings eventually led to agreement on a final set of proposals to be taken to conference: an end to the embargos on mechanisation and the recruitment of part-time staff and full-time postwomen (henceforth with equal rights and responsibilities as men) in return for a lead-in payment of £1.35 per week.<sup>94</sup> The way this was to be paid was structured over five years according to future productivity improvements. Postmen and PHGs would receive a £1.15 first element payment, with a second element of 20p added once manpower savings reached a prescribed threshold. In parallel negotiations the PO Management Staffs Association (POMSA) secured a £60 per annum first element for sorting office managers with a £10 second element.<sup>95</sup>

The conference began on Friday 16 May. Tom Jackson made an emotive and energetic case for accepting the offer. He argued that this was a crucial step in repairing a postal service being fatally undermined by the effects of inflation, which threatened to increase the postal deficit and cause a loss of traffic which would lead to the loss of jobs and deterioration of the service. ‘I must tell you firmly and

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<sup>92</sup> MRC: MSS.148/UCW/5/6/28... Postal Mechanisation – Withdrawal of Saturday Delivery, 08/08/74.

<sup>93</sup> POST 115/517, *The Post*, 1975, Special Report on Postal Proposals.

<sup>94</sup> *Ibid.*

<sup>95</sup> Appendix to the Carter Report, p.319-20.

flatly that I cannot get more than £1.35. To send me back for more is to reject mechanisation'. He continued: 'Those of our members who are opposed to mechanisation... are saying we cannot afford the capital expenditure or increased pay. These are the people who see no further than the end of their nose'.<sup>96</sup> He described attempts to abolish the Saturday delivery as 'the most strenuous negotiations I have ever been involved in' and on the issue of the recruitment of women, he attacked journalists in *The New Statesman* and *The Socialist Worker* who depicted the UPW as anti-female and insisted that with legislation on the way, it was time to accept the recruitment of fulltime postwomen as a matter of urgency. 'A grave responsibility rests upon delegates to this conference', he concluded. 'You can reject the advice we have given – what you will be unable to reject is the recriminations of your members. For it is their jobs, their livelihood, their earnings and their conditions which are at stake'.<sup>97</sup> The EC was challenged by 'Corby' who argued that the proposals were not in the best interests of the staff or the public. He claimed that traditional manual sorting remained preferable to the MLO scheme and the public had failed to use postcodes. A number of delegates rallied to support the EC. 'Who is Corby Kidding?' asked one delegate. 'Can't he see that mechanisation is the last chance of saving jobs?'.<sup>98</sup> Jackson replied along similar lines and added that the reason for a lack of postcode use by the public was that the scheme had ground to a halt when the embargo started. Once cooperation resumed, a comprehensive publicity campaign could begin. In the event Corby's amendment was rejected, the offer was accepted and the embargo ended.<sup>99</sup> Resumption was carried by 6863 to 4407 votes.<sup>100</sup>

Despite the absence of new machine installations, it should be noted that thirteen MLOs were operative between 1972-1975. Staff at these offices experienced their own transitions which were monitored by Headquarters staff. The revalidated Plan was still a long way from national integration with all the "critical mass" financial and operational benefits this promised. A forecast of 81 MLOs meant that between six and thirteen installations were scheduled per year up to 1981 (Table 4.2). Though further delays meant the full system was not completed until 1985,<sup>101</sup> this meant in 1975 that the major human aspects of implementation were to be tackled on a greater scale than before and this was spelled out in the revalidation report.<sup>102</sup> The history of the preparations made for this is explored in Chapter 6.

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<sup>96</sup> *Ibid.*

<sup>97</sup> *Ibid.*

<sup>98</sup> *Ibid.*

<sup>99</sup> *Ibid.*

<sup>100</sup> POST 69/240... MDPC (75) 39: Major Decisions at 1975 UPW and MSA Conferences of Concern to the Postal Business, Appendix 1.

<sup>101</sup> This is the date most often stated officially, although London Western District Office did not start coding until the summer of 1987.

<sup>102</sup> POST 17/317, Review of Postal Mechanisation, Annex 5, p.3.



**Table 4.2: Forecast dates for the revised programme of installations<sup>103</sup>**

Equipped already	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81
Aberdeen	Bristol	Dartford	Bradford	Belfast	Bournemouth	Bath	Bromley
Brighton	Derby	East Central Inland Section (London)	Chester	Chelmsford	Canterbury	Enfield	Crewe
Cambridge	Doncaster	Leeds	Glasgow	Coventry	Carlisle	Harrow	Ipswich
Cardiff *	Guildford	Newcastle	Liverpool	Edinburgh	Darlington	Kingston-upon-Thames	Northampton
Croydon	Redhill	Reading	Medway	Exeter	Hemel Hempstead	Leicester	South East District Office (London)
Huddersfield	Romford	Slough	Milton Keynes	Gloucester	Hull	Perth	Southend
Newport		Teeside	Nottingham	Stockport	Motherwell	Stevenage	Swindon
Norwich		Worcester	Peterborough	South West District Office (London)	Northern District Office (London)	Tonbridge	
Preston		Birmingham	Portsmouth	Twickenham	North West District Office (London)		
Sheffield		Eastern District Office (London)*	Shrewsbury	Western District Office (London)	Oldham		
Southampton		Manchester	Swansea	Wolverhampton	Oxford		
Stoke-on-Trent			Watford		Plymouth		
West Central District Office (London) *					Wigan		
York *							

<sup>103</sup> POST 17/187, Postal Mechanisation Policy, 1974, Appendix 2. Offices marked \* had equipment installed that was not in operation due to the embargo.

When the Carter Committee was formed in 1976, the PO was invited to explain the revalidation and comment on how it contributed to a resolution, including the lead-in payment affair. Their submission is here quoted at length as it provides a good summary of how mechanisation was entangled with the wider political upheavals in the industry, and reconfirms its importance in drawing all parties around a common goal. It also suggests that a turning point in resolving the embargo was the return to power of the Labour government in 1974, who were ready to be more flexible in interpreting how the continuation of the national incomes policy should apply to the nationalised industries, particularly with regards to special industrial payments.

The refusal of the UPW to co-operate in mechanisation in 1972 until there was full understanding of future intentions was a symptom of the general unease. During the course of the full review of mechanisation done in 1973, therefore, meetings were held with the unions affected to tell them about the studies being undertaken, to seek their views and to explain the benefits of mechanisation. The unions also had access to all the material collected for that review. These meetings helped to secure the agreement of the unions in 1975 to the resumption of mechanisation... In May 1974 the Government had recognised the justification for a "special payment" in respect of postal mechanisation (as well as certain other items affecting Post Office staff) out with the then current incomes policy. This concession was related to the general pay situation at that time and was not incorporated in the Special Pay Review of July 1974, but left for subsequent negotiation. These negotiations were however expanded by the Union to cover a range of matters, notably withdrawal of Saturday delivery, shorter working week and employment of women...The first element payment has to be seen in the wider context described above rather than as narrowly identified with new mechanisation schemes... In addition to the pay settlement there has been considerable effort to overcome the industrial relations problems inherent in a major change of the mails systems. Much attention has been paid to the design of mechanised offices and equipment, and plans for each office are discussed and agreed with the unions involved before implementation.<sup>104</sup>

The Carter submission concluded with a reminder that the PO considered these matters in international context and the global problem of labour intensity and the near-universal pursuit of mechanised sorting. From contrasting the British experience with similar, foreign projects, the conclusion of engineers, management and the union ECs was that no better long-term solution than the combination of code-sorting with productivity programmes was on the market. The embargo in Britain was problematic and linked to the combusive industrial politics of the time, but in international context, Britain's problems had parallels, not least in United States Postal Service where industrial action over

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<sup>104</sup> POST 151/uncatalogued, former ref: CH/C/0501, Post Office Review Committee: Post Office Notes, 1976-77, Postal Mechanisation, October 1976, pp.3-4.

machine-paced sorting was the source of severe protests.<sup>105</sup> The wider picture was that if the PO was to take its long-term responsibility to its customers seriously, it needed to reduce its dependency on labour and invest in more efficient handling systems. On this view, the speedy pursuit of mechanised sorting was the justified policy so long as it continued to be scrutinised regularly.

## Conclusion

In assessing the significance of the revalidation, it is important to remember that it was not solely concerned with finding the course of least resistance, or even in proving again the financial viability of mechanisation, though this was clearly a primary function. Discounting the details of the revalidation's financial side, the Board knew that the total future investment it proposed, though considerable in its own right, was dwarfed by the annual expenditure of the PO as a whole. Great stock was also placed in the importance of Britain's international standing in postal automation and in meeting the expectations of public and commerce. 'It therefore made sense to persevere, even if only to avoid a massively disruptive change of plan', Duncan Campbell-Smith has commented. 'This way lay the future of the postal service, whatever the financial complications of the day'.<sup>106</sup> Financial questions were, of course, central and the figures for Option 2, with its reformulated plan reducing the proposed number of MLOs from 120 to 81, were carefully calculated and subject to external audit and, to an unprecedented extent, staff-side scrutiny. Even the DCF results, which used more cautious assumptions, were consistent with the prevailing judgement of senior management and engineers that the LPP should continue in revised form. Furthermore, the implications of financial forecasting permeated the other areas as a consequence of the interrelation of the different aspects of code-sorting. However, as the PO later acknowledged, the revalidation's value was, equally, political. The impetus behind it was the UPW's embargo decision in 1972. Between then and the acceptance of the £1.35 package deal in 1975, the revalidation was the single most important factor (other than the lead-in payment) in striking a new accord between the two sides of industry. This was primarily due to its open, democratic and consultative approach, which more credibly involved the staff as stakeholders in re-planning the future shape of the system. Seen in the context of the ongoing formalisation of the PO's joint consultation machinery, it becomes clear that the rising wave of consultation and negotiation, inherent respectively in the revalidation and lead-in payment, suggests that the concrete issues of mechanisation offered both sides a forum in which post-strike industrial relations

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<sup>105</sup> Baxter, 'Process of Change', p.295.

<sup>106</sup> Campbell-Smith, *Masters of the Post*, p.520.

could be rehabilitated. Unions became involved in planning for the future in new ways; management reacted to new financial constraints with a corporate, rather than a unilateral, approach; and engineers brought new ideas to the field of modelling, situating the revalidation within the broader framework of building a robust forecasting apparatus for the mails system.

That political calculations of bargaining and compromise were central to the revalidation is consistent with the findings of industrial sociology in this period. In the wider economy, survey data suggests that firms that had recently experienced a strike were statistically more likely to involve IR considerations in capital investment decisions. This prompted Eric Batstone, the academic most familiar with the PO in this period, to argue that ‘... industrial action is the crucial factor in explaining the centrality of personnel and industrial relations considerations in fixed capital investment decisions’.<sup>107</sup> Moreover, the evidence supports the view that the increasing primacy of compromise rather than conflict as a management strategy was more than an empty or cynical gesture. In their study of the car industry Paul Willman and Graham Winch highlighted similar consultation practices at British Leyland. ‘In practice’, they discovered, ‘[union] participation acted as a sounding board for managers' ideas. It allowed BL to impress upon union representatives the difficulties and complexities of change and to rehearse ideas which subsequently arose in negotiation. The unions, however, did not find it an effective means to modify management suggestions or proposals’.<sup>108</sup> This stands in contrast to the PO’s revalidation and subsequent package deal, where there was more substance to union consultation and where the two demands of the embargo were met: first, by involving the unions in a comprehensive review, and, second, in sharing the future savings of the LPP with the staff. In the next chapter we see that over the same period, this pattern was repeated at the technological level, where, in the design of a second generation of machines, staff-side interests played an important role.

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<sup>107</sup> Batstone, *Working Order*, p.47.

<sup>108</sup> Paul Willman and Graham Winch, *Innovation and Management Control: Labour Relations at BL Cars* (Cambridge: Cambridge University Press, 1985), p.108.

## Chapter 5 Continuity and change in R&D: second generation machines and the “Easy View” coding desk

### Introduction

This chapter addresses developments in research engineering between 1972-5 and the extension of consultation over R&D and the working environment. This period saw a transition to a second generation of machines with particular attention paid to developing a new coding desk, the so-called “Easy-View”, which saw a ‘fundamental redesign’ and halved production costs.<sup>1</sup> This was significant in that its design objectives were better shaped by the psychological and physiological needs of operators. I argue that this shaping took place as both a natural outgrowth of past R&D and in response to staff-side criticisms of the first generation of machines. Lines of development were also fine-tuned by the effects upon the PO of poor economic conditions. The ongoing redesign of machines was incorporated under the revalidation umbrella, encouraging engineers to alter their philosophy of development and give greater priority to ergonomics. However, as is shown here, this should be balanced against the fact that postal R&D was long-established with its own unique culture and history, something that has not been sufficiently emphasised by critics who have suggested that PO engineers were uninterested in the human side of design.<sup>2</sup> The issues addressed in this chapter are therefore centred on both the machines and their makers. I will explain who was responsible for which aspects of the R&D process and how the second generation of machines differed from the first. I argue that alterations to design priorities took place between the late 1960s and the early 1970s and that this was consistent with the wider extension of staff-side consultation and changes in the commercial environment. This included an organised effort to learn from the first phase of implementation, a greater focus on computing power in improving machine performance, a greater focus on cost-effectiveness in response to cuts in funding and, above all, the wider application of so-called “human factors” research to improving the working environment. Overall, there was both continuity and change in postal R&D over this period. Continuity in that a rounded design philosophy was in place during the 1960s, balancing technical, operational, human and financial needs. Change in that, once it was clear that mechanisation was viable in practice, there was a shift towards improving existing designs and adapting them, both to lessons learned and to political and economic changes at large.

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<sup>1</sup> POST 17/187, Postal Mechanisation Policy, 1974, p.9.

<sup>2</sup> Corby, *The Postal Business*, pp.207-208.

The success of the Easy-View coding desk is evident in that it became the standard model used in Britain for the next 25 years. The first batch went live at Redhill, Surrey, in 1975. Thereafter huge numbers entered service, the last being decommissioned in 2003.<sup>3</sup> The Easy-View was the high point of PO coding desk design in terms of novelty, durability, effectiveness and ease of use, and the PO put right some fundamental problems in its second attempt to master the intricacies of the man-machine interface.<sup>4</sup> Later audits of the performance of code-sorting were critical of the context in which the Easy View was used, but this was part of a mid-1980s debate about how to move beyond the need for human coding within the sorting office environment.<sup>5</sup> In describing the process by which design specifications were selected and prioritised, more evidence is added to the argument that the PO's record ought to be viewed more charitably and that there was a constructive side to this notoriously tumultuous period. Roderick Martin has noted that, in 1970s Britain, consultation and union participation was often little more than a superficial gesture. It was rare for joint institutions between unions and management to have much practical effect on the specifics of technological change, stemming from the incompatibility between joint consultation and the adversarial nature of collective bargaining over wages.<sup>6</sup> This divergence of interests tended to preclude union representation, where it existed, from having a voice in the R&D process and there are examples of organisations using the introduction of new technology as a means of asserting management authority in industries with troubled industrial relations.<sup>7</sup> The PO was an instance of the exception to this, in that technological change and industrial relations were more democratic and constructive. This was important in securing an orderly transition to new working methods. Paralleling the inclusivity of the revalidation of mechanisation policy, the second period of designing code-sort machinery reveals an increase in staff consultation and an explicit emphasis on addressing UPW grievances in testing and trials.

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<sup>3</sup> Campbell-Smith, *Masters of the Post*, p.520.

<sup>4</sup> I would like to thank Tom Norgate for our interesting conversations on this question. See also Worwood, 'The Evolution of a Third Generation of Letter Coding Desk'.

<sup>5</sup> POST 17/295 'Ergonomics of the Post Coding Environment: A Study of the Physical and Organisational Environment in Mechanised Letter Offices' March 1986.

<sup>6</sup> Martin, *Fleet Street*, pp.200-1.

<sup>7</sup> Martin, *Fleet Street*, p.274.

Figure 5.1: First generation coding desks<sup>8</sup>



Figure 5.2: Second generation "Easy View" coding desks<sup>9</sup>



<sup>8</sup> On the left is an early model, POST 118/5288. On the right is a later model used at Romford from 1968-79, now held by the BPMA in storage, accession number OB1994.0112. Image retrieved on 01/06/10:

<http://postalheritage.org.uk/collections/museum/postalmechanisation/sorting>

<sup>9</sup> On the left is the Easy View in operation, POST 118/5015. The one on the right was used at Twickenham from 1975-2003, now held by the BPMA in storage, accession number 2003-0520. Image retrieved on 01/06/10 at <http://postalheritage.org.uk/collections/museum/postalmechanisation/sorting>

## The settings and structures of R&D and the role of Telecoms

The core of mechanisation R&D had long been centred on Dollis Hill Research Station, the epicentre for PO applied science and technical innovation. Opened in 1933, Dollis Hill gained its reputation as a world class industrial laboratory thanks to contributions to computing, telephone and satellite systems. During the Second World War it was the site for the construction of the code-breaking Colossus. Its post-war research programme focussed heavily on the telephone network, such as switching circuit theory and thermionic valve research.<sup>10</sup> Among Dollis Hill's success stories were the co-axial cable, capable of carrying over 2,000 telephone calls at once, the electronic telephone exchange for long distance trunk dialling, and the Goonhilly Relay Station in Cornwall which facilitated the first cross-Atlantic signals via the *Telstar* satellite in 1962.<sup>11</sup> During the early 1960s more staff were added, including mathematicians for calculating satellite orbits and programmers for advanced industrial computers such as the National-Elliott 803. This influx was matched by a widening research agenda and the growth of an in-house library, to which some 300 books were added per year and 9,000+ more loaned in. Its published output was also considerable.<sup>12</sup> By 1969 there were over 1,500 staff working at what had by then become an overpopulated and 'exhausted' site.<sup>13</sup> It was this outstanding pool of expertise that encouraged Anthony Wedgewood Benn in his vision for the PO as a revolutionary, science-based 'Ministry of Communications'.<sup>14</sup>

In their graduate recruitment literature, the Engineering Department invited prospective scientists and technicians to spend their careers improving a communications network of global significance. 'The life of the nation depends on the efficiency of the extensive postal and telecommunications system which serves us at home and links us with the rest of the world', explained a 1959 recruitment brochure. 'It is the Post Office engineer who is responsible for the design, provision and maintenance of the equipment which comprises this system'. New entrants, usually holding three A-levels and a technology-related degree, were generally welcomed with a secondment to a telephone exchange, in private industry or placement abroad, before settling down and specialising. 'At Dollis Hill' there was promised 'great

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<sup>10</sup> POST 69/28... BP 8 (46), Engineering Research, pp.4-5.

<sup>11</sup> POST 76/27, Engineer-in-Chief's Report, 1936-1949, 1937, p.9 ; 1938, Appendix F. POST 92/15, PO Report and Accounts, 1962, pp.24-25; 1963, p.15.

<sup>12</sup> POST 76/31, Engineer-in-Chief's Reports, 1961-3; Annual Report 1960-1, p.115; and POST 69/84... POB (69) 116, Move to Martlesham, June 1969, Annex 1: R&D Objectives, Annex 1.

<sup>13</sup> Staff numbers were recorded as 800 in 1959, 1,200 in 1960 and 1,500 in 1969. POST 76/128, University Scholarships for Student Apprentices in Electrical, Electronic & Mechanical Engineering, 1959, p.11; POST 69/68, PO Board 1960, POB (60) 42: Mechanisation and Buildings Department Progress Report, July 1960, July Board Proceedings, p.2; POST 69/84... POB (69) 116, Move to Martlesham, p.1.

<sup>14</sup> POST 92/15, PO Reports and Commercial Accounts, 1960-66, 1965, p.7.



opportunities for the man with an enquiring mind; electronics, micro-wave radio, quartz crystal, supersonic waves, postal mechanisation – all these and many more equally fascinating subjects are studied and developed to keep Britain in the forefront of world communications'.<sup>15</sup> The most senior engineers often stated that the department's breadth of research and record of achievement helped foster a culture of excellence. Spectacular breakthroughs in satellite and intercontinental telecoms were held up as benchmarks of scientific and technical ingenuity, serving to 'sharpen the technical imagination of staff, as well as proclaiming the Department as a science-based forward-looking unit in a progressive Post Office'.<sup>16</sup> Increasingly in the post-war period, the PO came to rely on its scientific and technical expertise which was both of a high calibre and diverse in practice. Even after the capital restrictions which flowed from the 1971 crisis, total annual expenditure at Dollis Hill stood at £20.4m, some 3% of total capital expenditure. From this, postal R&D received a budget of £1.3m per annum.<sup>17</sup>

Postal R&D was therefore historically embedded in the larger structures of telecoms R&D.<sup>18</sup> At the broadest level telecoms R&D saw its purpose as integrating basic research with applied science for the benefit of the business; a concept that held equally for the postal side, with which it shared both material facilities and a cross-flow of expertise. Strictly speaking, the work of R14, the main postal division of R&D, was performed by telecoms on an agency basis. However responsibilities for decision-making and establishing new directions in design rested in large measure within the postal service, with engineers and planning staff often working in tandem in both R14 and the Postal Mechanisation and Buildings Division (PMBD). The division objectives for R14 were 'to study new devices, materials and systems of potential engineering value to the Postal Business, and... to develop prototype equipment and carry out field trials'.<sup>19</sup> With a number of its key development projects in fact based away from Dollis Hill at sites in London such as Gresham Street and Calthorpe House, this raised questions about the need for telecoms involvement at all. The PO Board authorised the annual budget and postal R&D policy was ultimately governed by PBMD where design decisions were approved by an R&D Steering Group, of which R14 was a prominent member (although this group had in fact appropriated its 'system of project definition and approval' from telecoms). When the role of telecoms in postal design was posed in the R&D Annual Report for 1975, much weight was given to 'strong links' between the two concerning common technical features such as 'opto-electronics', 'signal processing', 'human factors', as well as mathematical and

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<sup>15</sup> POST 76/128, University Scholarships for Student Apprentices in Electrical, Electronic & Mechanical Engineering, 1959, p.1.

<sup>16</sup> POST 76/32, Engineer-in-Chief's Reports, 1964-5, Introduction.

<sup>17</sup> POST 92/17, PO Report and Accounts 1971-72, p.16.

<sup>18</sup> Monopolies and Mergers Commission, *The Inner London Letter Post: A Report on the Letter Post Service in the Area comprising the Numbered London Postal Districts*, (London: HMSO, 1980), p.34.

<sup>19</sup> POST 119/29, Postal Engineering Research Annual Reviews... 1975, p.1.

computer programming techniques.<sup>20</sup> As the report elaborated, there were less tangible but equally important reasons for a close relationship with telecoms, such as a shared design philosophy...

“Should postal engineering be carried out in THQ Research Department?” Yes. Being situated within a larger organisation enables cross flow of expertise in parallel specialisms, keeps standards high in an environment of professional comparison and enables specialists to be easily drawn in for short term projects from other fields without limiting their career prospects... R14 remains convinced that the scope of automation will increase and the introduction of what is loosely termed “robotics” is not far off. But whatever areas the Division moves into it is perhaps even more important that the work is closely allied with a systems approach and that a close relationship should be maintained with those in the Postal Business who are responsible for developing the operating systems of the future... If research is to be directed efficiently there is a need to link it with longer term planning in the way that applies to the Telecommunications Business.<sup>21</sup>

Pay and conditions for design engineers also mirrored those in telecoms, from the maintenance grades to more executive roles, with ‘recruitment, promotion, and training... organised on a common basis at many levels’.<sup>22</sup> At Dollis Hill, once the national mechanisation scheme was known to be imminent in 1966, the number of student apprenticeships, bursary and sandwich courses increased.<sup>23</sup> The conditions of entry for the most senior grades displayed a departmental preference for youth and talent, and a flexible attitude towards career development in which postal planning or field management was as likely as dedicated R&D work. Potential Executive Engineers under 35 years old were preferred, holding a First or Second Class degree in electrical or mechanical engineering, mathematics, physics, chemistry, polymer science or computer science. Alternative credentials were accepted, including corporate membership of the Institute of Electrical Engineers, or Radio or Production Engineers. A 1980 recruitment brochure spoke of promotion opportunities in engineering development, Headquarters departments or national planning, generally located in central London. Training lasted for 10-20 weeks including stints at the Postal Management College in Rugby and visits to operational sites around Britain.<sup>24</sup>

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<sup>20</sup> *Ibid.*

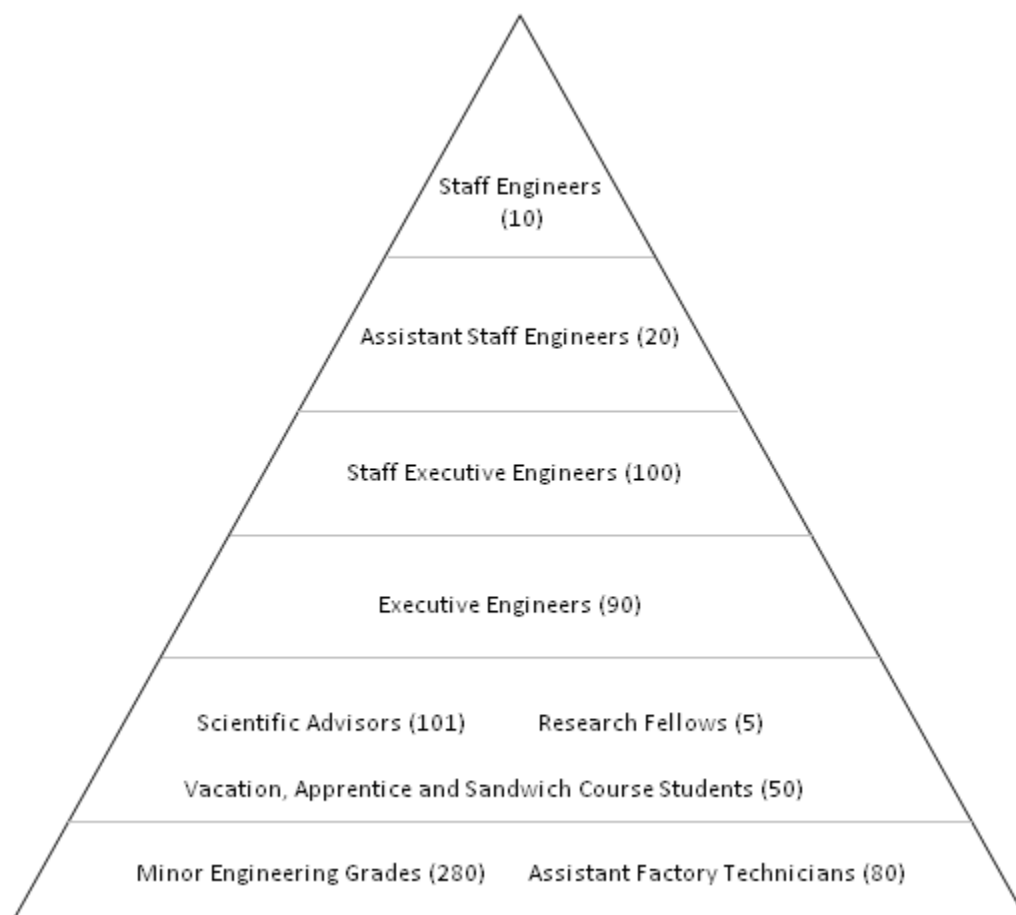
<sup>21</sup> *Ibid.*, pp.10-11.

<sup>22</sup> POST 60/301, Summary of engineering staff trees in the Postal business, the pay history of Post Office Engineering grades since 1966, and a discussion paper on the position of engineering, motor transport, and allied technical staff in the Post Office following separation from the Telecommunications side, 1979-1980, Discussion Paper: The Position of Engineering MT and Allied Technical Staff in the Post Office Following Separation, October 1980.

<sup>23</sup> POST 76/33, Engineer-in-Chief’s Reports, 1966-7, p.24.

<sup>24</sup> POST 60/301... engineering staff trees.

**Figure 5.3: Major staff groups by seniority at Dollis Hill Research Station, 1969<sup>25</sup>**



By the early 1970s a new technical paradigm utilising micro-electronics was anticipated by system planners in telecoms as the work in the field expanded in preparation for a new generation of digital exchange equipment known as *System X*. This factored into plans begun in 1968 for a move out of Dollis Hill to a new 100 acre site on Martlesham Heath in Suffolk, intended to provide a ‘modern stimulating environment’ to help attract and retain high quality staff. Fourteen departments, including R14, were gradually transferred to the 32 laboratory buildings which made up the Martlesham facility, officially opened by the Queen in 1975.<sup>26</sup> Over 1,500 staff, including 500 ‘high calibre’ engineers and scientists were relocated.<sup>27</sup> The Engineering and Personnel Departments corresponded over the IR implications and together established the ‘Martlesham Move Committee’ to facilitate communication over accommodation, productivity and training. Though the move was clearly necessary for the future health

<sup>25</sup> Based on figures given in POST 69/84... POB (69) 116, Move to Martlesham.

<sup>26</sup> PO Report and Accounts 1975-76, p.9.

<sup>27</sup> POST 69/84... POB (69) 116, Move to Martlesham, Annex 1.

of R&D, it created short-term upheaval. The purpose-built accommodation earmarked for R14 was given over to priority work on semiconductor processing for six months, leaving the department out-housed, at some inconvenience.<sup>28</sup> Some 800 Dollis Hill staff were moved to temporary accommodation in Martlesham, Ipswich and Felixstowe as the transfer took place.<sup>29</sup> Postal R&D was therefore performed at numerous sites while maintaining a presence at Dollis Hill and, later, Martlesham. Its professional culture was to some extent shaped by the state of the telecoms field in Britain, bringing with it the longstanding benefits of unique, specialised knowledge in overlapping areas of applied science and a larger organisational structure for research than would be justified by the economics of mechanisation in isolation. Martlesham became the centre of research on OCR and high speed mail handling, and where research into the manual dexterity of coding desk operators and Human Factors took place.<sup>30</sup> On Studd Street, London, Telecoms oversaw the development of the inks used for stamp cancelling and fraud-protection on tax discs and postal orders.<sup>31</sup>

The PO was the principal agent for most R&D, augmented by contracts with selected firms. R14 and PMBD together oversaw a number of Design & Development Divisions (DD1, DD2 etc.), comprising small working groups of two or three people specialising in aspects of mechanical or electrical design. At various points in a project, their drawings were handed to a workshop at London's Mount Pleasant Sorting Office where they helped build prototypes to be 'de-bugged'. David Evans, who later became Royal Mail's Head of Design, began his postal engineering career in 1971 working on electrical design under Cliff Wicken, then Head of DD1, sited at Telecoms Headquarters at Leith House on Gresham Street. Wicken was known as a 'no-nonsense' boss with a keen sense of humour and a preoccupation with spending as little of the PO's money as possible. Another colleague who joined as a student apprentice at the same time was John Backhouse, who was obsessed with Rover cars and player pianos with which he sometimes busked outside London's theatres.<sup>32</sup> The testing for the second generation machines took place at a new laboratory at Calthorpe House. This was over the road from Mount Pleasant and in 1970-1 took over the work formerly undertaken in the workshop in the Mount's basement. Twice a day, a minibus shuttled engineers such as John Harrison, Aubrey Walker and Mike Ferro between the different sites. The lead engineer at Calthorpe House was David Gubby, later succeeded by Barney Newton and Dave Evans, who directed operations in the machine shop and electronics lab where test rigs were built to test prototypes. His staff included Terry Klee, Mike Greenberg, Ray Paris and Ray Northfield and their work

<sup>28</sup> POST 119/29... Postal Engineering Research Annual Reviews... 1975, p.11.

<sup>29</sup> PO Report and Accounts 1973-74, p.14.

<sup>30</sup> POST 151/uncatalogued, former ref: CH/C/0501, Post Office Review Committee: Post Office Notes, 1976-77, Postal Research and Development, Operational Research and Long-Term Planning, October 1976, pp.1-2.

<sup>31</sup> Tom Norgate, 'Postal Mechanisation at Calthorpe House', in *Ident: Journal of the Postal Mechanisation Study Circle*, Vol. 35, 1, pp 16-18.

<sup>32</sup> David Evans, 'A Life in Automation', a lecture given at the British Postal Museum & Archive, 30/10/07

covered several key aspects of the new generation of code-sort technology such as the development of coding desks, printing systems, microelectronic memory, high speed sorting, segregating and culling units and, later, video coding and email.<sup>33</sup>

Evans remembers ‘a strange, competitive environment’ between the different Development Divisions. Extremely tight time limits for testing fostered a ‘gung-ho’ attitude of ‘get-the-project-planned-up’ with minimal time built in for understanding, correcting and learning from errors (something he believes Royal Mail and business in general has never properly addressed).<sup>34</sup> The outside equipment manufacturers, with whom the PO had a close collaborative relationship, entered at the earliest opportunity in the pre-production phase. The bulk of postal engineering’s annual £1.4m budget was spent on developing letter mechanisation in-house, with two-thirds going to PO staff and the remainder spent on contracts with industry, consultants and universities. The specialised and long-term nature of hybrid electro-mechanical R&D made this arrangement necessary. The use of live mail, for instance, was invaluable for testing machines in real-world conditions at high-technology sites such as Mount Pleasant and Croydon Head Post Office, where a ‘constant proliferation of new designs’ underwent testing.<sup>35</sup> Private manufacturers were denied this benefit for security and legal reasons and in keeping with the historic principle against interfering with the mail. With no guarantee of a contract, private firms were reluctant to commit their finances to specialised projects. Four firms supplied ancillary equipment, such as conveyors, elevators and chutes (GEC/Elliot Mechanical Handling, Manufacturers Equipment (MEC), Geo. Robson, and Sovex). There were four suppliers of free-standing equipment including Segs, ALFs, Coding Desks, and ASMs (GEC/Elliot Automation, Plessey, Masson Scott Thrissell, and Westlands). In 1965, under Benn’s guidance, these and other interested firms joined together to form the British Postal Engineering Equipment Association (BPEEA), with 28 members and orders exceeding £6m by 1970. ‘Inevitably the association endeavours to pressurise the PO – especially with regard to present and future levels of orders’, it was noted in a 1973 report, highlighting growing tensions with outside industry. The PO exchanged dialogue with the BPEEA to ‘develop its arguments and explain some of its problems’, but conflicts over tenders sometimes compromised the associations’ united front.<sup>36</sup> The PO believed there was a possible £300m international market of which it believed it could secure £50m. During the

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<sup>33</sup> Evans, ‘Calthorpe House’.

<sup>34</sup> Evans tells the story of once writing a memo recommending Hofstadter’s Law to a senior colleague – the adage that everything takes longer than you expect, even when you take into account Hofstadter’s Law. The file bounced back to him, simply annotated: ‘bollocks’. David Evans, interview, 14/02/08.

<sup>35</sup> POST 119/158, Postal Engineering Conference 1975, Bournemouth, 6-8 May 1975: Synopses and discussion of conference papers: CP19: Maintenance Problems on First Generation Equipment.

<sup>36</sup> POST 17/317, Review of Postal Mechanisation, Post Office Board Paper, 1973, Annex 15: Consultation with Industry on Resources.

embargo, production orders were nearing completion and the manufacturers were running out of work, leading to redundancies. Those who had not already abandoned the field were considering doing so.

There is a real danger that when the Post Office is in a position to re-activate its mechanisation programme, the supporting Industry technology and capacity essential to its success will have disappeared unless immediate action is taken towards injecting a reasonable workload into the firms primarily concerned... The high hopes that British Industry would participate substantially in postal mechanisation overseas are not being fulfilled... The virtual cessation of the mechanisation programme is having a detrimental effect on overseas customers who interpret the current revalidating as a question mark on the whole of the British system and equipment.<sup>37</sup>

Though contractor relations clearly mattered, there was little the PO could do. The issue was raised in parliament, but prospects for the government stepping in with funding were poor. The PO argued that there was still adequate competition in the field for expertise and resources to be regenerated upon resumption of letter mechanisation and that there would be no option but to pay higher prices for this when the time came.

### **Adaptation of the R&D programme to new financial and political conditions**

By the time the embargo came into effect in 1972, the financial environment for postal R&D had deteriorated compared with the promising conditions of the late 1960s. Introducing the new machinery and the postcode system had proved to be difficult. In 1970, the Institute of Mechanical Engineering in London hosted the first international postal engineering conference on mechanisation. The larger part of papers presented were by British PO engineers describing past and present developments in the design of sorting machines, their various components and sub-systems, and related fields such as postcoding. Nick de Jong, then Director of PO Planning and Mechanisation, delivered an optimistic and congratulatory plenary paper, describing the conference as ‘a very important and proud occasion’ representing a ‘climax’ to the careers of those who had been pivotal in the ‘long pioneering effort to establish this new branch of engineering’. For de Jong, John Piggott (Director Design Engineering) and other senior figures such as Geoff Copping (‘a mastermind in postal automation’),<sup>38</sup> the successful trials of the 1960s and their culmination in the LPP appeared as a great vindication for the field, and for their own leading roles within

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<sup>37</sup> *Ibid.*

<sup>38</sup> David Evans, ‘A Life in Automation’, Lecture given at the British Postal Museum & Archive, 30/10/07. Evans credits Copping with a number of important insights in how to turn, convey and manipulate letters within the machines. His books on these matters are still spread around the world’s postal administrations.

it. de Jong believed a radical reorganisation of mail circulation relying on automatic sorting appeared finally to be at hand:

Technical progress has been such that the Post Office now has at its disposal a range of equipment well able to meet its demands in the coming era of intensive mechanization; an era in which postal engineers will make ever increasing contributions both economic and social to this vital public service. ...it is possible that future postal engineers will look back on this Conference as recording the early days of this difficult marriage between mail and machine in which both inventive art and engineering science can be found. Throughout the development stages of the more complex machines, an immense amount of courage and persistence has been required by engineers, and by management. The reward is the array of equipment that is now being put into service at an increasing pace and which is described by the authors of the papers which follow.<sup>39</sup>

Though the field's sense of achievement was justified, the intervening two years had seen a number of changes to business conditions which had consequences for postal engineering in Britain and for R14 in particular.

One effect of the financial crisis was a slight cut in the R&D budget, which was sensitive to changes in the national economy. The annual request was reduced by 9% to £1.36m and spread in order to retain all 38 major research staff while curtailing the overall programme to priority projects offering the best prospects for quick returns. Blue skies, or 'free rein', work was mostly shelved. de Jong summarised for the Management Board how R&D would adapt over the short, medium and long term:

The first objective of R&D in the current financial climate is to provide the technical support, improved equipment and methods (capable of the earliest exploitation) which are required to implement the mechanisation programme with increasing financial and operational efficiency. The broad aims are to maintain, review and implement an R&D programme within an annual budget, covering basic system studies, the design of new and improved machinery and the development of code sorting equipment and associated electronic systems so as to meet the long-term future needs of the business and its possible new services, with a view to productivity improvement, reduction in manpower dependence and increased cost effectiveness; to attempt the early invention of the first prototype automatic address/postcode reading machine, and to recommend on the standardisation of mail required for a viable system. Additionally, there is a need to foster in-house competence and thereby assist the penetration of technology wherever it will benefit the business; the professional R&D staff have a vital part to play in the resulting radical changes.

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<sup>39</sup> de Jong, 'Introductory Paper', p.1 .

The level of competence must also be such as to ensure that the PO remains authoritative in postal mechanisation theory and practice.<sup>40</sup>

In outlining the adaptation of R&D to the new conditions, de Jong reminded the Board that in spite of the reappraisals underway the major benefits of mechanisation still held. Return on capital still ranged between 15-30% over a twenty year period based on realistic predictions about reductions in manual sorting. Mechanisation remained the ‘key element’ in the restructuring of the mails.<sup>41</sup> The great accomplishment of the Engineering Department had been to bring the first generation of machines to operational standards. By 1972, twelve MLOs equipped with first generation equipment had been successfully commissioned. These were Norwich, Croydon, Southampton, Newport, London’s East Central District Office, Stoke, Preston, Aberdeen, Brighton, Cambridge, Huddersfield and Sheffield. Three further installations lay idle due to union dissent in Cardiff, York and London’s West Central District Office.<sup>42</sup> In restating the department’s short term plans, emphasis was placed on studying the live performance of the first-generation systems and making incremental improvements to efficiency and cost in the light of experience. Talk of reaching first-generation ‘design stability’ co-existed with continuous fine-tuning relating to problems observed during commissioning, mail concentration, and the reactions of staff.<sup>43</sup>

Looking to the future, the ultimate goal was unchanged: the full automation of sorting in all of its stages between collection and delivery. Longer-term investigations continued into remote coding using CCTV and, as ever, the use of Optical Character Recognition (OCR) with artificial intelligence. If machines could ‘read’ the postcodes on letters with high reliability, which was still a distant prospect, the need for coding desk operators – the last significant ‘manual’ stage in sorting – was removed. R14’s continued pursuit of a viable OCR solution against strong budgetary pressures revealed a faith in the potential of their technology and gave a sense of mission to all interim designs along this path. Heading OCR Research was A.W.M. Coombes who, in May 1970, told *The Times* that the long term value of their contributions to computerised character recognition went beyond solving problems in postal sorting. His team took a cybernetic approach in modelling their future machine on three stages of human cognition: sight, interpretation and decision-making. Designing a computer which might reliably recognise patterns and shapes was a ‘first step’ towards machine intelligence, he believed.

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<sup>40</sup> POST 69/236... MPDC (71) 8: Postal Engineering Research and Development, 1971, p.2.

<sup>41</sup> *Ibid.*, p.4.

<sup>42</sup> Total machines in service by 1972: 44 SEGs and 80 ALFs at 33 offices and a further thirteen offices with a total of 248 working coding desks and 107 ASMs. POST 122/12528... MDP to DPMB (Director Postal Mechanisation Branch), cc. David Stewart, DPO, DPPG, May 1972, Annex B.

<sup>43</sup> POST 69/236... MPDC (71) 8: Postal Engineering Research and Development, 1971.



Twenty-five years from now we will be in the middle of the next revolution, following the computer revolution. Machines will be robots, doing things which are intelligent. They will do things we now say need a high degree of mental ability and agility.<sup>44</sup>

Already, de Jong and Piggott were trialling new computer programmes ‘with machine learning capabilities’ for controlling the recognition process. ‘The philosophy guiding this programme’, they wrote in late 1971, ‘provides for progress in defined stages with demonstrations of performance at appropriate points as a check on progress, feasibility and economic prospects’.<sup>45</sup> The final goal was eventually to have sorting offices controlled by a single computer overseeing all data-flow and machine operation.<sup>46</sup>

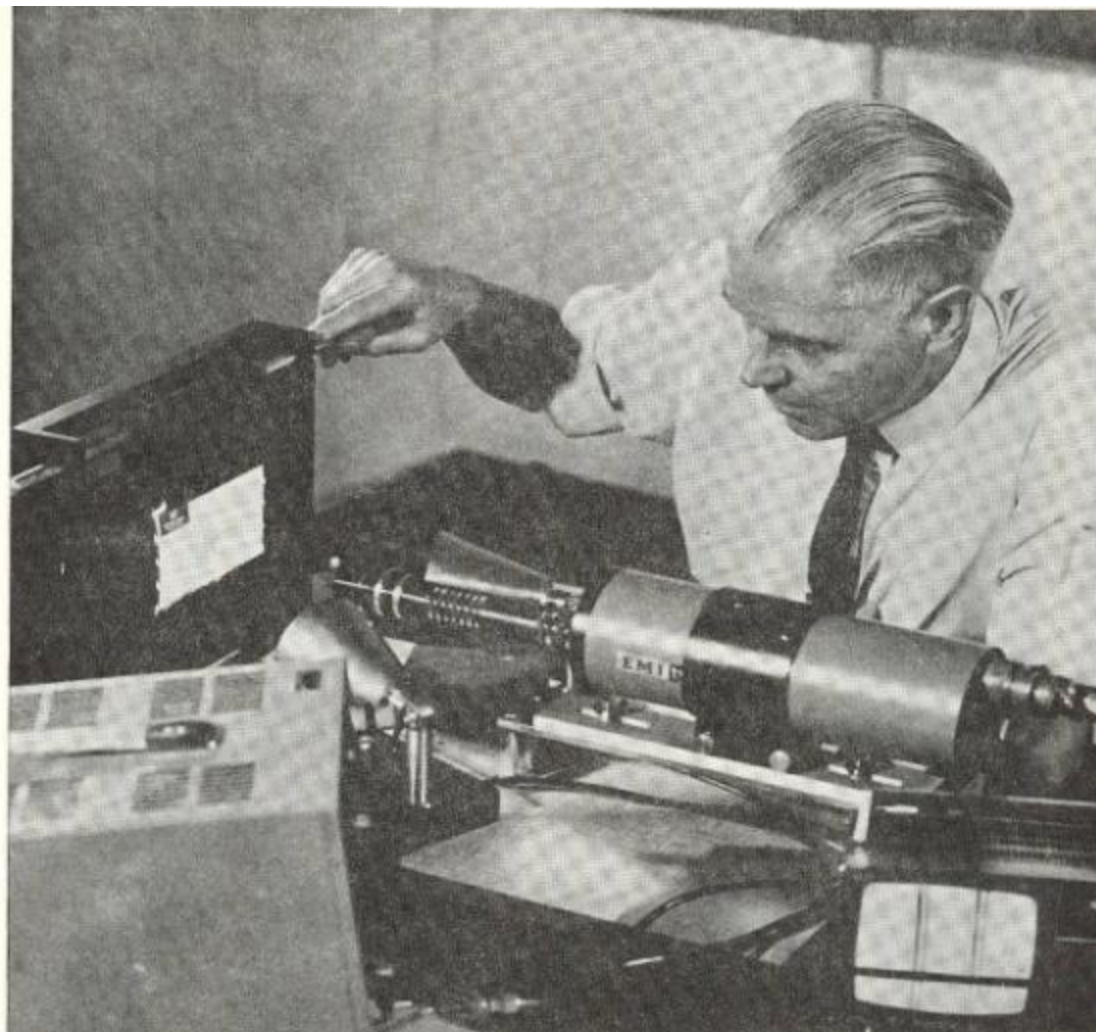
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<sup>44</sup> *The Times*, ‘Thinking Robot for Post Office’, 15/05/70, p.33

<sup>45</sup> POST 69/236... MPDC (71) 8: Postal Engineering Research and Development, 1971, Annex: ‘Postal Research and Development, 1971’ by Nick de Jong and John Piggott, pp.2-3.

<sup>46</sup> *Ibid.*, p.6.

Figure 5.4: An experiment in optical character recognition at the Dollis Hill Research Station<sup>47</sup>



In the meantime, they looked for improved medium-term solutions in code-sorting. As the man-machine interface, R14 and PMBD viewed the coding desk as the point in the system in greatest need of re-design. This was a priority reinforced by staff feedback, with urgency added by the UPW embargo in 1972 and other protests that were mostly absent when the LPP was first announced.<sup>48</sup> Criticism from outside the PO was also heard between 1972-5. As the embargo wore on, the wisdom of mechanisation and its underlying R&D was questioned in the newspapers, in Parliament and eventually in a Parliamentary Inquiry. In March 1972 the Labour Whip, John Golding, put it to Christopher Chataway in

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<sup>47</sup> POST 69/236... MDPC (71) 08

<sup>48</sup> POST 122/12528... Minutes of meeting of Joint PO/COPOU group on letter post systems planning, 28/04/70, p.1. Ryland also believed this to be a problem. POST 65/109, General Purposes Committee correspondence and minutes, 1973-1975, 6<sup>th</sup> Meeting of the General Purpose Committee, 12/04/73, p.4.

the House of Commons that ‘the slowness of the introduction of postal mechanisation is proving self-defeating and that it is thought within the business that much of the equipment being ordered will be obsolescent by the time it is used’.<sup>49</sup> In January 1973 *The Times* published details of the unused machines in London, Cardiff and York. A PO official denied mechanisation was being delayed but said that it was taking a ‘natural break’ while unions were consulted in a review.<sup>50</sup> The following year, in the House of Lords, William Anstruther-Gray, who had been Assistant Postmaster General in 1945, voiced his low opinion of the entire postcode scheme. ‘...these extra letters and numerals seem to have no rhyme or reason behind them, and ... it is almost impossible for one to remember them unless one happens to have the address in front of one on a desk’.<sup>51</sup> This echoed the popular complaint that typists and secretaries across Britain, not to mention the public, were wasting their time with codes that were not used by postmen.<sup>52</sup> The CBI, too, highlighted the frustrations of many large companies which had converted their address systems based on postcodes, at great cost, only to see no progress by the PO or any sign of a rebate for pre-coded mail. They also criticised the UPW for its obstructions which, they argued, jeopardised the future of their own industry and ‘damaged the previous high regard in which postmen were held in the community’.<sup>53</sup>

The Mail Users’ Association offered the most detailed public critique in its 34 page submission to the Carter Committee, which upheld staff concerns over the de-skilling and isolating nature of code-sorting. Though their technical brilliance was admitted, serious questions were raised about the design of the machines and of the overall system, with PO engineers accused of a failure to understand what changes sorting staff would accept in their working environments. They criticised delays in the programme, failure to implement OCR for printed business mail sooner, high administration costs, poor promotion of postcodes and increasing fixed costs at a time of uncertainty over future mail trends. They concluded that job satisfaction would be damaged as button-pushing obviated the skills of frame sorting, and that commissioning larger offices might exacerbate already tense industrial relations.

The MUA believes inadequate attention was paid to the human relations implications of mechanisation. In 1970 a conference of British Postal Engineering did not mention the problems. Industrial relations is not mentioned at all in the 350 page report. A paper of “Special Environmental Problems Associated with Mechanised Sorting Offices” was presented; however, the quality of thinking was of pre-Hawthorne standard. It commented, “sorting office fenestration can profitably be restricted to that necessary to avoid

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<sup>49</sup> Hansard, ‘Postcodes’, Commons Sitting, 22/03/72, Series 5, Vol. 833, cc. 1486-7.

<sup>50</sup> *The Times*, ‘PO Denies Halt in £83m Mail Sorting Programme’, 10/01/73, p.18

<sup>51</sup> Hansard, ‘Post Office Postcodes’, Lords Sitting, 28/06/74, Series 5, Vol. 352, cc. 1720-3.

<sup>52</sup> *The Times*, 02/09/71, p.19. de Jong responded, defending postcodes as necessary for mechanisation and efficiency in *The Times*, ‘The Advantages of the Postcode’, 05/10/71, p.20.

<sup>53</sup> Appendix to the Carter Report, p.339.

any ‘sealed in feeling’ by the staff’. MUA believes the effects on the informal work structure have been underestimated. Mechanisation will tend to result in loss of job autonomy and the breaking up of working groups. This could result in the anomie that is prevalent in many production line systems becoming a feature of postal employment.<sup>54</sup>

The MUA denied being motivated by ‘schadenfreude’, adding that the PO had ‘generated quite enough dogma on the subject of mechanisation’ and that, through higher postage costs, their members would be ‘compelled... to pick up the bills for any mistakes’.<sup>55</sup> They continued by arguing that the costing of the revalidation had been inadequately audited by the government and that mechanisation displayed the characteristic shortcomings of public sector capital investment.

The pattern is typically: over optimistic forecasts, work begins, delays occur, work continues sporadically, industry becomes “locked into” project, point of irreversibility passed, true costs revealed showing benefits illusory. At this latter stage all those with special interests point out that there is no going back and that examination of previous errors will accomplish little and may even be harmful.<sup>56</sup>

The delays and the small proportion of mail then being handled mechanically were, they concluded, bringing postcodes into disrepute.<sup>57</sup>

This critique, though justified in parts and supplemented by a sizeable alternative financial analysis, in several places presented a straw man of PO incompetence in using rhetorical language and reductionist reasoning. The criticism that PO engineers demonstrated an incurious attitude to human factors was a particular caricature. References were made to a comment at the 1970 postal engineering conference that the PO was considering building sorting offices with no natural light. D.V. Davey, an Assistant Staff Engineer, was quoted as saying: ‘I consider there is a case for a “windowless sorting factory”’.<sup>58</sup> But, in context, this was speculation during a discussion about how to reduce overly stuffy sorting offices. Davey went on to cite Croydon’s west wall which was 85% glass and raised the temperature on hot days. Others agreed that the variability of sunlight was not always welcome and that refining colour schemes and lighting configurations might be easier on the eyes. The discussion was strictly about the investigation into 25% windows in south and west facing walls and improving lighting and colour contrasts. They were cognisant, too, of developments elsewhere in industry where ‘total energy systems’ were being introduced and affecting the placing of windows in factory designs.<sup>59</sup> This

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<sup>54</sup> *Ibid.*, pp.342-343.

<sup>55</sup> *Ibid.*, p.350.

<sup>56</sup> *Ibid.*, pp.354-5.

<sup>57</sup> *Ibid.*, p.374.

<sup>58</sup> *Ibid.* p.345.

<sup>59</sup> Discussion during Session 10, in Institution of Mechanical Engineers, *British Postal Engineering*, p.347.

misrepresentation of the windows discussion was later repeated by Michael Corby,<sup>60</sup> and more recently echoed by Duncan Campbell-Smith, whose criticism was based on the absence of the term “industrial relations” in the index of the proceedings of the 1970 postal engineering conference.<sup>61</sup>

Very little in the MUA submission will have surprised POMB who saw it as an elaborate version of arguments increasingly heard from within the PO after 1971. Some criticism was felt to be constructive, some politically motivated and some ill-informed, but, taken together, these were pressures keenly felt. During a dispute in 1971 between R&D and Training Division over the quality of staff training experiments, Copping asked Training for a more detailed, thorough approach in procedures at Croydon where there were problems with the methods used for acquiring data on, and monitoring the performance of, operators. When D.V. Davy, who was by then Head of Training, took the critique as an insult (‘If you were not such a nice chap I would be writing you a very rude reply’), Copping reminded him of the virtues of a thick skin when trying to implement change. ‘I cannot help wondering how you would have reacted to the criticism open and implied that we in DD1 have had to live with over the last 3/4 years’.<sup>62</sup>

In addition to outside complaints, it is evident that the core demands attending the first wave of implementation had stretched the resources and abilities of Copping and his colleagues to the limit, as he explained in his February 1973 branch report.

After the birth of the old Planning & Mechanisation Dept. [1968] my branch held its breath for two or three years for fear of a fiasco... As it turned out the commissioning and settling down period for a new office became a matter of years rather than weeks but happily the rejection of mechanisation on purely technical grounds was just avoided. I began to breathe again and development engineers ceased to be frantically occupied in patching the ship in mid-ocean just to keep it afloat.<sup>63</sup>

One response to these pressures was a more visible and prominent commitment to improving the code-sort system, later promoted as the most important aspect of the revalidation exercise.<sup>64</sup> This was not mere posturing to appease the UPW membership, but rather reflected a genuine shift in design philosophy in which worker wellbeing was elevated as a design principle. From 1971, shaped by experience of the first wave of installations, a more consistent and focussed concern with ergonomics and human factors was

<sup>60</sup> Corby, *The Postal Business*, pp.207-8.

<sup>61</sup> Campbell-Smith, *Masters of the Post*, pp.518-9.

<sup>62</sup> POST 119/896, Coding Desks: Operator Training Extract, Courier Extract, Simulator Training Machine, Development etc. 1970-1976: Copping to Davey, 30/06/71

<sup>63</sup> POST 17/281, ‘Postal mechanisation branch developments, 1972-1973, progress report on letter handling mechanisation with design photographs and drawings’, February 1973, p.1.

<sup>64</sup> POST 17/187, Postal Mechanisation Policy, 1974, p.1.

evident in statements concerning new ideas and directions in R&D. Though attempting an evidence-based understanding of human psychology and physiology was a longstanding feature of postal engineering, its significance increased after 1971. Copping's defining paper in 1958 on the future of sorting machines recognised the need for sound ergonomics as a means of improving operational efficiency. 'In any process which is controlled directly by a human operator', he noted, 'the working conditions of that operator have a considerable bearing on the overall efficiency of the man/machine combination'. But with the priority at that stage still focused on overcoming the still considerable technical difficulties, he treated questions of staff, ergonomics and psychology in a cursory discussion under the heading 'Ancillary Problems'.<sup>65</sup> In 1971, by contrast, de Jong and Piggott were presenting a case to the Management Board for extending human factors research over a wider range of engineering:

This work [human factors research] is of major significance to the labour intensive Postal Business which inevitably involves many important man-machine interfaces. Mechanisation in its earliest phases led to the initiation of PO work in this field. Present Human Factors work for the business is concentrated on tasks related to the current letter code sorting system (i.e. keyboard designs). A need exists for an expansion of this work to embrace parcel sorting and to provide a firm basis for the design of other systems involving changes in the man-machine relationship.<sup>66</sup>

Though surviving the rigors of live operation in a technical and operational sense, the first-generation machines were by no means acceptable to many of the staff expected to work them. The technology had reached a stage that demanded an ergonomic focus if the next generation in design was to maximise its contribution to sorting productivity, and so a shift in outlook was in some ways the logical development. As it happened, this coincided with a period in which emphasising the virtues of progressive, human-centred industrial design became an ever more prudent political gesture. Certainly, as Copping construed it retrospectively, it was an obvious area for improvement in code-sorting and ergonomics was the major spur to redesign of the coding desk.<sup>67</sup>

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<sup>65</sup> POST 17/172... Copping and Langton 'Sorting Letters by Machine', pp.18, 20-22.

<sup>66</sup> POST 69/236... MPDC (71) 8: Postal Engineering Research and Development, 1971, Annex: 'Postal Research and Development, 1971' by N. C. C. de Jong (DPM) and J. Piggott (DDE), p.1.

<sup>67</sup> POST 17/281, 'Postal mechanisation branch developments, 1972-1973, progress report on letter handling mechanisation with design photographs and drawings', February 1973, p.2.

## Design objectives for a second generation of machines

Shifts in R&D policy took place between the strike in 1971 and the beginning of the embargo fifteen months later. A reduction in funding prompted a streamlining of the overall research programme. Long term projects were confined, firstly, to reducing reliance on coding desks through experiments with a CCTV system that would enable some mail to be coded remotely at computer terminals in an office environment away from the sorting office floor, and, secondly, to achieving the eventual obsolescence of both coding desks and CCTV by continuing research into computerised OCR reading. Over the medium term, projects likely to produce quick savings and reduce production costs were favoured. However, in all cases, the department's design philosophy was altered by placing greater weight on human factors research and a fresh emphasis on man-machine interfaces. What effects would this have on changing the attributes of code-sort machinery? What objectives were established, by whom were they initiated, and when?

The desire for a more parsimonious solution to letter presentation had long been discussed and ideas were circulating in the late 1960s about a design in which the movement of letters was unbroken and seamless. M.S. Agate, Senior Executive Engineer, raised the issue in a discussion session at the 1970 conference:

The coding desk is the only letter handling machine in which, of necessity, the letter has to be brought to rest several times; it is the basic cause of the complexity of the machine and many elegant solutions have been produced to meet these requirements. Present day thinking is towards a simple constant velocity letter transporting system with coding and printing operations completed without halting the letter. The current philosophy is the reduction of the mechanical content of the machines with electronics as the replacement, and where maintenance procedures are built around throw-away capsules.<sup>68</sup>

Nevertheless, it is Eric Hills who is credited with envisioning a new kind of coding desk and charting its design path. Hills was a senior figure in the engineering hierarchy by the 1970s, overseeing the work of the Development Divisions, having been instrumental in the design of numerous machines and sub-systems in the 1960s, including belt systems for stacking and destacking letters, electronic scanning units and synchronisation and control systems. (Detailed minutes of meetings in 1962-3 between PO Engineering and the contractors Elliot Automation on the design of the "Reader-Feeder" unit for the SPLSM provide insight into the intricate problem-solving with which Copping and Hills engaged).<sup>69</sup> David Evans, who worked with Hills on the mechanics and control system for the Easy View, remembers

<sup>68</sup> Discussion during Session 4, in Institution of Mechanical Engineers, *British Postal Engineering*, p.175.

<sup>69</sup> POST 119/1, Letter Facing in USA, 1909-1965, Reader Feeder: Notes on meetings with PO Engineers at Lewisham and Greenwich, 1962-3.

Hills sharing his opinion that the workstations he had helped create were constrictive and ill-suited to efficient, comfortable reading.

He thought that the coding desks that were being developed at the time were inherently wrong in their design... His view was that the earlier machines that they'd had all presented the mail with the person effectively sitting bolt upright in the air looking straight across and keying the image. His view was that it would be far easier if the letters were presented in the same way that you would hold a book. So his concept was what we call the "The Easy View Coding Desk".<sup>70</sup>

Hills' ideas received consideration during 1971 as the first-generation C6 Coding Desk was undergoing re-engineering prior to expected bulk orders. Urgent time pressures at that stage confined this work to improving assembly, reliability and maintenance features, which 'precluded lengthy deliberation of fundamental design questions'. Thereafter, Hills had the opportunity to elaborate his concept and it was soon favoured over a competing two-window design similar to the C6, to the extent that top-down coding was in time recognised as obsolete.<sup>71</sup> From the financial and operational perspectives, it had the great advantage of mechanical simplicity compared with its predecessors, which gave credible prospects for greater reliability in use and a potential 50% reduction in production costs.<sup>72</sup>

These were among the conclusions of a review into all aspects of the coding desk in which special attention was given to 'operator comfort, mechanical simplicity, reliability, cost and compatibility with other machines in the letter-sorting system'.<sup>73</sup> These were the main operational requirements established:

- a. Unlike the previous design of coding desks which had a height of approximately 2m, the new coding desk had to be designed to a height approximating to that of an office desk.
- b. The coding desk should be ergonomically matched to the operator.
- c. The capital cost should be low.
- d. The floor space taken up by the coding desk and its operator should not exceed that of the earlier types of coding desk.
- e. The supply of letters to a suite of coding desks should be replenished automatically from a single letter feed point. (This requirement was later dropped in favour of the hand loading of individual coding desks.)
- f. The coding desks should fit together to enable a coding suite to be assembled, and positioned such as to be compatible with the office traffic-flow pattern, thus minimising the transportation of mail within an office.

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<sup>70</sup> David Evans, interview, 14/02/08.

<sup>71</sup> POST 17/317, Review of Postal Mechanisation, Annex 5: Report of Study Group for possible Reductions in the Capital Cost of Letter Processing Machinery and increased Effectiveness of the equipment, p.2.

<sup>72</sup> POST 17/317, Review of Postal Mechanisation, Annex 5, Appendix 2: Coding Desks.

<sup>73</sup> POST 119/900, Evans et al., 'An Easy-View Letter-Coding Desk', in *The Post Office Electrical Engineers' Journal*, Vol. 71, Part 2, July (1978), p.70.

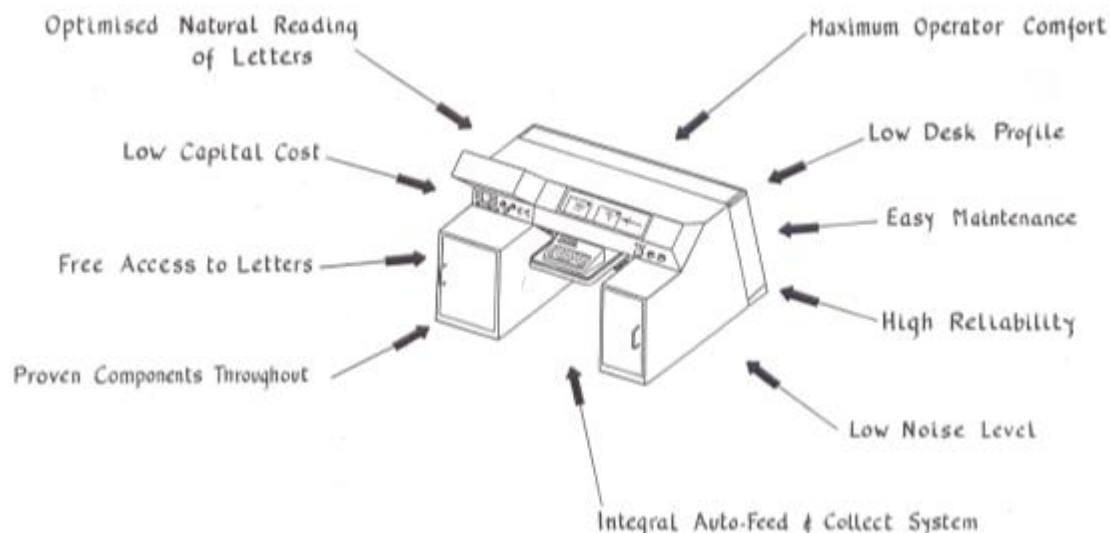


- g. After coding, letters from all the desks forming a suite should be collected by a single aggregating belt and fed automatically to letter sorting equipment.
- h. The intrinsic rate (that is, the rate at which letters can be presented to the coding-desk operator) should be fast enough to prevent frustration of the fastest operator.<sup>74</sup>

In addition, four general design constraints were specified:

- a. Simple and reliable mechanics.
- b. Low maintenance cost.
- c. Use of established letter-handling principals.
- d. Minimal effect on the sorting office environment; in particular, a low noise level.<sup>75</sup>

**Figure 5.5: Design specifications for the "Easy View" coding desk<sup>76</sup>**



The most acute need for change was in the ergonomics of how letters were presented to the operator and, explained Evans, Hills and Wicken, 'it was from this aspect that the new design of coding desk evolved. One of the prime aims of the coding-desk design was to ensure that it would fit the person required to operate it'.<sup>77</sup> Three research areas were defined for the tackling problem: letter presentation,

<sup>74</sup> *Ibid.*

<sup>75</sup> *Ibid.*

<sup>76</sup> POST 17/317... Annex 5, Appendix 2

<sup>77</sup> POST 119/900, Evans et al., 'An Easy-View Letter-Coding Desk', p.70.

physiology (seating posture, leg space, elbow room etc.) and environmental factors (noise, heat and dust). These specifications were drawn up during 1972 and were drawn in as a central feature of Engineering's contribution to the revalidation. Moreover, the Easy View was by 1973 formally incorporated into a broader project of redesign encompassing the full range of code-sort machinery, dubbed the "second generation", referring to all machines in a code-sort suite. At this level, the goals were to improve performance through more accuracy and speed in letter handling, and to integrate the different stages – segregation, facing, cancelling, coding and automatic sorting – into an automated whole. This would require automatic feeders and replenishers to tie various stages together, such as the high speed pre-sorter then being tested which added an extra stage of segregation into four stacks of mail exiting the coding desks and entering the Automatic Sorting Machines. The overall vision was for 'a new low cost integrated modular code-sorting system' to become 'the national standard for MLOs'.<sup>78</sup>

Thus the Easy View was the centrepiece of a raft of improvements to code-sort hardware and the timing of the embargo and revalidation presented an opportunity to fashion what might otherwise have been ongoing, incremental improvements into a more coherent package. With one eye on the bigger picture, redesigning the individual building blocks of the first generation system was clearly anticipated from the late 1960s. However a detailed appreciation of exactly which features needed changing and in what ways was not entirely possible until there had been time to assess how first generation machines performed live and on a wider scale than the early trial offices alone. As de Jong observed in 1971, there was a need to react to the initial wave of implementation and the problems this raised if the next phase in design was to succeed. 'The specification and design of these future machines' he wrote, 'is made possible by the knowledge and unique experience available and through feedback arising from maintenance and operational experience'.<sup>79</sup>

### **Re-engineering the working environment: noise, heat, dust and isolation**

The subject of some stronger complaints made at the UPW conference in 1972 was the increase in heat, noise and dust produced by the machines and these grievances became a mainstay of UPW commentary on mechanisation through the 1970s. For some, the spread of code-sorting was associated with deterioration in the working environment. The 24 coding desks at Brighton were at one stage described as

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<sup>78</sup> POST 119/33, Research and Development in the Postal Business; Report 1974-75; Programme and Budget 1975-76. RO Bonnett, March 1975, p.6.

<sup>79</sup> POST 69/236... MPDC (71) 8: Postal Engineering Research and Development, 1971, p.4.

‘the equivalent to 24 two-bar electric fires’ pushing temperatures over 100 °F in summer<sup>80</sup> These were longstanding issues in sorting offices studied by postal engineers, dating back in the case of dust to at least the 1930s when bag-cleaning machines and mechanical dust extractors were first developed. The dusty air created by the erosion of envelopes and wrapping fibres had long been a problem in sorting offices which was progressively exacerbated by mechanical handling. After the war, concerns about heating and ventilation at London’s Mount Pleasant precipitated a range of humidity, temperature and air quality measurements for comparison with outside industries. S. Scott of the Mechanical Aids Committee described dust as ‘an inescapable concomitant of work in sorting offices’.<sup>81</sup> The problem was still alive a decade later, despite improvements to extractor fans and bag cleaning processes. Even so, the strength of protest in the early 1970s was not anticipated by the Board before initial implementation. In 1966, after three weeks inspecting large sorting offices in America and Canada seeking reassurance that the British plan was ‘sufficiently ambitious’, the Board concluded that their own in-house R&D led to more staff-friendly machines. In contrast to the British PO, the USPS gave private manufacturers such as Philco in Washington a ‘free hand’ in designing machinery. ‘The noise level was high and certainly greater than would be acceptable in this country’, their visit confirmed. ‘Safety standards were inferior’.<sup>82</sup> They felt their optimism was justified by the fruits of the PO’s post-war design process in which union input was ever-present. Aware of the inevitability of outside scrutiny, one of the founding goals established in 1947 was to liberate the operator from the rhythm of the machine as a prerequisite for a psychologically acceptable and therefore more efficient overall system, and a major turning point in the history of sorting machine design.<sup>83</sup>

In discussions at the 1970 postal engineering conference, G.N. Davison, Staff Engineer, attributed the decision to untie operators from the rhythm of the machine to a design philosophy which had always prioritised human factors, referring especially to the ideas of John Piggott. The allocation of codes to the keys of the first 12x12 keyboard was based, he said, on ergonomic principles.

The operators had to learn and memorize two-letter codes, some logical and others arbitrary. Later the operators learned by associating particular finger positions with corresponding destinations, without any reference to alphabetical codes.<sup>84</sup>

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<sup>80</sup> POST 115/519, *The Post*, 1977, July, Annual Conference Issue.

<sup>81</sup> POST 76/27, Engineer-in-Chief’s Report, 1936-1949, PO Engineering Department Reports, 1936, Appendix F; 1939, p.17; and 1948, p.33; POST 17/454... MAC, 04/04/57, p.2.

<sup>82</sup> POST 69/78, PO Board: Papers and Proceedings 1966, POB Paper 24, ‘Postal Mechanisation, North American Visit’, February 1966.

<sup>83</sup> POST 17/453... MAC, 25/11/47, p.4.

<sup>84</sup> Discussion during Session 4, in Institution of Mechanical Engineers, *British Postal Engineering*, pp.174-177.

In a similar spirit, de Jong pointed to the Ergonomics Department at Dollis Hill and the wide range of outside experts consulted as an indication that this tradition was still alive and well. He added that ergonomics in postal automation was not an exact science owing to the many different psychological dispositions found among the mass of staff with which their machines interacted.

We may be near to inventing an apparently intelligent robot but I think we are a long way from producing the standard man which these problems of ergonomics etc. seem to me to require. One man's meat is another man's poison and what suits one doesn't suit the other. There are many variants to cope with and a compromise solution to meet partially everybody's individual tastes may be as near to the ideal indicated by the science of ergonomic studies as we can go. I have no doubt about the contribution ergonomics can make to improving the machines that we do design.<sup>85</sup>

Part of the purpose of the technical field trials in Bath, Luton and Norwich was to understand how staff reacted to different machine set-ups and to gather their views; a dialogue preserved in the correspondence that flowed between local staff representatives and the official management/engineering side. Though little organised opposition occurred during the post-war trials – on the contrary goodwill and support prevailed – many of the grievances that exploded in the 1970s had been voiced for decades on a smaller scale, with questions raised over allowances for mechanised working, shift durations and health.<sup>86</sup> Concern was expressed on the Mechanical Aids Committee from the late 1950s onwards that, in replacing traditional frame sorting, coding lessened the need for geographical knowledge and might deskill sorting – something acknowledged by engineers T. Pilling and P.S. Gerard, who in a 1961 article in the *PO Electrical Engineering Journal* wrote about the Luton trials, commenting that reducing reliance on the skill and memory of staff would mean ‘a less skilled sorter can be employed’.<sup>87</sup> When the UPW accepted the LPP in principle in 1969 they expressed caution on these grounds, warning of reservations about the machine's affects on the working environment following discussions with the Norwich branch. ‘We have in mind... such important issues as noise levels, space standards and ventilation’. The Board responded with pledges to develop special acoustic treatments in trial offices as well as redesigning the machines to minimise noise and heat.<sup>88</sup>

It was discovered after the first wave of implementation that, although there was complaint about the greater heat and noise, staff reactions were quite varied from one person to the next and from office to office. A complex picture of how staff took to the new working practices emerged in which an individual's perception of mechanisation seemed to be shaped by factors such as length of service, how

<sup>85</sup> Discussion during Session 1(a), in Institution of Mechanical Engineers, *British Postal Engineering*, p.38

<sup>86</sup> POST 122/461... Trial of SPLSM at Bath, File 5.

<sup>87</sup> POST 17/454... MAC, 04/04/57, p.2; POST 119/253... Pilling and Gerard, ‘The Luton Experiment’, p.31.

<sup>88</sup> POST 115/512, *The Post*, 1970, February Special Issue: General Secretary's Annual Report, 1969, pp.94-99.

well moving into the new building had gone or regional variations in attitudes to management policies. Some saw a certain prestige in code-sorting while others saw it as another encroachment from an impersonal Headquarters. Where industrial relations were poor, mechanisation tended to receive greater criticism. Discerning trends in the staff response was therefore problematic, prompting fresh IR research seeking first to compile staff opinions about code-sorting and then attempting to understand their political meaning. In September 1970 R.M. Tabor of the University of Warwick's School of Industrial and Business Studies completed a commissioned report, *Industrial Relations Problems of the Management of Change in the Postal Business*, which examined relations between staff and management during the commissioning of MLOS in Croydon (South London) and Newport (near Cardiff in Wales). Based on documentation, discussions with management and around 70 interviews with postmen and supervisors, Tabor concluded that grievances over code-sorting, 'which involves the working man more than any other of the recent changes', stemmed both from excessive noise ('a ubiquitous source of complaint') and isolation from fellow workers. The statement by one Croydon postman: 'You're more remote now. We seem to be split up somehow', was agreed by the majority of those questioned.<sup>89</sup> He found that coding tied people to a single position in the sorting office and made chatting with colleagues more difficult. 'I hate to be told not to talk', said one postman. 'I can work as fast when I'm talking and as accurate. I learnt to "whistle and ride" a long time ago'. Tabor observed: 'Here is a thing of value to the man at his work which he loses when he moves from the manual sorting frame to the coding desk'.<sup>90</sup> At Croydon one postman explained: 'The grapevine says the machines are the guvnors now'. There, almost 70% of staff agreed with the statement: 'The machine is controlling you now: you can't get away from it'.<sup>91</sup> Tabor argued that there was still much to do to win over the mass of the rank and file and stressed the need for better communication between local staff, management and unions and that Headquarters should pay attention to the specific problems raised over the new machines, buildings and practices.

There is at rank and file level a substantial feeling that mechanisation will generally worsen conditions; a feeling which should give cause for alarm... This is the sort of situation which fosters the unreasonable view that Post Office "high-ups" are given to an ivory tower optimism untempered by an understanding of the full operational effects of their decisions.<sup>92</sup>

Tabor concluded that more attention to staff views and ideas was needed and that the lessons learned from Newport and Croydon should guide future implementation.

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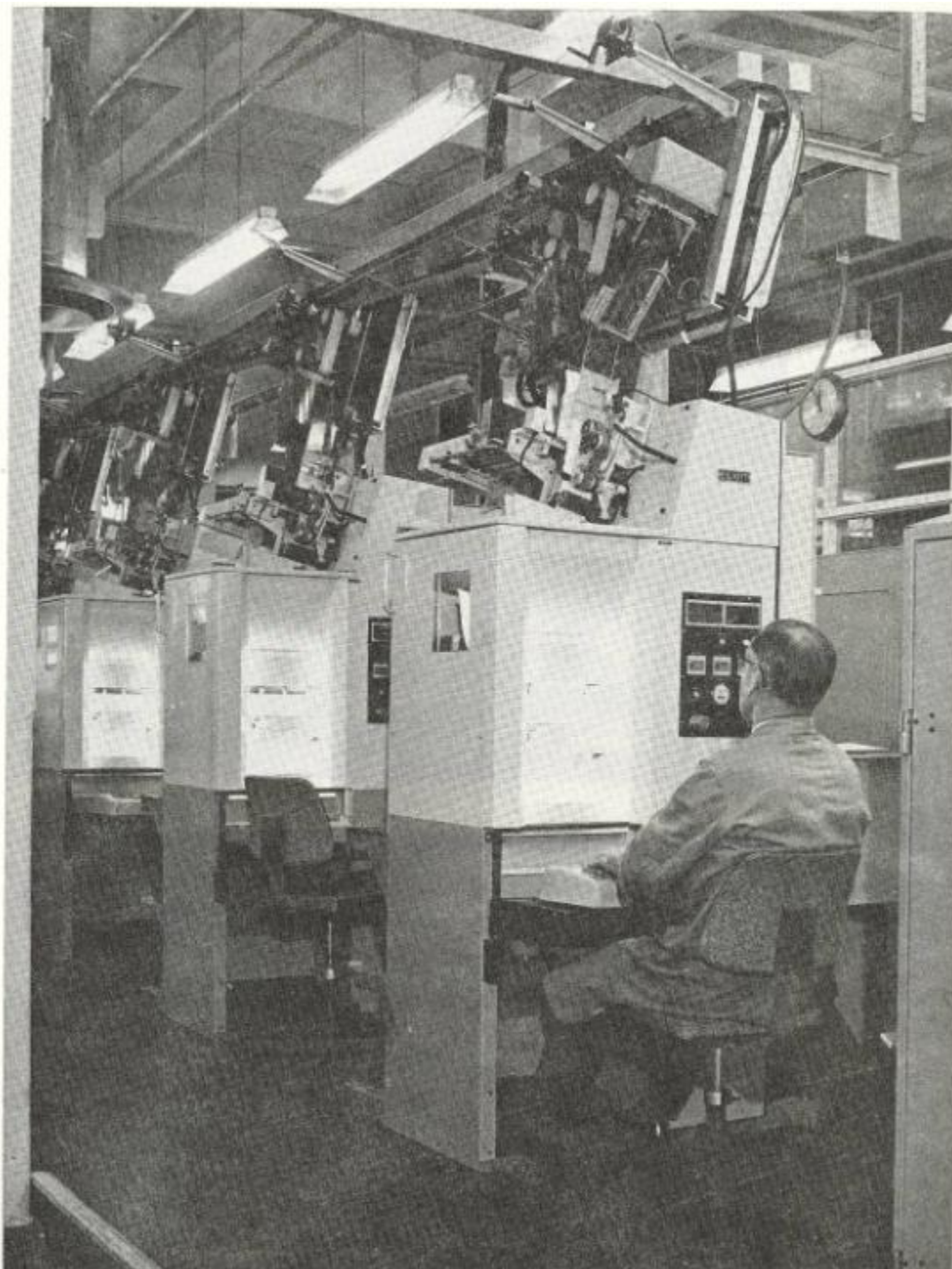
<sup>89</sup> POST 65/172, 'Industrial relations problems of the management of change in the postal business', R M Tabor, MSc dissertation, September 1970, pp.5, 11, 17, 27.

<sup>90</sup> *Ibid.*, p.28.

<sup>91</sup> *Ibid.*, p.25.

<sup>92</sup> *Ibid.*, p.63.

Figure 5.6: First generation coding desks at Croydon<sup>93</sup>



<sup>93</sup> POST 69/236... MDPC (71) 08. At Croydon staff complained about the noise and isolation. The shape, positioning and layout could reduce interactions between operators.

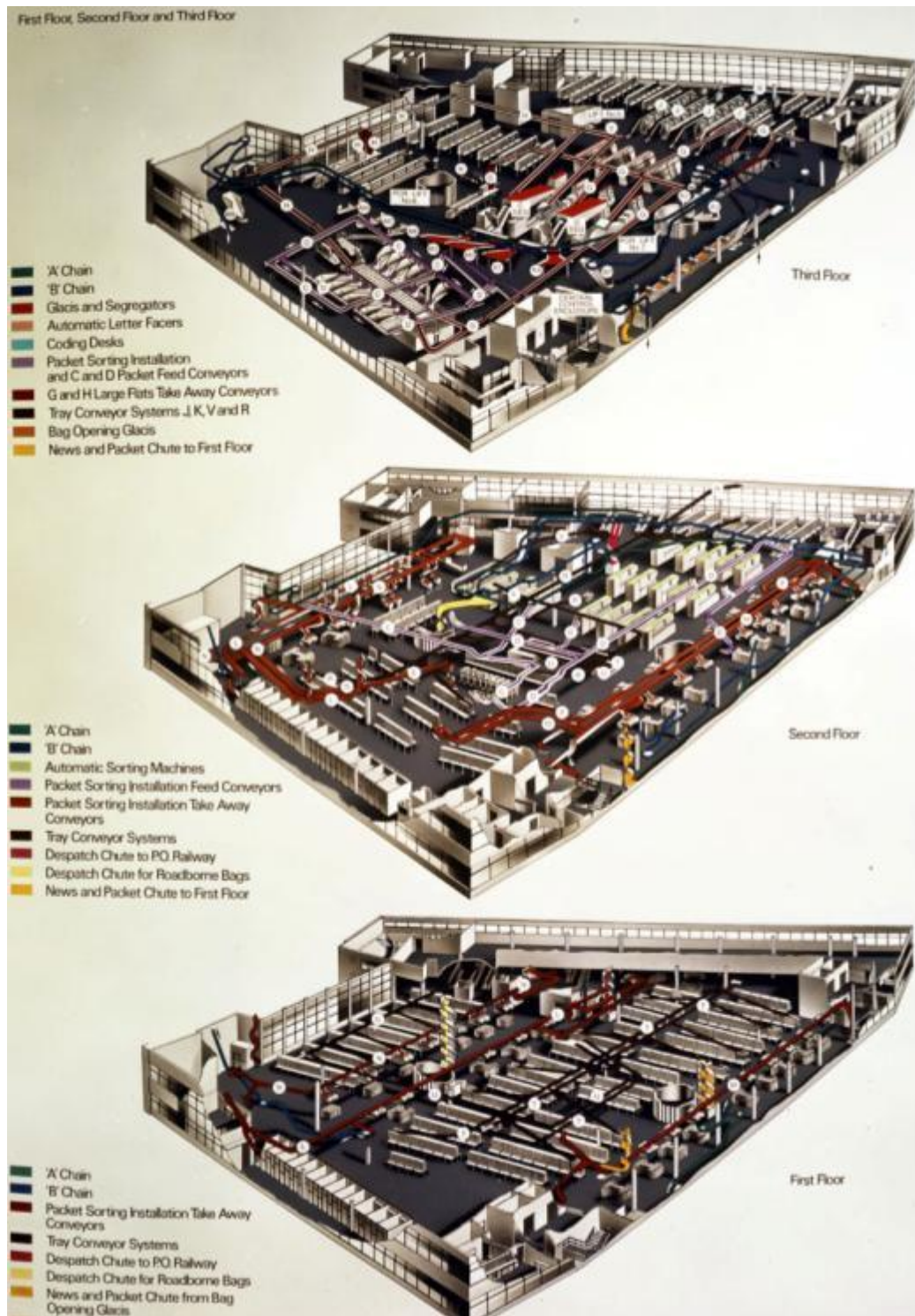
Figure 5.7: A bank of second generation Easy View coding desks in operation<sup>94</sup>



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<sup>94</sup> POST92/25, PO Report and Accounts, 1979-80

Figure 5.8: Isometric plan of London West Central District Office, 1972<sup>95</sup>



<sup>95</sup> POST 118/6178, London WCDO, Isometric Plan Views, 1972



Knowledge about staff attitudes to code-sorting was becoming well developed at both UPW and PO Headquarters by the time of the Embargo. As negotiating stances solidified after the announcement, Tom Jackson again emphasised to the Board that, alongside, its potential effects on pay, redundancy and the relocation of staff, mechanisation was feared for how it changed the working environment. He highlighted again how code-sorting reduced contact with work-mates, brought about mechanical monitoring of performance and tended towards excessive noise and poor air conditioning.<sup>96</sup> David Stewart, then Director of Operations who was in regular dialogue with Jackson and his union colleague Bill Wolfenden, carried a confident tone in the early meetings, highlighting the many studies underway and that ‘the solutions were beginning to become apparent’.<sup>97</sup> He explained that reducing heat and noise at source had become a priority for design engineers.<sup>98</sup> He was in communication with de Jong and Piggott who reported that Engineering had in hand a range of studies on ‘the cause and reduction of machine noise, the investigation of frictional and wearing properties of materials and the relationship of these factors to machine reliability’.<sup>99</sup> They found that an installation of C6 coding desks accounted for approximately 20% of ‘total heat gain’ in a mechanised office.<sup>100</sup> Meanwhile parallel studies were focussed on tightening up parameters for noise, heat and dust, for the design of future machines as well as buildings. Investigations in 1970 and 1972 looked at office ventilation and concluded that MLOs needed new systems to supply clean air and extract polluted air at 18.3 cubic meters of fresh air per occupant. Alternative materials for mail bags and vacuum cleaning machines were also studied. The German PO invited a delegation to visit Braunschweig Sorting Office where a new ventilation system boasted 8.5 air-changes per hour and a glass wall separated air supply and isolated the mechanised area.<sup>101</sup> By 1972 the PO was contracting in systems filtered for airborne dust (in the 10-30 micron range) capable of 10 air-changes per hour and was working towards a future of universally ventilated offices.<sup>102</sup>

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<sup>96</sup> POST 69/92, PO Board: Papers and Proceedings, 1972, Paper 304, November: ‘Letter Mechanisation: Negotiations with UPW’.

<sup>97</sup> Uncatalogued: 2<sup>nd</sup> Review: PHBS/BG/0048, Buildings and Mechanisation Committee of the Postal Business Joint Council (COPOU), 1972-1981, Minutes of the 2<sup>nd</sup> Meeting of the Buildings and Mechanisation Committee, 01/08/72, p.5.

<sup>98</sup> Uncatalogued: 2<sup>nd</sup> Review: PHBS/BG/0048, Buildings and Mechanisation Committee of the Postal Business Joint Council (COPOU), 1972-1981, First Meeting of the Letter Mechanisation Sub-Committee, 25/07/72

<sup>99</sup> MPDC (71) 8: Postal Engineering Research and Development, 1971, Annex by N. C. C. de Jong and J. Piggott, p.4.

<sup>100</sup> POST 17/258, Report of study group on environmental conditions in large mechanised sorting offices, 1970, p.5.

<sup>101</sup> POST 17/259, Second Report of Study Group on Environmental Conditions in Large Mechanised Sorting Offices, August 1970, attached papers.

<sup>102</sup> *Ibid.*, Feb, pp.1-2.

On noise, a study group established in March 1971 recommended a maximum of 79dBA per working position.<sup>103</sup> In machine design there had already been significant developments in this respect and some of the complexities involved were increasingly apparent by the late 1960s. When noise absorption materials were first built into machines they had the problem of dissipating heat. Acoustic foam in the first generation ALF reduced noise levels in the rear of the machine by 5-6 dBA but increased temperatures in the logic racks from 37-40 °C due to thermal conductivity.<sup>104</sup> New MLOs had been designed to minimise noise, heat and dust. The air breathed in a sorting office was conditioned, refreshed and circulated several times an hour thanks not only to ventilation systems but decisions made when the buildings were commissioned. From the beginning, a choice between an open-plan and modular layout was considered, while special arrangements were used for city constructions to keep out street noise. P.E. Marriot of the Planning and Mechanisation Department was a key figure in this regard, reckoning in 1970 that the clear choice for the future was for a sharper focus on the problems of heat, noise and dust.

When modern operational buildings are designed, there is rightly great emphasis on the need for early, close, and continued liaison between architect, engineers, and user. For mechanized sorting offices this is particularly so, and lack of early consultation on engineering services can lead to costly and inefficient schemes. The demand for flexibility in planning... restricts the engineering services designer in his choice of the most efficient and economic design. ...it is very desirable that the second generation of mechanized offices should be planned with environmental conditions well to the fore.<sup>105</sup>

Informed judgement was needed in choosing the best insulation arrangements with the aim of keeping room temperatures at 70°F and a move to solar glass helped prevent overheating during summer. At the Maintenance Engineering Conference in May 1973 there were calls to standardise the best of these measures and an agreement was reached that every building's control systems should be 'automatic, protected from interference, and control each room by sensors fitted in the room'. Where early decisions had been ill-judged or control systems did not meet these criteria, 'very unpleasant' conditions were reported.<sup>106</sup>

The engineers of R14 and PMBD certainly took these issues seriously, as evidenced by the very particular limits placed on component design as well as by the growing proportion of projected production costs taken up by heat-, noise- and dust-reducing innovations. For example, in 1973 the track

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<sup>103</sup> POST 17/317, Review of Postal Mechanisation, Annex 13: Environmental Conditions in Mechanised Sorting Offices, pp.1-3.

<sup>104</sup> Institution of Mechanical Engineers, *British Postal Engineering*, pp.114-116.

<sup>105</sup> Marriot, 'Special Environmental Problems', p.327

<sup>106</sup> POST 119/26, Postal Engineering Maintenance Conference, Clacton-on-Sea, May 1973: Conference papers, Synopses & discussions. (Staffing and maintenance issues, detecting faults, etc), 1973, CP1: Problems in Air Conditioning by LPR

speed of the belts in the second generation Multi Selection Automatic Sorting Machine (a faster version of the ASM) increased from 150 to 195 feet per minute. Higher speeds were desirable and achievable (although other requirements such as the need for orderly stacking also placed limits on belt speed) but were refused on the grounds that this would make machine noise unacceptably high.<sup>107</sup> Senior engineer T. Pilling told the maintenance conference that noise reduction at source was a long term project, commenting that ‘...the cost of noise reduction on an ALF was about 10% of the total cost of the machine’. In discussion, one attendee pointed out that more could be done about noise absorption via the choice of building materials and singled out Cannon Street and Euston railway stations in London as successful examples. It was agreed that Headquarters experts on noise should hold a two day seminar to raise awareness of these points among regional management.<sup>108</sup>

Much of this dovetailed with the wider research programme of the revalidation. The Board’s understanding of staff attitudes to mechanisation as expressed in the final report was better researched and more nuanced than that which came before, with greater emphasis on the UPW’s requests for improved environmental conditions. The report acknowledged the increased noise and heat generated by machines but asked that the negatives be weighed against positive effects such as the fact that mechanised sorting reduced heavy lifting. It was also observed that the arrival of code-sorting had been a catalyst for ergonomic scrutiny.

At the present time there is more staff awareness than in the past of environmental conditions in sorting offices whether or not mechanised procedures are introduced. However, mechanisation has brought these misgivings into focus and it is right that the Post Office should give assurances to its employees that they will be given the best practicable working conditions.<sup>109</sup>

Further, there was recognition that rank and file expectations about working conditions had risen across British industry and that the PO needed to move with the times.

With the improvements in the standard of living which have taken place over the years, the environment in which people live has become more important. Staff are no longer willing to work in conditions which are physically uncomfortable and are very sensitive to any change which might worsen existing manual office conditions. It follows therefore that environmental conditions form a major factor in the motivation of staff.<sup>110</sup>

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<sup>107</sup> POST 119/407, Increasing letter sorting machinery throughputs: Practicability and limitations of. RB Newton. 15 January 1973. Letter Machinery Development Branch Report 17, 1973, p.3.

<sup>108</sup> POST 119/26, Postal Engineering Maintenance Conference... *CP2: Maintenance of the Working Environment by PMB3*, Discussion; POST 119/459, Mechanical Codes of Practice Committee: Memo 003, Noise, March 1978, p.7.

<sup>109</sup> POST 17/317, Review of Postal Mechanisation, p.14.

<sup>110</sup> *Ibid.*, Annex 13, p.1.

The emphasis given to these statements was probably a product of the Board's need to show they had listened to the growing waves of complaint from each UPW conference since 1971. These and similar passages were penned with a resolution to the embargo in mind and the report was submitted to the UPW before their special mechanisation conference in May 1975. If the Board could be faulted for its failure to adequately address these issues earlier, the wide range of ways in which ergonomic and environmental design rose to prominence in this period – as measured by the surge of discussion and research into building and machine design summarised above – suggests a certain justification for their rhetoric. Even so, by the Board's own admission, part of the challenge of making the shift in design priorities effective was the wide variety of grievances and the difficulty of ordering and defining what mattered to staff in the aggregate. The wider improvements in communication and consultation at the PO after 1969 were extended to include design choice and design processes.

### **Union consultation on technical design**

Among the new channels of communication opened and strengthened during the course of the revalidation was a series of consultations covering the specifics of technical and environmental design. Union officials routinely visited Calthorpe House to discuss the latest developments in coding desk and sorting machine design.<sup>111</sup> This benefitted both sides by facilitating a more nuanced, detailed and precise understanding of their respective positions and paid dividends in healthier politics and design solutions better suited to their intended environment. At a technical level, a “case law” of testing consultation was compiled from 1972. In parallel with the wider consultation framework emerging at the PO in this period, technical consultation was formalised and extended and, by 1975, had matured to cover three different levels of concern. At a network level, the unions were informed in greater detail about fluctuations in funding, the methods and content of costing and the overall plans for the pace and character of implementation. At a work-environment level, the focus was on heat, noise and dust. On the technical level, consultation was used to fine-tune experiments and trials. More broadly, it enabled design objectives to take account of the overall pattern of union concerns, encouraging the prioritisation of sub-projects in ergonomics. A number of committees were formed over this period specifically to provide union input on the particulars of noise, heat, dust and the design of machines and their components. This contributed to a growing body of knowledge on the human effects of code-sorting and served to underpin

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<sup>111</sup> Ron Clatworthy, Interview, 13/01/11.

a union-management dialogue by embedding a more systematic level of staff-side scrutiny into the design process, helping to reposition and tighten the boundaries of design outcomes.

Environmental conditions in sorting offices became a formal area of consultation after a special meeting in 1965. Regular discussions took place every two months thereafter at Norwich, in order to be among the machines, until May 1967 when the first Joint Committee was established. Its purpose was to involve unions at an earlier stage in design and planning.<sup>112</sup> This resulted in more closely-defined joint studies producing agreed limits and standards on temperature, noise, dust and fenestration, culminating in a joint statement in 1975. On temperature, a minimum 16°C was established for all MLOs and a commitment was made by the PO to take into account the likely dissipation of heat from machines at the design stage. Similar assurances were made regarding noise in acoustically remodelling walls, floors and ceilings and using rubber instead of metal in machine components where possible. Similar agreements were struck over ventilation and lighting.<sup>113</sup> Following several joint visits to operational MLOs, the UPW told the Board early in 1973 that, in general, the staff response to this was positive, though complaints continued. The change in the working atmosphere following an installation was often adverse, with many staff saying they felt isolated from their co-workers while on code-sort duties. Steps had been taken to alleviate this, such as setting maximum coding stints at two hours and ensuring that mechanised working was mixed with other manual duties to provide variation. This was reported in *The Post* alongside the announcement of the revalidation, the purpose of which not only to improve existing buildings and machines but to eliminate problems at source in future. Trials using nylon bearings on diverters to help reduce noise were promised, as were more water vending machines, rest rooms and shower facilities such as those at the newer MLOs in Southampton and Cardiff.<sup>114</sup>

Roland Worth took the lead as COPOU negotiator in these matters after a long record of service with the UPW as Branch Official and District Organiser. He became Secretary of the Departmental Staff Side in 1963 and was involved in negotiations over the PO Act, 1969.<sup>115</sup> Worth made a formal request for consultation on R&D during the first meeting of the Joint Committee on Buildings and Mechanisation (BMC) on 28 April 1972.<sup>116</sup> When the BMC met again after the embargo, a new set of procedures for technological consultation had been drafted. All new or altered technologies involving changes in

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<sup>112</sup> POST 17/145, Joint Group on Postal Coding and Automatic Letter Sorting, First Report, May 1967, p.2.

<sup>113</sup> POST17/287, Code Sort Compendium, c.1984, Postal Mechanisation Policy Statement (1975), Appendix 5: Environmental conditions in mechanised sorting offices, pp.27-28; POST 17/258, Report on environmental conditions in MLOs; POST 17/259, Second report of environmental conditions study group, 1972.

<sup>114</sup> POST 115/515, *The Post*, 1973, April, p.10.

<sup>115</sup> POST 151/uncatalogued, former ref: CH/BS/0003, Post Office union statistics and biographical information - COPOU, Extract from New Management, 10/10/69.

<sup>116</sup> Uncatalogued: 2<sup>nd</sup> Review: PHBS/BG/0048, Buildings and Mechanisation Committee of the Postal Business Joint Council (COPOU), 1972-1981, Minutes of the 1<sup>st</sup> Meeting of the BMC, 28/04/72, p.2.

working practice were to be subject to local and national consultation. Part of the purpose of opening up the engineering process in this way, it was agreed, was to build up a 'case law' for understanding changes in working practice, and a (non-legally-enforceable) statement titled 'Postal Mechanisation Experiments and Field Trials' guaranteed this. Laboratory work, once brought to the brink of initial trials in live sorting office conditions, would be reviewed by the BMC for COPOU scrutiny. The relevant engineering branch controller was required to provide details of an experiment's aims, methods and duration. Each was thereafter reviewed periodically and the results discussed before an implementation decision was made.<sup>117</sup> By the year's end reports on visual perception, short-term memory, and the ability to learn and apply the basic principles of coding were discussed. Moreover, COPOU learned more about the second generation project. Bonnett explained this would 'enable the Postal Business to move towards a firmer plan which ... would allow marked progress on the mechanisation front'.<sup>118</sup>

The resulting case law grew over the following two years. One example is the trials of LOCUM (Letter Office Computerised Monitor) in which a computer system originally designed to monitor the performance of ALFs and ASMs produced information for maintenance engineers. It was later adapted to collect additional information for work measurement and operator productivity, though this was received cautiously by the union as it could feed into a future work measurement system. Another example was the live trials with electronic solid-state memory controllers at Norwich in January 1973; just one aspect of a long-term sub-project aiming to settle designs for a cheaper and more reliable alternative to the pin-wheel memory system used in sorting machines. Through trials and consultation, problems were exposed and defined, precipitating a new design of printed circuit board.<sup>119</sup> This was of great significance to PO engineers as it led to the first use of micro-electronics in British industry.<sup>120</sup> John Piggott, speaking at the Committee for the last time before his retirement, took the opportunity to expand on his philosophy of development and at which points in the process he felt consultation was appropriate.

An idea for a change of practice could originate from any source. The change foreseen might range from an alteration to a technical spec. (e.g. different materials used) to a new operating or maintenance procedure. The idea might first be tested in the laboratory in embryo, where there would be no changes in working conditions so that the experiment would not necessarily be included on a notification list at that stage. (Ideas were sometimes abandoned after first test). If the tests were encouraging, a further step could be to try out a manufactures prototype at the factory, again not necessarily involving a change in working

<sup>117</sup> *Ibid.*, 2<sup>nd</sup> Meeting of the BMC, 01/08/72, pp.2-3; Appendix.

<sup>118</sup> *Ibid.*, 3<sup>rd</sup> Meeting of the BMC, 23/11/72, p.6.

<sup>119</sup> Two alternatives were being developed in 1974: one by PMB1.4 for sorting machines only, another by R14 for wider application, i.e. chain conveyors. *Ibid.*, Letter Mechanisation Division (PMB1) – List of Experiments and Field Trials, July 1974. LOCUM was scrutinised closely by the POEU who were worried about its potential to make maintenance engineers redundant; *Ibid.*, Sixth Meeting of the Letter Mechanisation Sub-Committee, 28/11/74

<sup>120</sup> Evans, 'A life in Automation'.

practices for PO staff. If, however, the next stage was to test live mail at the factory, or on PO premises, this would of course involve a change in practice requiring prior notification.<sup>121</sup>

Piggott stressed he was keen to ‘separate changes in design technology from changes which would affect working practices’, pressing for clearer criteria governing which types of R&D should be added to the case law.<sup>122</sup> Such fine tuning of communication channels had been an objective of the revalidation which had in turn been characterised by the PO’s wider commitment to embedding new joint forums into IR machinery in the post-civil service years. PO unionism of course had distinctive traditions of bargaining and communication and had long played important roles whenever operational changes took place, but the LPP was unprecedented in its scope and duration and, through first and then second generations of technology, a strengthened consultative format evolved to match. The benefit of this as it applied to case law was its avoidance of unnecessary consultation at the laboratory stage. Piggott’s message was to continue the conversation about how to streamline the process of change, while balancing effective, timely innovation with the need for methodical, good-willed consultation, which acknowledged the difficulties of a labour-intensive nationalised industry.

## Conclusion

After the package deal was agreed in 1975 a new wave of installation projects began. In October, staff at Redhill operated the first batch of Easy-View coding desks. These were connected in banks which fed coded mail to new high speed automatic sorting machines, which utilised a new computer system based on micro-electronics to translate codes into correct sortation. Second generation installations were tied together with individualised sorting plans running from a central system enabling speeds of 20,000 letters per hour. Redhill soon successfully handled 300,000 items a day, which encouraged the Board to make bulk orders in the following years.<sup>123</sup> Immediately after the launch, the Letter Mechanisation sub-committee of the BMC convened to discuss how this would unfold, focussing on phasing in letter concentration upon existing MLOs and bringing new offices into the emerging system, starting immediately with Cardiff, London (West Central District Office) and York, Doncaster, Dartford (briefly, before further union opposition) and Guildford followed. Eric Hills voiced his gratitude to the staff ‘who

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<sup>121</sup> PHBS/BG/0048... 6<sup>th</sup> Meeting of the BMC, 13/11/73.

<sup>122</sup> *Ibid.*

<sup>123</sup> POST 119/900, Evans et al., ‘An Easy-View Letter-Coding Desk’, p.76.

helped during the difficult days of laboratory trials'.<sup>124</sup> Bill Wolfenden (UPW) agreed that the collaboration had resulted in an improved system which changed the working environment for the better. Second generation machines were more cost effective, more reliable and provided an elegant solution to the problems of letter presentation. The pre-reading technique previously involving a drop-down, two-window arrangement – a longstanding feature fashioned at great expense in mechanical complexity – was replaced in the Easy View provided 'for free' thanks to the horizontal easel which was integrated with a destacker to deliver smoother, seamless presentation of letters in 'a single simple system without the need for mechanisms to stop, start, or change the axis of movement of the letters'.<sup>125</sup> This was a radical departure and a reflection of the premium placed on faster speeds, lower costs and a more comfortable and conducive experience for its operators.

Connections between the politics of mechanisation and its re-engineering in the second generation of buildings and machines, found expression in the adaptation of an engineering philosophy which emphasised solving the human problems of code-sorting. The participation of staff and unions in this process became more explicit and involved in this period, as the views of staff representing all effected grades were probed with questionnaires and through consultations. This had a tangible impact on the objectives established and the outcomes reached. It also coincided with funding reductions which prompted the Engineering Department to reprioritise its projects and refocus the field of postal automation by drawing on its institutional resources in telecommunications and computing and making new connections between basic research, operational inquiries and the translation of ergonomic theories into practice. Subsequent external audits of code-sorting confirmed the benefits of the post-revalidation working environment, though for years serious reservations remained over the appropriateness of instituting data-entry work in factory conditions. In 1985, a six-month study by the University of Nottingham's Department of Production Engineering and Management analysed operations at eight MLOs. They found that problems remained with the 'paced, repetitive, low-initiative nature of the tasks, the pressure from performance targets, and some inadequacies in feedback'.<sup>126</sup> Their recommendations highlighted again the fundamental dilemma of code-sorting in that 'the result was similar to setting up a typing pool in the middle of a factory shop floor'.<sup>127</sup> The remedy was to cultivate an 'anthropomorphic' approach and grapple again with the 'social wellbeing of workers' by eschewing the idea that new technology determined the nature and shape of jobs, adopting instead a 'human-centred rather than

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<sup>124</sup> Uncatalogued: 2<sup>nd</sup> Review: PHBS/BG/0048... Eighth Meeting of the Letter Mechanisation Sub-Committee, 14/10/75, pp.5-7.

<sup>125</sup> POST 119/900, Evans et al., 'An Easy-View Letter-Coding Desk', p.76.

<sup>126</sup> POST 17/295... Ergonomics of the Post Coding Environment...1986, pp.2-7.

<sup>127</sup> *Ibid.*, p.58.



technocratic approach'.<sup>128</sup> The concentration required for effective and comfortable coding was ill-suited to a busy, noisy, warehouse-type environment.

The problems can be seen to be largely the result of the fairly drastic and rapid transition, by the Post Office, from its long tradition of manually orientated work. Such a change necessitates greater environmental and organisational alterations than the Post office perhaps planned.<sup>129</sup>

This in effect restated the problem of the man-machine interface for which long-term R&D into CCTV coding and, ultimately, OCR reading continued. For all its improvements, redesigning sorting office machinery could not resolve the inherent flaw in the code-sort concept which was the incongruity of the job with its environment. However it did provide another stepping stone towards increasingly satisfactory solutions. From this perspective, the Easy-View was a transitional technology that helped bridge the gap between the full automation envisioned in 1948 and the obsolescence of the coding desk in the early twenty-first century. The transition from planning to implementation is a theme taken up in the final chapter which addresses the question of how staff were trained for the code-sort era.

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<sup>128</sup> *Ibid.*, p.9.

<sup>129</sup> *Ibid.*, p.55.

## **Chapter 6 Staff training and the transition from planning to implementation**

### **Introduction**

This chapter focuses on the history of staff training for mechanisation in the 1960s and 70s. It describes how training of rank-and-file staff and the Inspectorate (Head Postmasters and sorting office managers) was changed in order to operate MLOs, the concepts and techniques used in developing teaching programmes and how their criteria were entwined with the political and operational realities of both sorting office life and of the wider institutional context. Training was a crucial component of the broader mechanisation project and the final stage in equipping the staff with the knowledge and skills required to make the revalidated system functional. The negative consequences of ineffective training, even in the smallest degree, could be long-term and have wide ranging consequences and, as will be shown, new methods were chosen after several years of experiment and debate during which questions of worker psychology and the relationship between the machines and the wider system were paramount. The critical area was teaching staff to use coding desks but this also formed part of a raft of measures for all affected staff-types. MLO managers found that clearing a day's post presented new challenges compared with their traditional responsibilities, while ancillary workers were needed to mind the machines and feed them with letters. In each case, training was important in shaping the content of people's work and their attitudes towards it. The resulting policies were informed by new philosophies about training which entered the organisation in the mid-1960s. Thereafter the Board supported a more scientific "programmed learning" approach, encouraged from 1965 by McKinsey's and, in code-sorting, found that the postal service was presented with its first major opportunity to develop training schemes based on new techniques in behavioural science and systematic research. Again, engineering played a critical role in this process, most notably in pushing the frontiers of keyboard ergonomics and in the creation of specialised training machines. However, because the greatest challenges to successful recruitment and training were found in workplace politics and the employment market, tensions between the Engineering and Personnel Departments grew. These and a number of related developments are appraised here in an effort to better understand the transition from planning in the late 1960s to wider implementation after 1975.

Due to its high labour-intensity, the postal service has a long history of developing and improving its policies for recruitment and instruction and in the twentieth century this became a major, multifaceted educational undertaking, predominantly organised internally but supplemented by universities, colleges

and business schools. In total, education cost the PO around £50m per year in the mid-1970s.<sup>1</sup> However the specifics of how it took place in the postal service and how it was adapted to the entrance of new technologies have not been explored. What policies were developed and how were they shaped by the different stakeholders? How did the attitudes and goals of management, staff and engineers differ over training? The chapter begins with an investigation of new ways of thinking about training entering the industry in the 1960s and how this contributed to an enrichment of management education. Attention is then turned to a series of projects for developing the technology of training. The need to incorporate a motivational message and to understand the psychology of keyboard operation highlights how programmed learning was balanced with a human centred approach concerned with improving industrial relations. The role of postal engineers in developing the code-sort training programme is analysed, with emphasis placed on trials in keyboard ergonomics and efficiency; on their efforts to design a training machine; and how this led to their hitherto driving role in mechanisation being questioned, as the Personnel department assumed wider responsibilities. Finally, some of the difficulties in recruitment and selection and the links between training and the labour market are summarised.

Some historians, economists and industrial sociologists have noted that poor training provision contributed to the British productivity problem and that international comparisons are unfavourable.<sup>2</sup> Paul Chapman states that ‘It has become widely accepted that one of the major factors in the poor economic performance of the UK economy has been the inadequacy of VET [vocational education and training] policies’, yet notes that our understanding of industrial training processes is limited.<sup>3</sup> Ewart Keep and Ken Mayhew have observed that the human capital shortcomings in the 1990s had deep historical roots and that debates about the role of the state in training have been live for over a century.<sup>4</sup> Before the 1960s, training in Britain was mostly left to individual firms and institutions until the need for a more systematic analysis was highlighted by the Ministry of Labour and National Service in 1958, eventually leading to the Industrial Training Act, 1964. A White Paper in 1962 outlined the goal as enabling ‘decisions on the scale of training to be better related to economic needs and technological developments’.<sup>5</sup> Industrial Training Boards were established to advise on programmes and offered a levy-grant funding scheme in

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<sup>1</sup> POST 151/uncatalogued, former ref: CH/C/0777, Miscellaneous - Post Office review Carter Committee, Personnel and Industrial Relations in the Post Office, Section 4: Staff Resources, Training and Education.

<sup>2</sup> Stephen Broadberry, ‘Human Capital and Productivity Performance: Britain, the United States and Germany, 1870-1990’, in P.A. David and M. Thomas (eds.), *The Economic Future in Historical Perspective* (Oxford: The British Academy and Oxford University Press, 2003), pp.103-133; Robert Lindley, ‘Active Manpower Policy’, in Bain (ed.), *Industrial Relations in Britain*, p.339.

<sup>3</sup> Paul Chapman, ‘Investing in Skills: Training Policy in the UK’, in Tony Buxton, Paul Chapman and Paul Temple (eds.), *Britain's Economic Performance* (London: Routledge, 1994), p.160.

<sup>4</sup> Ewart Keep and Ken Mayhew, ‘The Changing Structure of Training Provision’, in Buxton et al. (eds.), *Britain's Economic Performance*, p.308.

<sup>5</sup> White Paper, *Industrial Training: Government Proposals*, Cmnd. 1892 (London: HMSO, 1962), p.4.

which firms could claim refunds on their taxes provided certain training standards were met.<sup>6</sup> In the 1970s there was understood to be a ‘dual aspect of training’ covering both the economic gains to individual firms and ‘the social importance of wider opportunities for individuals’.<sup>7</sup> The Donovan Commission saw training as a prime example of the inefficient use of manpower, where craft tradition and obstructionism were in play, and it recommended strengthening the resources of industrial training boards.<sup>8</sup> During the 1970s and 80s, more and more money was devoted to training systems. Many analysts viewed this as a by-product of the long-term shift to white collar employment and the diffusion of automated systems. Management surveys showed that the purpose of training was ordinarily linked with the pursuit of organisational efficiency, and, in general, automation created jobs requiring new forms of training.<sup>9</sup> Industrial sociologists began to note in the 1980s that training rank and file staff in automated factories tended to include education about the wider workings of a technological system because operators endowed with a contextual understanding of the larger process tended to be more competent and motivated than those limited to narrower forms of training.<sup>10</sup> This chapter argues that, although the PO was not covered by the remit of the first training boards and was largely left to manage its own training, several developments in the fields of behavioural science, education and human capital during the period of reform had considerable effects in the postal service.

### **Programmed learning and behavioural theory in management training**

‘I suggest that the invention stage of postal mechanization is ending and we face larger problems, such as maintenance and operator training’, stated Geoff Copping to colleagues at the first international postal engineering conference in 1970. ‘With [the development of] new training equipment we shall have a splendid opportunity to learn more about the vital man-machine interface’.<sup>11</sup> But the notion of applying advanced training equipment in the postal service was a far cry from traditional discussions about how the training of postmen might be improved. In the 1950s, the central issue was how to move beyond the widespread tradition of ‘on the job’ training where new entrants learned their craft from those with

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<sup>6</sup> Lindley, ‘Active Manpower Policy’, p.343-344.

<sup>7</sup> White Paper, *Training for the Future: A Plan for Discussion* (London: HMSO, 1972), p.6.

<sup>8</sup> Batstone, *Working Order*, p.5; Brinley Thomas, John Moxham and J.A.G. Jones, ‘A Cost-Benefit Analysis of Industrial Training’, in *British Journal of Industrial Relations*, Vol. 7, 2 (1969), pp.231-264.

<sup>9</sup> David Allen and Robert McGowan, ‘Labor and Training Issues in Advanced Technology Industrial Development’, in *New Technology, Work & Employment*, Vol. 1, 1 (1986), pp.27-36.

<sup>10</sup> Peter Senker and Mark Beesley, ‘The Need for Skills in the Factory of the Future’, in *New Technology, Work and Employment*, Vol. 1, 1 (1986), pp.9-17.

<sup>11</sup> Discussion during Session 4, in Institution of Mechanical Engineers, *British Postal Engineering*, p.175.

experience. A typical recruit would receive two hours of instruction on his conditions of service and two more on postal geography, before being given a tour of the office to meet his colleagues and superiors. He might then be taught about the differences between classes of mail or between inward and outward sorting, or work on his sorting technique using practice cards before his first duty began, but by and large these arrangements had not fundamentally changed since the nineteenth century.<sup>12</sup> Once sociologists and work study experts began entering the workplace before the shift to Corporation status, and with radical changes expected from mechanisation, it became obvious that, although many of the traditional methods of induction would remain, a new set of techniques was needed. The Board realised this required a change in attitude and believed this should begin with the Inspectorate who would oversee the implementation of change on a day to day basis. This would bear a resemblance to superimposing the new MLO network onto the traditional mail flow system, insofar as new techniques for managing change needed to be mapped onto the traditional methods. The old ways, impressed on the inspectorate through experience, would be supplemented by a new curriculum based on management theory and behavioural psychology. The argument here is that these developments prepared the ground for mechanisation training. The key changes were the adoption of programmed learning methods, later applied to code-sort training, and the retraining of the inspectorate in behavioural theory and socio-technical systems so that they would be prepared for the industrial relations impact of mechanisation.

Ideas for improving training were always alive in the postal service but they received more sustained and systematic attention during the mid-1960s modernisation movement.<sup>13</sup> Concerted research began alongside an influx of work-study specialists following the approach outlined by McKinsey's consultants: to apply 'systematic, objective and critical examination of all the factors governing operational efficiency' – specifically including staff and management training.<sup>14</sup> The 1964 Annual Report noted the introduction of a comprehensive series of courses for all grades; including those designed for systems analysts and others whose work was being changed by the use of computers.<sup>15</sup> In 1965 a group of senior PO officials visited the USA to learn how "Programmed Learning" (PL) was being applied across a range of industries. The phrase was popularised by the behaviourist B.F. Skinner in 1958 who was interested in applying systematic, social-scientific research to 'manage human learning under controlled

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<sup>12</sup> POST 63/60, Standing Joint Committee on training and education, postal panel, training of new entrant postmen, 1966.

<sup>13</sup> The PO was regarded by industry observers as having balanced training policies. When the 1969 Corporation Act came into effect it made the PO subject to the 1964 Industrial Training Act, in which Training Boards issued guidelines to ensure adequate training for different sectors of the economy. It was decided following discussions with government that this need not apply in practice to the major postal grades. POST 122/11472, PO change of status: staff matters. Staff consultation. Training, 1967.

<sup>14</sup> POST 69/80... POB (67) 6, Postal Productivity and Work Study, p.1.

<sup>15</sup> POST 92/15, PO Reports and Commercial Accounts, 1960-66; Report for year ended 31 March 1964, p.23.

conditions'.<sup>16</sup> The field was burgeoning in America with several large businesses hiring specialists to design training plans through preliminary analysis of an occupation's behaviour and psychology and reverse engineering this into feedback-based courses (or, "programmes") divided into distinct sections ("frames") and in some cases involving bespoke teaching machines. The PO spoke to publishers, researchers and training managers on a visit organised primarily for French business executives by the consultants CEGOS. Used at 300 of the largest 500 US firms, and pioneered in the pharmaceutical industry in teaching sales staff their product ranges and sales techniques, American developments in PL impressed PO delegate D.H. Pentecost who returned to London believing that lecture notes, reference books and intuition were no longer sufficient for management training and envisioned broad applicability of these new methods to many PO occupations.

...there is now wide recognition that the key to real success with programmed learning lies in the thoroughness and skill with which the training job is analysed, breaking down the skills and information to be taught in great detail, and building up these skills in the program by using psychologically sound teaching techniques.<sup>17</sup>

He saw how this was deployed in the US Postal Service and visited IBM who used over 30 programmed courses in data processing, 25 in engineering and six in products, where remote learning by computer was being trialled. AT&T was spending 10% of its training budget in a similar way and had also begun to use teaching machines, as had the US Navy. At Kodak they witnessed a demonstration of camera assembly using a slide-projector synchronised with an instructive audio-tape, with the speed of presentation controlled by the student using a foot pedal. There, audio-visual aids and adaptive teaching machines evaluated student responses individually or as a group, adjusting the pace and content accordingly. All of this encouraged the Board back in Britain, who had already begun commissioning similar programmes for selected PO occupations. Their conclusion was that the US influence should continue.

The Post Office is one of the pioneering organisations developing the business use of this technique in the UK, and I suggest that the more advanced work now being done in America should be a major influence in our approach since, at the moment, we have little to learn from other British organisations. Contacts with sources of information in America, therefore, should be fostered by Training Branch to maintain the present pace of our development... Firms like IBM, Univac, Kodak and General Electric continuously surveyed existing training methods with a view to adopting improved techniques, and clearly regarded training as

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<sup>16</sup> B.F. Skinner, 'Teaching Machines', in *Science*, Vol. 128, No. 3330, 24/10/58, pp.969-977.

<sup>17</sup> POST 63/42, Visit to the USA to study the business use of programmed learning, April 1965, report by D H Pentecost, 1965, p.11.

subject to the same standards of economy and efficiency as any operational activity... These are also currently very important objectives of British industry and the PO in particular.<sup>18</sup>

On the strength of Pentecost's report a research group with expertise in behavioural psychology was established to work on automatic keyboard instruction, speed reading, audio-visual training techniques, computer-based instruction, and teaching machines.

In 1967 the Training Division published *GPO New Training Developments: Systems Analysis in Training*, a pamphlet designed to ease management concerns over the increasing introduction of PL courses. The message was clear: training programmes needed to serve management's strategic objectives using systematic techniques. The aim was not to over-elaborate but to organise training with distinctive phases, including defining the problem, searching for the facts, choosing between alternatives and evaluating the results. The training sequence should be planned, a programme drawn up outlining methods, and a syllabus designed, leading to a costed training plan with clearly defined targets. Similar care was urged in selecting instructors, choosing accommodation, and in the use of audio-visual aids, machines, models or rule books.<sup>19</sup> Systems analysis also borrowed from "critical path methods" being used in telecommunications, in which a network was 'constructed' on paper to anticipate the formation of the real networks of cooperation necessary for the completion of complex projects.<sup>20</sup> At a conference of Operational and Planning Controllers the following year, D.J. Jarman presented a paper on the subject. 'There [has] been traditional disinterest in training and it could be argued that this – together with a tendency to provide supplementary training on an unscientific basis – [has] cost us dear'.<sup>21</sup> During discussion it was suggested that a lack of enthusiasm for training would be a problem, with counter training in London cited as an example of the rank and file valuing the length of training over its content for the time it gave them away from normal duties. A programmed learning approach was subsequently adopted before decimalisation for retraining counter staff in general knowledge, cash handling and changes in procedure. Something similar took place on a smaller scale for metrication, involving the conversion of 78,000 weighing machines over two years from 1972.<sup>22</sup> Meanwhile, it was held that management tended to view attending courses as 'routine chores'. The key point raised was that under rapidly changing conditions, more regular courses on mail circulation would be required and that

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<sup>18</sup> *Ibid.*, pp.11-12.

<sup>19</sup> POST 63/52, New training developments, no.5, 1967.

<sup>20</sup> Uncatalogued, 'Critical Path Methods (CPM) Technique', by Management Sciences and Computers Division of Management Services Department (THQ), c. 1970.

<sup>21</sup> POST 73/195, Conference of Operations and Planning Controllers, 1968; Training in the Postal Business (Paper 2) by D. J. Jarman.

<sup>22</sup> POST 63/79, 'Postal decimalisation bulletin No. 2', c. 1971; POST 69/237: Managing Director's Committee: Posts: Committee Papers, 1972, MDCP (72) 39: Metrication in the Postal Business, Appendix B.

supervisors at the larger mechanised offices would benefit from a more scientific approach to their training.

The changes that came with PL were therefore more extensive than the jargon might suggest. Nowhere was this clearer than in the evolution of the curricula taught at the new Postal Management College (PMC) at Coton House, Rugby. ‘Our main aims are to convince students’, read the Annual training report one year before the PMC opened, ‘that the purpose of life of managers is to help to achieve the objectives of the undertaking which employs them... That management is not a combination of hunch, intuition and inspired guesswork... but is capable of being tackled in a systematic, methodical, orderly way’.<sup>23</sup> In its first year Coton House taught over 300 students through dozens of courses. It was the first permanent establishment for training management – from Chief Inspector to Head Postmaster – and the product of a decision to increase the quantity and quality of management training in the postal service. As was outlined to the Hardman Committee in 1971, this was done for several reasons, chiefly to foster healthier industrial relations and to facilitate the changes anticipated in mechanisation and the shift to Corporation Status.

This [the establishment of the PMC] has provided an opportunity to expand training, for example in the behavioural sciences, in ways which are relevant to and practical within the business. A major aim is to underline the importance of good human relationships recognising that results will be obtained in a labour intensive industry only if there is a willing commitment to business objectives by the work force. The philosophy of the Postal Management College is that change is inevitable and frequently uncomfortable; that it is important to win the consent of those directly involved; that participative management is, therefore, an essential goal. Problems associated with change are a main theme in training programmes.<sup>24</sup>

One of the courses, titled “The Managerial Grid”, encouraged students to recognise the ‘conflicts of interest between the needs of production and the feelings and aspirations of people. It is about attitudes and management styles, and the effect which particular styles have or are likely to have on subordinates’. Students were asked to consider the wider picture of British industrial relations and heard from union officials invited to talk on the courses. By the 1970s, EC members of COPOU were invited to speak at each of the twelve general management courses. (Union training was encouraged through leave with pay

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<sup>23</sup> The five resources to be managed were men, money, materials, time and themselves. The seven sins of management were cynicism, complacency, rigidity, indecision, perfectionism, arrogance and a lack of self proportion. POST 63/32, Management Training Centre, Eastbourne, Annual Reports, 1956 -1967; MTC Annual Report, 1966-7, p.1.

<sup>24</sup> POST 65/242, Hardman papers on training and industrial relations, 1971; Industrial Relations in Management Training, p.1.



for a range of courses).<sup>25</sup> Other outside speakers included the Oxford industrial relations academics Arthur Marsh and G. Bowen Thomas. As the Hardman Committee heard, much of this was done with one eye on coping with the changes mechanisation would bring. ‘The Post Office is particularly seeking expertise on how to integrate the effects of mechanisation, concentration and more sophisticated control systems with the need to develop the organisation in a way that will achieve better staff participation and greater commitment’.<sup>26</sup> Indeed, during the 1971 crisis, a Board Paper argued that those running the PMC should liaise more closely with the Board so that training programmes and the selection of new managers could be better informed by likely future industry developments.<sup>27</sup>

Over time, the curriculum at Coton House was broadened in scope and enriched in its use of theory. Industrial relations remained the PMC’s centralising concept. All students attending the Industrial Relationships course received a historical guide to PO unionism. It made clear that one reason for the PO Act 1969 was to institute more progressive IR and described how the ad hoc system subsequently gave way to formal consultative machinery.<sup>28</sup> By the mid 1970s the curriculum included a history of scientific management; an analysis of human needs at work including the motivational theories of Elton Mayo; and courses on the informal organisation of industry, management styles, and Job satisfaction. The core text was *Basic Motivation Theory*, later summarised in the pamphlet, *Human Behaviour at Work*. This began by explaining the history of Taylorism and how this was applied in the PO through time-and-motion studies; the functional division of departments; work sequencing; and the basic tenets of business administration such as planning, coordination and control. The PMC, it stated, was above all concerned with delivering a rounded management education by teaching progressive forms of scientific management which recognised that people had a hierarchy of needs and that workers’ motivation had a social dimension.

Taylor was right in one respect. The worker wants money. All the money he can get. But the worker wants more from a job than just a pay packet. He wants social satisfactions from participation in group activity. He wants psychological satisfactions too ... The blind spot of the scientific management approach is the failure to realise that the work does not need to be allocated by basic elements just because it has to be studied in that way... The need to be accepted and liked by one’s workmates is as important, or even more important, than the financial incentives offered by management. The apparent nonsense, chatter, gossiping, kidding and clowning about is in fact often the way in which the boredom of work is tamed

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<sup>25</sup> POST 151/uncatalogued, former ref: CH/C/0777, Miscellaneous - Post Office review Carter Committee, Personnel and Industrial Relations in the Post Office, Section 2: Industrial Relations, p.6.

<sup>26</sup> *Ibid.*, pp.2-4.

<sup>27</sup> POST 69/236... MDPC (71) 18: Postal Management College (PMC) Board.

<sup>28</sup> POST 151/uncatalogued, former ref: CH/BP/0016, “Historical Background to IR in the Post Office” in Gill to Young, 20/07/79.

...Organisations cannot be made to function effectively merely through a mechanical observance of figures, time-cards, motion studies, bonus schemes and the like. To make it work, it is also necessary to understand the nature of people as the human components of industry ... Man is a wanting animal and as soon as one want is substantially satisfied he finds a new one.<sup>29</sup>

Herzberg's development of basic motivational theory was then presented to argue that beyond pay people tended to seek challenging work, good prospects for advancement and an understanding boss. The point was that managers needed to work with rather than against the informal networks and bonds that workers created. In a bid to reformulate the carrot and stick approach, two predominant styles of management were presented within a grid, ranging from 'Theory X' (people are lazy, unambitious, resistant to change, disliking responsibility) to 'Theory Y' (people are mature, self-motivated and cooperative). Finally, the PMC aimed to make all managers comfortable with the concept of "Socio-Technical Systems", as being particularly useful in understanding the changing postal system and the need for a participative approach. 'In adapting to, designing and implementing change it [the concept] seeks to take account of the needs of the technical or operational systems and, just as important, the needs of social systems as well.'<sup>30</sup>

The influence of behavioural psychology and programmed learning on management training was therefore considerable and its role in preparing the ground for mechanisation training – from code sort operators to MLO managers – was made explicit before the LPP began. The particular lines of research and consultation accommodated by and running in parallel with this change in philosophy are explored below.

### **Staff motivation and the keyboard trials**

While the thrust of training at the PMC was reoriented, several specific programmes were in development for the different grades expected to conduct their daily work in MLOs which drew heavily on the new ideas. Of these, the most important – operationally, financially and politically – was training for the code-sort position. Designing effective teaching methods for coding desk operators was widely acknowledged as being of critical importance. In 1971 it was predicted that an approximate total of 100 million finger movements would take place at coding desks every working day once the system was fully

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<sup>29</sup> POST 63/181, *Human Behaviour at Work*, 1977, pp.5-13.

<sup>30</sup> *Ibid.*, pp.21-23. The reading list for staff training included: J. Brown, *The Social Psychology of Industry* (1970); T. Burns and G. Stalker, *The Management of Innovation* (1971); F.W. Herzberg, *Work and the Nature of Man* (1966); and A.W. Willsmore, *Managing Modern Man* (1973).

implemented.<sup>31</sup> The aim was therefore to create the most effective possible training method for coaxing productivity out of the rank and file, divided into methods for selecting the best candidates and for teaching those chosen to code with accuracy, pace and stamina. This involved programmed learning, training machines, coding desk simulators and group tuition. Though this was a collaborative departmental effort throughout, it is clear that before 1974 research was driven by senior postal engineers. By then, two major issues were settled: the design of the keyboards to be used for coding and the technical arrangements (computers, audio-visual aids and simulators) used for selection and training. After this point, responsibility for refining code-sort training moved out of the hands of in-house postal engineers and into the hands of others – principally Personnel Department, Training Division and outside contractors – with Engineering playing a supporting role. This and the following section address these issues, which, taken together, formed the main elements of the training package in place by 1975.

Leading the attempt to implement code-sort training at the end of the 1960s was Head of Mechanisation, Nick de Jong, who emphasised the need for industrial relations sensitivity within a systematic framework for staff-training. His approach found expression during 1968 as he took control of the creation of a film aimed at introducing sorting staff to mechanisation as a first step in training. Most staff had no experience of sorting machines, let alone their integration within the workings of a network of MLOs, and measures were needed to allay fears and inspire enthusiasm.

Conscious of the fact that we have embarked on the largest building and equipment programme ever tackled in Postal History, we have been giving considerable thought to our training needs for postal staff at the large mechanised offices now in building or advanced stages of planning. All of these offices will house substantial amounts of mechanised equipment and several will include complex central control and signalling systems... Future schemes are much more ambitious and involve an entirely new era in sorting office working; indeed, with the opening of these offices we will be passing from the era of manual sorting office into the “factory” sorting office of the future... We cannot escape the fact that the average rank and file man suffers not only from a lack of knowledge about the machines but he also tends to view mechanisation with some suspicion and fear that its sole purpose is to take away his job. It involves him in a change which he has not sought affecting almost every aspect of his job and it brings about vastly different working conditions to those he has been accustomed to for many years. It is absolutely vital, therefore, that the training sets out not only to show how the machines should be used but also to win over the staff to the many advantages for them so that they enter the new era in the right frame of mind.<sup>32</sup>

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<sup>31</sup> POST 69/236... MPDC (71) 8: Postal Engineering Research and Development, 1971, p.4.

<sup>32</sup> POST 122/14157, Training in Mechanised Sorting Offices – National Film, 1968; Memorandum: Training in Mechanised Offices, May 1968, pp.1-2.

Training, on this view, had three objectives. First, to give an overall appreciation of mechanisation with its various machines, general goals and effects upon staff conditions. Second, to provide knowledge about local arrangements, such as where machines would go, their function and layout. Third, to give individual job instruction on a ‘need to know’ basis.<sup>33</sup> For job instruction there was scope for increasing the ‘Programme Learning type techniques’ being trialled at the Manchester MLO due to open in August 1969.<sup>34</sup> It was agreed early in the film’s production that the overall goal should be to ‘foster a spirit of enthusiasm and interest in the staff realising that they are in a forward looking, modern industry’.<sup>35</sup>

The film itself began life as a treatment called “Beasts of Burden” written by outside consultants whose narrative equated the new technology with societal progress and economic responsibility. Largely under de Jong’s influence, it was re-titled “Tomorrow’s Post” and whittled down to become a more straightforward explanation of the machines, the strategic reasons for code-sorting and a detailed interview between de Jong and Tom Jackson addressing UPW concerns. The technical ingenuity of the machines and their role within the wider system was explained with reference to the economics and operational facts underpinning the decision to mechanise. The final treatment sought to persuade staff that the Letter Post Plan was in their interests, that it was of great value in modernising the postal service – and by extension a contribution to British society – and that they had an important part to play. The film’s final words typify its motivational tone.

New machines, in new places, with new ideas behind them: these are fundamental to the success of our future but still only a small part of it. However it is recognised, the service we give the public will always be personal; human. Any enterprise is only as good as the men who make it work, and to maintain the character of that service we need, from everyone, a genuine willingness to accept new ideas and the changes they bring. In other words, the success of the 1970s, as of every other decade, depends upon your co-operation and your enthusiasm.<sup>36</sup>

Though completed, it is not known what became of the *Tomorrow’s Post* or whether it was widely screened, despite costing about £20,000 to produce. There were requests for copies to be used abroad for selling British machines but these were vetoed by the UPW who had been consulted throughout and wished to limit its circulation to its original training purposes. Tom Jackson’s views, in particular, were sought in scripting the interview in which questions regarding redundancy, deskilling, movement of staff, pay and working conditions were addressed. However the memos and correspondence for *Tomorrow’s*

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<sup>33</sup> *Ibid.*, Memorandum, May 1968, p.2. The need-to-know principal in staff training had pedigree and was applied widely. POST 65/242, Hardman papers, p.1.

<sup>34</sup> POST 122/14157... Memorandum, May 1968, p.3.

<sup>35</sup> *Ibid.*, Outline Brief for Postal Mechanisation Film, p.1.

<sup>36</sup> *Ibid.*, Final Commentary, 27/11/69.

*Post* indicate that de Jong had substantial control over most aspects of the film, again demonstrating the power of Engineering to intervene in the politics of mechanisation.

The Engineering Department's central role in shaping code-sort training followed naturally from the history and standing of postal engineering in the late 1960s. When in 1956 he posed the question 'What is the best training method?', the former Director General Sir Gordon Radley continued a tradition of linking the design of machines with the design of training which can be traced at least as far back as the Transorma trials at Brighton in the 1930s. Under Radley's Chairmanship of the Mechanical Aids Committee in the 1950s, this question stimulated research into the psychological and physiological circumstances of code-sort working, involving filming operators at work and studying their hand-to-eye coordination, their movement and posture and the knowledge and concentration utilised in letter-sorting. New training ideas, such as audio-visual cues and performance measurement, were in consequence taken up.<sup>37</sup> While Radley's question also contributed to successive redesigns of the seating arrangement, the layout and lighting of the work station and the materials used in production, the aspect of design most aligned with the question of the effects of training methods on operational efficiency was that of keyboard design. As Geoff Copping mused in 1958, keyboard design was complex and critical to the prospects of implementing mechanised sorting in Britain. There were, he said, 'various ways of employing a keyboard to control the encoding of information, the optimum distribution of addresses on the keys so as to relate the heaviest traffic loadings with the easiest keying strokes, and of course the spatial layout, pressures and strokes of the keys themselves'.<sup>38</sup> Though there appeared to be a relationship between different keyboard layouts and different rates of learning by operators – and this would be a determining factor in future levels of productivity – the actual nature of the relationship remained largely unknown.

The choice of keyboard, the ergonomics of the coding desk and the design of a training programme for code-sort operators were therefore seen from the late 1950s as being interlinked. Investigations began in the 1960s under Copping's guidance and following his recommendation that due weight should be given to psychologists and physiologists of the Medical Research Council. A search, he said, was underway for 'scientifically obtained proof' of the psychology of the coding desk; all in the service of the long-term imperative: 'the overall efficiency of the man/machine combination'.<sup>39</sup> In discussing the various possibilities for designing experiments to establish the best keyboard strategy, Copping made the link with training explicit:

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<sup>37</sup> POST 17/454... MAC, 26/04/56, pp.1-3.

<sup>38</sup> POST 17/172... Copping and Langton 'Sorting Letters by Machine', p.18.

<sup>39</sup> *Ibid.*, pp.19-20.

On a snap appraisal it would appear that the typewriter keyboard would be the slowest method of injecting information, the Canadian binary board faster and the Dutch board faster still. However training, finger dexterity, the pulsating nature of the physical load and many other factors must be considered before the correct decision can be reached. An apparently unimportant factor is the different psychological effects of training an operator in an art which is generally useful, such as normal typing, or of training him to perform a task which has no other application.<sup>40</sup>

Internationally, different approaches were being applied to these problems. The Americans were committing to machine-paced coding, while the Japanese were holding out for OCR. The Canadians were following a similar path to the British, while many other countries imported solutions from other countries. Copping saw that the choice of training scheme was largely determined by the method of data entry and that, in Britain, just as empowering operators with pace-control presented the most challenging R&D path but with the prospect of high returns in productivity, so too with the design of training courses.

...the economic viability of mechanized sorting is dependent on the rate achieved by coding desk operators. The operator's job must therefore be as simple as possible and he should be able to absorb the intelligence from the address at a glance. It is this practice – “glance extraction” – which enables operators in Madrid using British machines to deal with 5200 letters in an hour....<sup>41</sup>

When this was discussed at the first international postal engineering conference, a consultant from Plessey Pacific in Sydney, V. Magnusson, spoke about the attitude to training in Australia. There, codes were used for a small amount of mail allocated to railway lines serving wide areas. (In the outback there was an average of seven postmen per office). ‘We use female keyboard operators; in general males are not psychologically fitted to keyboard operation’, he said. ‘In a period of three to four weeks these girls are trained to sort at a passing-out rate of 2000 letters per hour on a one-hand keyboard’.<sup>42</sup> de Jong responded pointedly:

Mr Magnusson states that for keyboard operation women are better than men. In Britain we are aiming at complete equality of opportunity between the sexes, and selection will be on the basis of standards of performance. We think this will give us the best complete solution and will have the support of the trade unions.<sup>43</sup>

Mr. S.G. Young, Head of Postal Research R14, stated that the central idea in Britain was to perfect the ergonomics of the coding environment as a means of accessing the highest coding rates over the long-term.

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<sup>40</sup> *Ibid.*, p.26.

<sup>41</sup> Discussion during Session 4, in Institution of Mechanical Engineers, *British Postal Engineering*, p.175.

<sup>42</sup> *Ibid.*, p.176.

<sup>43</sup> *Ibid.*

There is no shortcut to accuracy in human factors; one must use relatively large samples of human subjects – we are thinking of 20 per sample, and the samples must be standardized and one must avoid pre-conditioning. The process is therefore a fairly long and expensive one. Results obtained with a few laboratory assistants, or ladies from the office, are, I am afraid, just not good enough. The samples must represent as near as possible the actual people available. Somewhat similarly, in work on the configuration of machines and sorting offices, many factors are interrelated. The service standards, the type of mail, the siting and shape of offices, and the machines themselves are just examples of the many interacting factors. It is difficult to make a fundamental change in isolation.<sup>44</sup>

Geoff Copping spent much of his career in search of the perfect balance between a keyboard with which operators would be familiar, such as the QWERTY typewriter, and one best adapted to the length and form of a typical postcode. The character-length and alpha-numeric form of the postcode were evolved with the productivity of future coding desk operators in mind. Certain characters and numerals (i.e. “O” and zero) were not used at all and others were used more heavily depending on where coding took place in the country’s mail-flow. Outgoing mail from Lincoln would have different mail circulation from that in Brighton, with predictable differences in finger movement for each. Furthermore a given proportion of letters going through a coding desk, where address information was lacking, would be “passed” for manual sorting or receive an “extract code” in which the operator, seeing no postcode appearing on the envelope, reverted to a generic set of rules for creating a short code based on the first three and last two letters of the town name. For example “Birmingham” would be extract coded as “BIRAM”. In similar fashion, extract codes for locally addressed “inward” mail used the first and last two letters of the street name instead. Additionally, the facility for “short codes” was added, developed for frequently used destinations. Birmingham thus changed from BIRAM to Bs/c, ‘two key strokes instead of five’.<sup>45</sup>

Following four years of collaboration with the Applied Psychology Unit of the Medical Research Council, Dr. R. Conrad and Dr. D. Longman were credited with the creation of a concept keyboard known variously as the Conrad, Cambridge or CHORD keyboard.<sup>46</sup> However, on balance no clear benefit was established and Copping returned to improving the keys and electronics of the QWERTY, preferring its ease of training, the ability to train part time staff familiar with typing and ‘the lack of any proven

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<sup>44</sup> Discussion during Session 1(a), in Institution of Mechanical Engineers, *British Postal Engineering*, p.38.

<sup>45</sup> POST 119/786, Keyboard evaluation experiment: Historical background and methodology, 1970. JH Fletcher. 27 March 1972. Research Department Report 275, 1972, p.4. See also POST 119/253... Copping, ‘Conversion of the postal address into machine language’.

<sup>46</sup> R. Conrad and D.J.S. Longman, ‘Standard Typewriter versus Chord Keyboard – An Experimental Comparison’, in *Ergonomics* Vol. 8, No. 1 (1965), pp.77-88.

alternative'.<sup>47</sup> However, when attention returned to keyboards in 1968 before the expected implementation of the LPP, he became convinced that the coding target of 2,100-2,500 iph could not be consistently achieved using QWERTY. The number of districts and the prominence of mail concentration in the later versions of the LPP, combined with the national breadth of the postcode, led him to believe that either the keyboard or the code would need altering. 'Unfortunately conditions and requirements have subtly and slowly changed... it is suggested that a very serious situation is developing in respect of the rate and accuracy of coding desk operation'. As an overall pattern emerged of the distribution of postcodes across towns, districts and regions it became clear there would be a greater than expected use of numerals, making it more difficult for operators to extract code accurately and rapidly. Concerns grew that the financial returns of mechanisation would be jeopardised, resulting in 'urgent requests' to R14 for a new series of keyboard experiments.<sup>48</sup> 'One indisputable requirement emerges from the change in the form of the postcode; we must dispense with the typewriter keyboard. With two or three numerals in every code, the numeral keys must be brought closer to the "strong" fingers and nearer the "home" position of the fingers'.<sup>49</sup> Copping therefore began considering alternative solutions, arguing at first for a 30-key keyboard; the replacement of extract coding with the use instead of full town names; and "linking" numbers 10 to 29 with characters on the keys.<sup>50</sup>

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<sup>47</sup> POST 119/786, Keyboard evaluation experiment, Research Report 275, p.5.

<sup>48</sup> *Ibid.*

<sup>49</sup> POST 119/896, Coding Desks: Operator Training; G. P.Copping, 'The Letter Post Plan, the Postcode and the Coding Desk Operator', internal article for PHG and PMD, 26/11/68, p.1.

<sup>50</sup> *Ibid.*, pp.2-3.



Figure 6.1: Schematic showing comparison of typing loads<sup>51</sup>

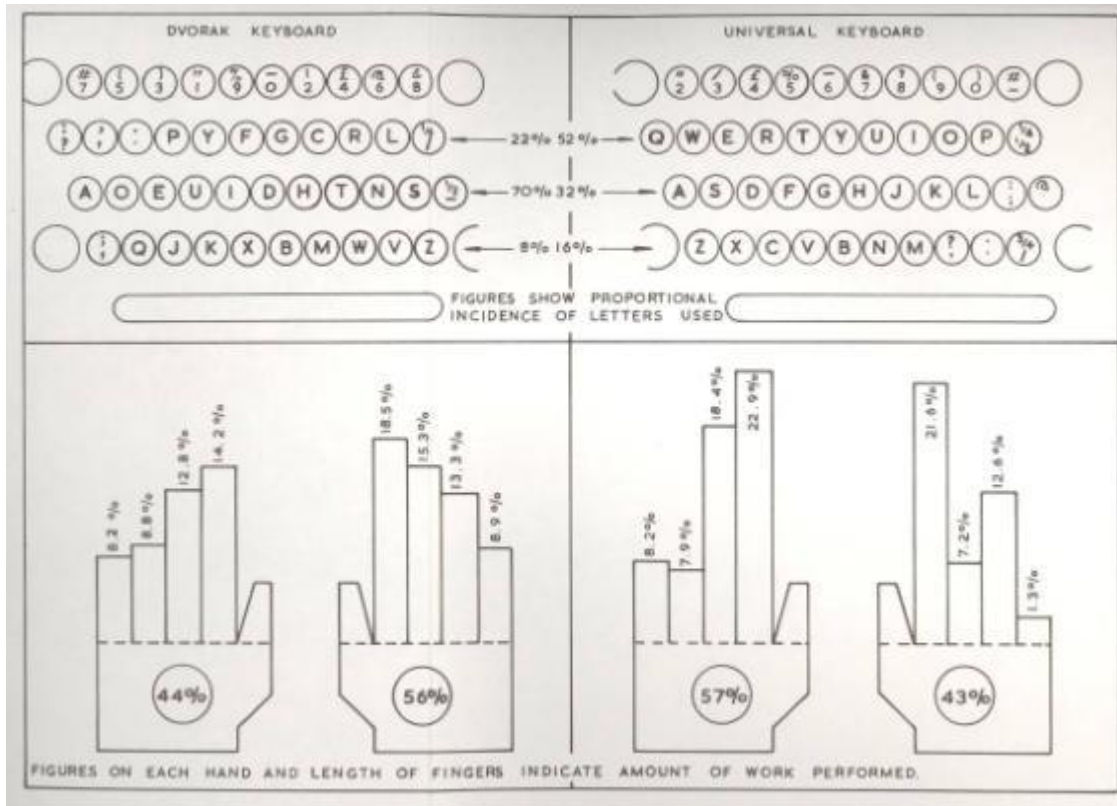
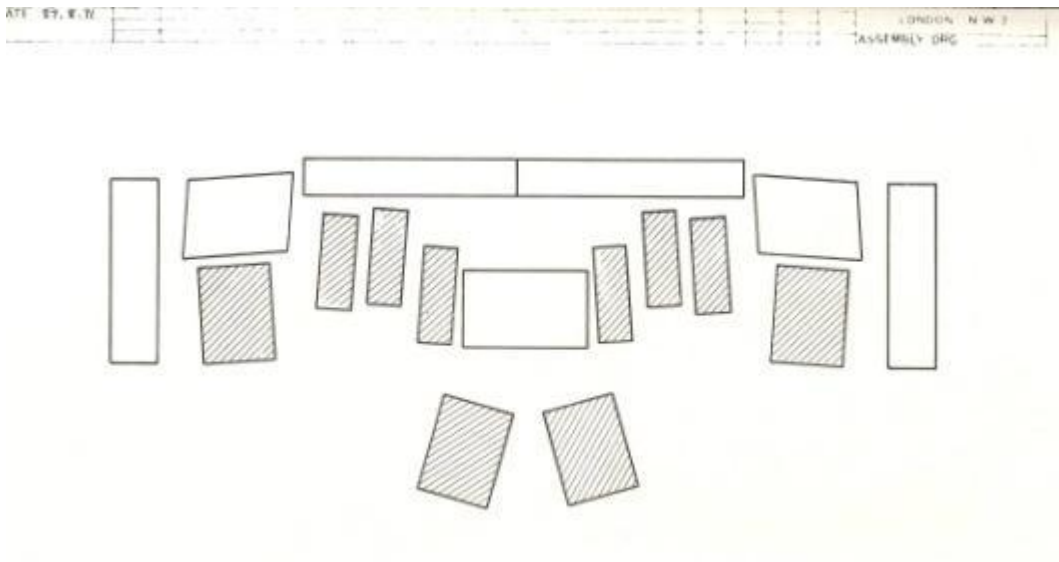


Figure 6.2: Schematic showing key layout for the CHORD Keyboard<sup>52</sup>



<sup>51</sup> POST 119/785, 'Human Coding Performance – A Review' by H.R. Henly, November 1973.

<sup>52</sup> *Ibid.*

An experiment was designed to gather evidence about which keyboard provided the best performance from operators over a series of mock training sessions. Several new configurations were ventured within R14, whose staff found that departmental politics and operational tensions collapsed into the keyboard problem. Postal engineer J.H. Fletcher remarked in 1972, in an internal history of keyboard development, that no single option presented a clear solution at the outset because different stakeholders were pressing for different outcomes. ‘The comparison of keyboard layouts is complicated by the large number of possible variables and the different weightings that may be attached to their relative importance by different interested parties’.<sup>53</sup> Nevertheless, to help give the experiments direction, a set of ideal characteristics was outlined:

- Speed: the faster the better. Speed depends on ‘key positions, reaction and thinking times, the number of keystrokes per item, and it may also be a function of the code-form. Hence, the best keyboard layout for office A may differ from that for office B where the distribution of expected code-forms is different from those of office A’.
- Accuracy: different layouts produce different results. Again, this can be location-sensitive.
- Ease of use: minimise fatigue and location-sensitive.
- Ease of learning: minimise training time.
- Cost should be minimised: ‘This implies the optimisation of the interacting variables, number and function of the keys and control electronics, under constraints imposed by characteristics 1-4’.<sup>54</sup>

Added to this was the known disparity between theory and real-world complexity. The Medical Research Council pressed the point that workers rarely experienced ideal conditions and high levels of motivation could not be assumed. Variation should be expected.<sup>55</sup> The experiment’s overriding principle was therefore to minimise variation in its pool of subjects in order to reduce ambiguities in the statistical results obtained. They sought a uniform group of volunteers with minimal variation in skills, knowledge and attitudes.

Knowing not only that the results could end up determining a highly significant, long-term technological choice for the postal service, but also that the findings would form a contribution to the literature on keyboard ergonomics, extensive preparations were made. They looked to outside experience in training punch-key, computer data operators and qualified typists to see how learning curves related to actual performance under stress, boredom and changes in environment. All published results of such

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<sup>53</sup> POST 119/786, Keyboard evaluation experiment, Report 275, p.5.

<sup>54</sup> *Ibid.*, pp.5-6

<sup>55</sup> *Ibid.*, p.6

aptitude tests were studied.<sup>56</sup> The lessons learned were later compiled by the Parcel Mechanisation Branch in a lengthy report examining industrial coding projects outside the Post Office. An eclectic and rich literature review drew together all manner of writings, from statistical evidence to ergonomic case studies. Of particular interest were studies which said something about the relationship between engineering and economics, or, the ‘obvious interaction [of] ergonomic and engineering considerations and cost’.<sup>57</sup> This led into considerations of efficiency and productivity. The literature on commercial Morse Code communications showed that it was common when training operators to find plateaus in their learning curves, representing phases during learning where subjects consolidated their new skills before moving to the next level. Similar findings on the ‘acquisition of higher habits’ came from studies of typists, adding machine operators, telephonists, and stenographers. The consensus was that short-term memory was the most important skill for coding of all types.<sup>58</sup> The research came predominantly from universities and the R&D departments of dozens of large organisations including IBM, Honeywell, Navy Electronics Lab, Aerospace Medical Research Lab (Ohio), USN Electronics Lab (San Diego), EMI Electronics and Durham University Psychology Department.<sup>59</sup> The key point for the Post Office was the importance of learning curves in selecting their keyboard. In other words the best keyboards elsewhere in industry were those which delivered the best training results.

In setting up the experiment, several problems arose with selecting postmen as subjects. Special payments would be expected and negotiations with the UPW would be time-consuming. Moreover, the existing rank and file could be expected to bring mixed preconceptions, skills and experience, going against the requirement for subject-homogeneity. It was decided to recruit housewives with children of school age on a part-time basis, with a pilot study scheduled for early November 1972 to avoid half-term. It was believed that typing work ‘naturally appealed’ to this group and they were readily available in the Ipswich area, near to the Research Station. Local population constraints favoured the choice of 20-35 year old women. In a bid to further limit variation, specifications required subjects never to have used a typewriter before, to speak English as their first language, to be married, having left school at fifteen, and to have a husband employed in manual labour.<sup>60</sup> The pilot study comprised fifteen hours of training

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<sup>56</sup> POST 119/896, Coding Desks: Operator Training, Research Department Report 465, ‘An Interim Report on Aptitude Tests for Postal Coding Desk Operators and Coding Desk Keyboards’, October 1974, p.5.

<sup>57</sup> POST 119/785... Human Coding Performance... p.8.

<sup>58</sup> *Ibid.*, pp.8-12.

<sup>59</sup> *Ibid.*, pp.31-45. Examples from the bibliography include: D.G. Alden, *Human Factors Principles for Keyboard Design and Operation* (Micro Switch Division, Honeywell Inc, 1971); A.D. Baddeley (*et al.*), ‘Letter Structure of the English Language’, in *Nature*, No. 186, 30/04/60, pp.414-416; W.M. Brodey and N. Lindgren, ‘Human Enhancement Through Evolutionary Technology’, in *IEEE Spectrum*, Vol. 5, No. 2, September 1967, pp.79-83; R. Conrad, ‘Letter Sorting Machines – Paced, “Lagged” or Unpaced?’, in *Ergonomics*, Vol. 3 (1969), pp.149-157.

<sup>60</sup> POST 119/790, ‘An Evaluation of Several Alphanumeric Keyboards for use in Postal Coding’, Research Department Report 560, 1976, p.7; POST 119/786, *op.cit.*, Appendixes 9 and 11.

spread over three weeks. Eight subjects sat in front of display panels which included an oversized layout of the experimental keyboard and a large screen displaying postcodes. Exercises were paced by a tape recorder playing spoken instructions while another tape carried a pulse to synchronise the computer program. For each subject, a headset sounded a pulse whenever a mistake occurred. The initial course taught them to touch type step by step; beginning with the “home” keys, while in later exercises the display panel was phased out in favour of the projector to encourage touch typing. By lesson thirteen the pace was increased from 0.7 keystrokes per second to 1.3. Thereafter sessions became increasingly unpaced. The film being projected showed 1,000 envelopes, two per frame, and as each was “coded” the film stepped on to drop the top letter to the bottom of the screen as a simulation of the way a first generation coding desk presented letters from top to bottom.<sup>61</sup> Their keyboards plugged into a visual display unit with a record of each subject’s performance recorded on paper tape with every keystroke, making it susceptible to a predefined set of statistical analyses. The whole process was repeated with separate groups, each trained on one of seven different experimental keyboards.<sup>62</sup>

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<sup>61</sup> *Ibid.*, pp.10-11.

<sup>62</sup> POST 119/896, Coding Desks: Operator Training, Research Department Report 465, p.6.

Figure 6.3: Teaching apparatus used during the 1972-4 keyboard trials<sup>63</sup>



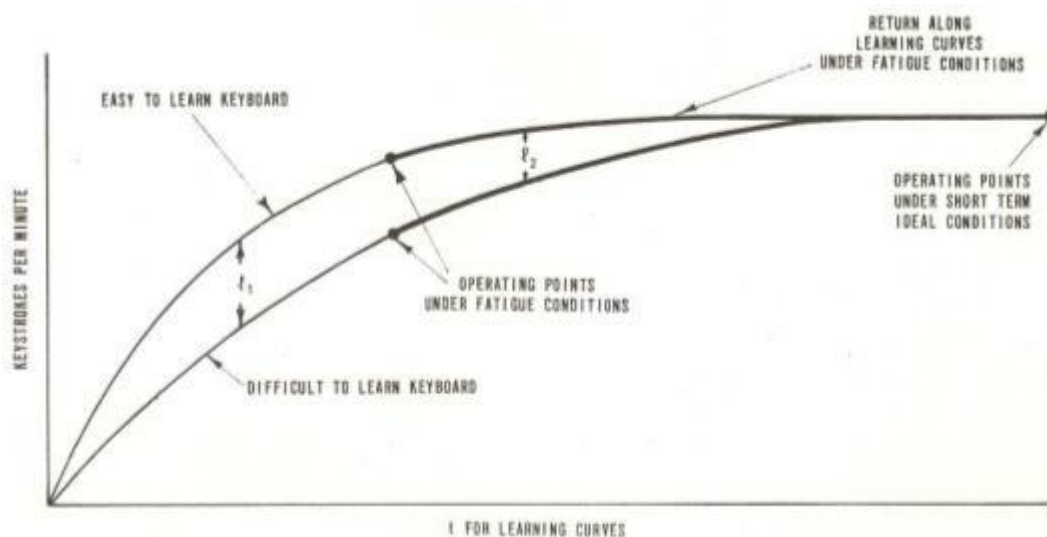
Figure 6.4: Training apparatus used during the 1972-4 keyboard trials<sup>64</sup>



<sup>63</sup> *Ibid.*, photo 1.

<sup>64</sup> *Ibid.*, photo 2.

Figure 6.5: Learning curves plotted based on subject performance<sup>65</sup>



Once finished, the keyboard trials left behind substantial data for analysis. Postal Engineer G.D. Panton concluded in the final report: ‘This has been a complex experiment in which we have tried to ensure that different subjects, tested at different times and in different places, were treated identically for all but their keyboards’.<sup>66</sup> However, for all the precautions taken to keep data free from contamination, subject-variety kept creeping back in. Initial disruptions were caused when industrial action at a nearby power station and a strike by local council workers led to the temporary closure of some schools, preventing a number of subjects from taking part.<sup>67</sup> While in total more than 200 housewives participated, many were in fact Irish and some were only partially literate. In the early training sessions the plan was to have no supervision and to rely entirely on recorded instruction to avoid the variation likely to result from different personalities interacting with their supervisors. However the absence of direct supervision encouraged subjects to interact with each other, creating variety in the extent to which groups discussed their activities. ‘In one class the degree of interaction appeared to be significant. Similarly, without supervision, many of the subjects tried “hunt and peck” typing despite reminders from the taped lessons [not to look at the keys]’.<sup>68</sup> The biggest problem was that it proved impossible to train subjects to code fast enough. Their performance differed markedly from actual staff, largely because the real world structures of pay, discipline and teamwork were impossible to simulate. Attempts to counteract this

<sup>65</sup> *Ibid.*, figure 6.

<sup>66</sup> POST 119/790, ‘An Evaluation of Several Alphanumeric Keyboards’, p.20.

<sup>67</sup> *Ibid.*, p.8.

<sup>68</sup> *Ibid.*, p.9.

included displaying a “high score” to encourage a sense of competition and the use of weekly questionnaires to probe subjects’ attitudes to training so they might feel their efforts more highly valued.<sup>69</sup> When trying to draw conclusions, analysts became overwhelmed by the sense that the artificial nature of the experimental environment tainted the results and that when applied to the real world the data become of less obvious value. It was also felt that the use of housewives in the trials was problematic.

As more data is analysed it is becoming clearer how people work keyboards and how their technique changes with training and experience. With naïve subjects, each element of the task is separate and distinct, but as the task becomes more automatic then it may no longer be possible to consider simple elemental processes. The elements are chained together, and do not behave independently... When considering different mixtures of ability, and their relationship to an ideal keyboard, one is naturally drawn to speculate on the probable differences between the female subject employed to date, and postmen operators. It is probable that postmen will be more familiar with postal information processing, but not so nimble fingered as the women. In a sense the two types may be diametrically opposed, at least in training.<sup>70</sup>

Later reflections on the experiments and how the ergonomic press discussed them noted a lack of confidence in the methods and techniques employed:

Comparative studies that involve training and the acquisition of high levels of motor skills are notoriously difficult to perform and analyse... Hindsight suggests that a very large number of variables need to be monitored for a really definitive study and to date it appears that nobody has had adequate resources or “hindsight prediction” to be able to conduct such a study... Thus the use of simple human factors experiments yields little definitive information.<sup>71</sup>

By October 1974 a decision was needed about which of the keyboards should be adopted and, though there were slight performance differences between the seven, the data was not robust enough for a decision. As Panton explained, QWERTY remained the best compromise choice due largely to the variety present both in national postcode distribution and in the skills and attitudes of the rank and file.

How great an improvement can be gained from keyboard optimisation depends on the language. In the code-sorting application this is a mixture of extract codes and postcodes. If one were to ignore the problems of training and staff mobility then the optimum solution would be different for each office. When one takes these into account then a standardised national design becomes more attractive, and no layout could be

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<sup>69</sup> *Ibid.*, p.8. Similarly, an element of competition was later introduced into live coding, including cups and prizes for high performers. Later still, this was phased out when it was found that some operators were exploiting shortcuts to achieve high scores. See Tom Norgate, ‘A Visit to Guildford MLO’, in *Ident: Journal of the Postal Mechanisation Study Circle*, Vol. 1, 1 (1977).

<sup>70</sup> POST 119/896, Coding Desks: Operator Training, Research Department Report 465, p.10.

<sup>71</sup> POST 153/uncatalogued, previous ref: MD/FH/0831, General Coding Desk Keyboard Design, 1977, R14.3 Memo No. 105, ‘Some Current Thoughts on the Design of Keyboards’, by JH Fletcher, November 1977, p.1.

more standardised than QWERTY. A really strong case would have to be made for a departure from a QWERTY based layout.<sup>72</sup>

It was also observed that QWERTY had originally been designed so that letters most commonly found together in written English were separated as far as possible to minimise clashing of type-bars. This clearly applied far less to postcodes which only faintly corresponded to common language.<sup>73</sup> Moreover, the problems of staff turnover in 1974 favoured QWERTY, the keyboard that was easiest to learn.<sup>74</sup>

It should be stressed however that although the primary objective was not met, the experiments did provide the PO with a wealth of new insights into the nature of coding desk work and how people responded to different training approaches in different environments. After three of the best performing subjects were invited back for a week on operational coding desks, for instance, they were able to explain which they preferred using – the machine or the simulator – and why; namely the ‘psychological sense of achievement that resulted from seeing real letters actually move’.<sup>75</sup> Much was made of these secondary benefits. It was noted that out of a ‘system for performing subjective comparisons of keyboard layouts, an effective method of teaching touch typing to naïve subjects has been produced’.<sup>76</sup> Moreover, much was learnt about how people went about honing their mental activities during coding. Reading, deciphering information, sorting through options, co-ordinating this with muscular movements in fingers – and merging these into a seamless performance with rhythm, pace and stamina (Figure 6.6). These “peripheral” benefits in fact delivered detailed knowledge useful for short-term decisions about training methods and adding to the body of knowledge about the “psychology of the coding desk” which had been built up since Copping used the phrase 15 years earlier. The Engineering Department’s annual review of research in 1975 pointed out that one of their main preoccupations during the year had been devising and applying aptitude tests for the selection of trainee coding desk operators, based largely on the experience gained in the keyboard trials.<sup>77</sup> And there were other ways in which the experiments and the wider goal of designing the code-sort training programme went hand in hand.

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<sup>72</sup> POST 119/790, An Evaluation of Several Alphanumeric Keyboards, p.21.

<sup>73</sup> POST 119/786, Keyboard evaluation experiment, Report 275, Appendix 3.

<sup>74</sup> POST 119/896, Coding Desks: Operator Training, Research Department Report 465, p.5.

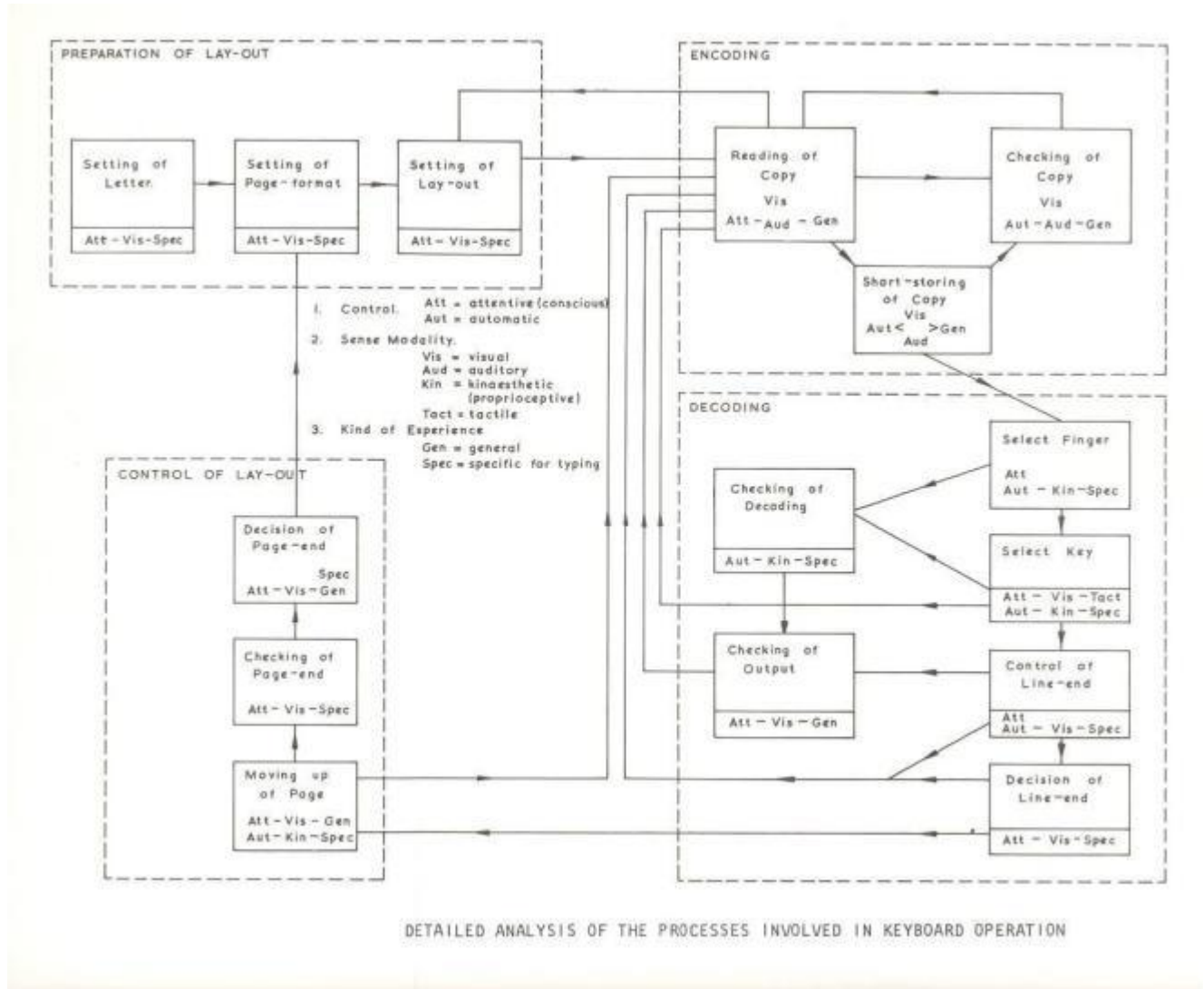
<sup>75</sup> *Ibid.*, p.8.

<sup>76</sup> *Ibid.*, p.10.

<sup>77</sup> POST 119/29, Postal Engineering Research Annual Reviews... 1975, p.7.



Figure 6.6: Mental processes of keyboard operation diagram<sup>78</sup>



<sup>78</sup> POST 119/785, Human Coding Performance, 1973

## Courses, hardware and the Adsum dispute

Possibly the greatest tangential benefit of the keyboard trials for the Engineering Department was the opportunity to test the technical arrangements for the operator training programme, then being developed in parallel. The keyboard trials, as we have seen, used a variety of hardware both for selecting suitable candidates and delivering each part of the training sequence. This included projectors, dummy keyboards, coding desk simulators and computerised lesson-delivery and performance-measurement systems. Striking the right balance was a delicate matter. Over-reliance on basic hardware such as the dummy keyboard/projector combination was ineffective compared with computer-controlled training machines which produced better results, but these were highly specialised and expensive.<sup>79</sup> By 1974 there was a question mark over whether DD1 – the design division hitherto responsible for training equipment – was approaching a limit in terms of its contribution to deciding the final arrangement. The imminence of wider implementation shifted responsibility for this decision further into the hands of Training Division who favoured buying machines from outside sources, and adapting them to DD1 specifications. The key contributions of DD1 are outlined below, followed by examples of growing tensions between the two departments, as the leaders of in-house engineering resisted having their influence diminished. But first, building on the themes and developments already laid out in this chapter, a more comprehensive description of the actual content of the code-sort training programme is offered. Here, two important issues are evident in understanding the balance struck between technical and political considerations. These are that the design of training constituted a striking example of programmed learning, and that the thrust in programme design came from a recognition that the policies adopted needed to motivate staff and promote healthy industrial relations as a means of delivering and sustaining high productivity levels.

Training in existing offices had seen successive improvements in the early 1970s and, although the application of selection testing was still in its infancy,<sup>80</sup> policies for teaching postmen to use coding desks had by 1972 been developed to a state of high sophistication. In that year, PA Management Consultants – the firm auditing the costing models – conducted an investigation into training requirements in MLOs. Comments written by officials reviewing the success of training in the late 1970s suggest that PA Management's analysis was taken seriously and their recommendations, in confirming

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<sup>79</sup> POST 119/896, Coding Desks: Operator Training, 'Development of a Coding Desk Simulator/Teaching Machine', PBJC Committee Paper 3/76, p.1.

<sup>80</sup> Paper-based tests of visual perception, short-term memory and coding principals designed by Psychological Services Branch were trialled at Sheffield, Cambridge, Brighton and, later incorporated measures of finger dexterity, at Newport. However the tests were hardly used prior to 1974. Uncatalogued: 2<sup>nd</sup> Review: PHBS/BG/0048... Minutes of the 3<sup>rd</sup> and 4<sup>th</sup> Meetings of the BMC, 23/11/72, p.7; 05/02/73, p.6; and Third Meeting of the Letter Mechanisation Sub-Committee, 18/07/73, p.2

the existing Headquarters thinking, largely enacted. PA also had experience of training male keyboard operators in other areas of industry. They observed four distinct sections in the existing course:

- Introduction and indoctrination
- Skill development and fault analysis
- Speed and stamina build up
- Transition to the production environment.<sup>81</sup>

They argued that, although this structure was well thought through having been shaped by a philosophy that was balanced and well-informed,<sup>82</sup> the focus on managing the human aspects of change should be more heavily emphasised and the whole course should be expanded over ten stages. The first step was to explain to trainees the overall purpose of mechanisation and stress the importance of their contribution. ‘Operators of coding desks may feel that they are in the “battery hen” situation of having a continuous stream of mail presented to them and being required to press buttons to send it, by some little understood means, to its destination’. Fear and cynicism could be eroded, they said, by providing ‘Knowledge of how the individual contributes to the total pattern’.<sup>83</sup> At each MLO, four hours of lectures on this subject were recommended, delivered by a senior member of the local management. Trainees could then proceed to mock coding desks linked to teleprinters for their first lessons in touch typing, spread over 12 one hour sessions. Assisted by slides and audio recordings, their aim was to achieve 3,500 keystrokes per hour in a five minute test. The next three lessons repeated this, having removed all visual aids. They would now be expected to have a maximum 3% error rate. Fourteen lessons should then focus solely on increasing speed up to a target of 7,000 keystrokes in a five minute test. Next, 36 hours should be devoted to increasing this figure to 12,000 keystrokes, this time replacing recorded verbal instructions with a “bleep” signal and aiming for a maximum 1% error rate. Instruction should then be given in reading addresses quickly and accurately before moving onto lessons in the principles of extract coding using a computer programme that progressively removed assistance until trainees could extract-code unaided. The same process would then be repeated for short codes. It was recommended that the final lessons should return to increasing speed and stamina, using a simulation of live mail-flow before transferring students to operational coding desks for a probationary spell.<sup>84</sup> The PA report reminded the

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<sup>81</sup> POST 17/306, Training Requirements in Mechanised Letter Offices, 1972, p.15.

<sup>82</sup> *Ibid.*, p.16.

<sup>83</sup> *Ibid.*, p.11.

<sup>84</sup> *Ibid.*, pp.21-25.

PO that in implementing this scheme it would be ‘vital... that careful and painstaking development work’ make use of the insights of people with significant experience of training postmen.<sup>85</sup>

Their recommendations went on to stress the importance of having the operator training programme integrated within the broader context of MLOs and the wider system. They noted with approval developments in retraining the Inspectorate, observing a policy that went beyond simply explaining how the machines worked. Training Division had devised a new course which recognised that Postmasters might now have responsibilities over more than one floor and their offices would be filled with mail constantly on the move through machines. The tradition of seeing piles of unsorted mail needing clearing before a certain time now applied less. New management skills – both technical and personal – needed mastering. The key, as PA saw it, was to avoid teething troubles leading to a cynical perception that the changes were unnecessary. They recommended a five-part course using role-play to simulate likely problems encountered in the office, such as a drop in coding rates, machine faults, staff motivation, discipline and control systems.<sup>86</sup> They warned against allowing Head Postmasters too much autonomy during the transitional phase to mechanised sorting, when targets and measurement defined centrally, in London, would better keep different offices at a good, uniform standard. The Mechanisation Section of the Training Division advised Head Postmasters on the selection of local Assistant Inspectors to become trainers who were taught how to train staff using a typewriter based training course using the considerable research underpinning course content and layout.<sup>87</sup> PA’s overall conclusions emphasised the difficulties still to overcome in retraining a significant proportion of the rank and file in a workforce characterised by great diversity in age, experience and attitude.

We believe that this training task with its concern for people, their motivation and attitude to change, represents a greater challenge than the problems, already overcome, of designing and producing the mechanical equipment. A realisation of the scale of the problem followed by a determination from all concerned to organise for, develop and control the training programme is the only road to success... Greater concentration on the management, organisational and human problems of change is urgently required... The mechanisation programme represents, for the Postal Service, a very large capital investment. Without improvements in the training of Post Code Operators, and the Inspectorate, which in turn are dependent on an improved organisation for training, the return on that investment will fall well short of both the budgeted potential and the full amount that is achievable.<sup>88</sup>

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<sup>85</sup> *Ibid.*, p.25.

<sup>86</sup> *Ibid.*, p.28.

<sup>87</sup> *Ibid.*, p.5.

<sup>88</sup> *Ibid.*, pp.34-35.

The need for a multifaceted, centralised, ongoing effort in policy management was likely to have been the main reason for moving some of the responsibility for training from engineers to people with more dedicated experience of management and administration. The fact that responsibility was spread across departments was acknowledged by PA Management who saw the concentration of effort on creating better-adapted training machines ‘on what appears to the outsider to be almost a competitive basis’ as the next key development in operator training.<sup>89</sup>

DD1 began work on this in 1968 and outlined some general specifications for a computer-based training system the following year. They planned to use a time-shared central data processor with several training positions comprising presentation units and keyboards. This would amount to a simulation of the coding desk and was aimed at producing reliable performance data establishing a pass-out target for each trainee.<sup>90</sup> This was conveyed to the staff-side in the internal newspaper, *The Courier*, which stated on its front page in July 1970: “‘Robot’ teaches sorting by keyboard”.<sup>91</sup> Postal engineer K.L. Spence reported in 1971 that computerised selection methods should pre-test trainees (in reading, memory, dexterity, accuracy of finger movement, reaction time, information extraction and fatigue),<sup>92</sup> trials with equipment for the full training programme began in 1972 at Croydon and London’s West Central District Office.<sup>93</sup> These provided better results than more rudimentary methods in typewriter training which only pushed trainees up to 50% of the desired performance, which tended to fall by about 20% when transferred to live work, before slowly building up again. The great benefit of the computer-controlled simulator was that a trainee’s performance could be tracked and the lessons were automated and tailored in pace to individuals or to groups. Additionally, the constant stream of observations of how people new to coding eased their way in was valuable to improving the ergonomic design of operational coding desks.<sup>94</sup> The computer-controlled system could accommodate multiple users simultaneously (up to 40) and was considered ‘unique and far in advance of any comparable method’.<sup>95</sup> Many features resembled advanced versions of the training machines witnessed by PO Officials in America five years earlier. The lesson plan comprised 500 ‘training blocks’ each with progressively more challenging speed and accuracy targets, though not

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<sup>89</sup> *Ibid.*, p.34.

<sup>90</sup> POST 119/896, Coding Desks: Operator Training, Specification PE 0092 for Operator Training Equipments, February 1969.

<sup>91</sup> *Ibid.*, *The Courier*, July 1970.

<sup>92</sup> *Ibid.*, Pre-Selection Tests for Coding Desk Operators, April 1971.

<sup>93</sup> POST 122/12529, Letter Post Plan: Staff Side Consideration, 1970-2; 6th Meeting of the Joint Group on Postal Coding and Automatic Letter Sorting, 03/01/72, para 98.

<sup>94</sup> MD/FH/0407, Paris Conference, *op.cit.*, pp.4-5.

<sup>95</sup> POST 119/899, Letter Machinery Branch Report No. 11, A Computer Based Coding Desk Operator Training System, 1971, p.4.

necessarily in a linear sequence. The programme was structured to incorporate ‘branching techniques’ where each stage of teaching was determined by previous performance.<sup>96</sup>

At some point between 1972 and 1974 a decision was passed down to invest primary responsibility for the code-sort programme in Training Division (connected with the Personnel Department), with the Engineering Department relegated to a support role. Training Division was staffed by Personnel officials and the department driving the training machine project was PP1 (and later PP4) where the decision was made to outsource to Adsum Ltd (formerly Computer Peripheral Equipment Ltd (CPE)). Adsum were commissioned to produce the “Teleprinter-and-Coding-Keyboard-Linked-Equipment system”, known as TACKLE.<sup>97</sup> Adsum’s first prototype hardware fell short of what was needed in being suited only to group learning, in failing to clearly identify errors in printouts and, it was alleged, prone to escalating maintenance costs. With second generation equipment in the pipeline, Adsum proceeded to develop a prototype Coding Desk Simulator/Teaching Machine (CDS/TM) involving information storage on a magnetic drum, TV screen display and printer. Because CDS/TM could accommodate any type of keyboard and display unit it had wide industrial applicability and featured in a “Training For Work” BBC education series. Adsum were asked to adapt the CDS/TM system for training staff on the Easy-View coding desk.<sup>98</sup> Another company in discussion with the PO about a training machine was Honeywell who also had experience in computerised training. K.L. Spence would later work with the Honeywell hardware to produce a scheme for a new machine (Figure 6.7) which had an array of indicator diode lamps representing the keyboard layout, and a row of eight alpha-numeric display panels. His goal was to offer both paced and unpaced learning, using displays and a headset for immediate error feedback. The software would run a training course of up to 1,000 self-contained lessons without the need for personal supervision.<sup>99</sup>

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<sup>96</sup> *Ibid.*, pp.6-7.

<sup>97</sup> Tom Norgate, ‘Coding Desks and Postal Mechanisation’, in *Cross Post*, Vol. 9, 2 (2005), pp. 51-55.

<sup>98</sup> POST 119/896, Coding Desks: Operator Training, Development of a Coding Desk Simulator, pp.1-4.

<sup>99</sup> *Ibid.*; Operator Training Equipment, by K.L. Spence (PMB6.2.2), August 1976.

Figure 6.7: Training machine diagram<sup>100</sup>

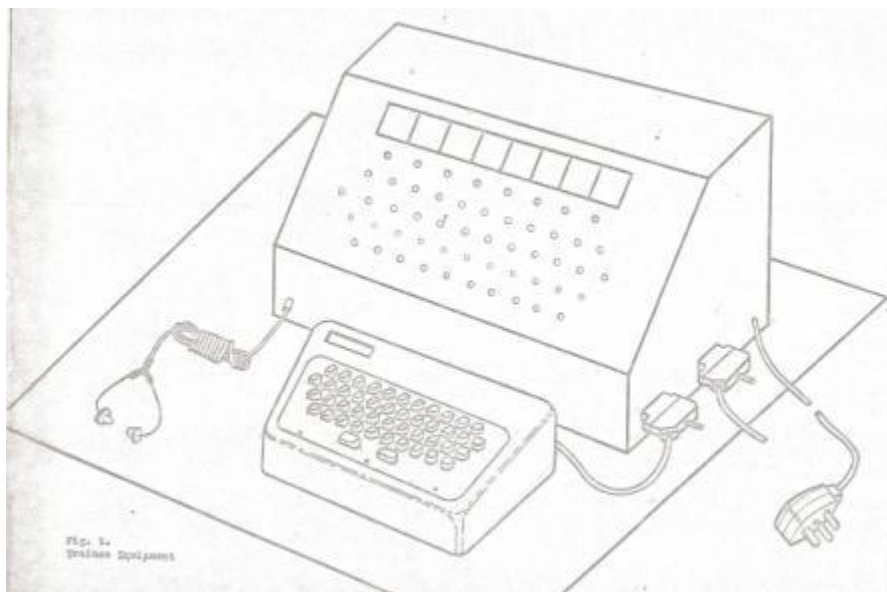


Figure 6.8: Coding Desk Trainer<sup>101</sup>



<sup>100</sup> POST 119/896 Coding Desks: Operator Training.

<sup>101</sup> POST 118/5952, Croydon, Coding Desk Trainer

Figure 6.9: Coding Desk Training Consoles with Operators<sup>102</sup>



Clearly, there was a complicated range of people, departments and outside organisations involved in developing training machines. It is also clear that, before 1975, no standard, uniform solution materialised. The debate over training hardware continued throughout the 1970s and tended to revolve around how to balance costs against performance and around who within the industry had most expertise to control this aspect of training. A running dispute developed, as senior engineers repeatedly voiced criticism of the Training Division, beginning in 1971 when Copping wrote to David Harvey to complain about the quality of a training experiment the latter was conducting at Croydon Head Post Office. The

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<sup>102</sup> POST 118/5994, Coding Desk Training Consoles



performance of operators, Copping said, was not being monitored in enough detail and the results needed to be broken down into more discrete categories. There were too many inadequately prepared instructors and the pre-selection of trainees was poor.<sup>103</sup> Once Training Division and Adsum gained primary control over training R&D, internal correspondence between senior PO engineers recorded their displeasure, as notes between Keith Phillips and Eric Hills in March 1976 make clear:

Alex Bennett has highlighted ONE area in which R&D work proper to your division is being implemented elsewhere – and not very effectively at that! If we are to make best use of our resources to the advantage of the Postal Business it is NOW time to take steps to ensure that ALL R&D activities are directed by the R&D divisions... I emphatically agree with Alex Bennett that we should now impose some discipline on the organisation and implementation of Development work.<sup>104</sup>

Alex Bennett intervened with a reminder that his policy was to ‘not get involved’ with training equipment ‘for various historical reasons and because it costs money’.<sup>105</sup> However he and his colleagues had serious reservations about the ability of other departments to make engineering judgements. This included their choice of outside contractors and the suitability of Adsum in particular. The group even went public with this view in a letter to *The Times* in September 1976, in which they argued that the latest Adsum proposal...

...is that of a clever undergraduate essay. It has an undergraduate’s broad arguments and sweeping conclusions; it has an undergraduate’s use of supposedly telling quotations from a limited number of sources of differing value. It has the undergraduate’s combination of superficial plausibility with the absence of any real grasp of the subject matter. It has the undergraduate’s lack of a sense of proportion so that trivial details, themselves introduced as evidence of research effort, are accorded equal weight with matters of great importance.<sup>106</sup>

An internal report on the issue written by Cliff Wicken in September reiterated their frustration. By this stage the matter of operator productivity at operational MLOs was becoming an even greater concern as the figures suggested a lower rate of coding than that forecast in the revalidation costings. Reports from the ground indicated that many operators were having difficulties bringing their technique to maximum capacity. Those who were hitting their targets tended to develop quickly a good flow of touch-typing and “reading ahead”, i.e. mentally processing the next letter in line while simultaneously entering the code of and dispatching the previous letter. Wicken and his colleagues believed that training should focus more on developing core touch-typing skills which were difficult to forget later, and less on the formal teaching

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<sup>103</sup> *Ibid.*; Correspondence between Copping and Harvey, 21/06/71; 23/06/71; 30/06/71.

<sup>104</sup> *Ibid.*, Phillips to Hills, 25/03/76.

<sup>105</sup> *Ibid.*, Bennett to Phillips, 02/08/76.

<sup>106</sup> *Ibid.*, Wicken to Hills, 29/09/76.

of reading-ahead, which, they felt, was picked up naturally once in the job. Wicken spelt out Adsum's failings in capitals:

THE TEACHING OF KEYBOARD SKILLS IS THE MAIN AND MOST IMPORTANT PART OF A CODING DESK OPERATOR'S TRAINING. IT IS OF UTMOST IMPORTANCE THAT OPERATORS ACHIEVE A VERY GOOD STANDARD OF TOUCH TYPING AS THE HABIT OF LOOKING DOWN AT THE KEYBOARD IS VERY TIRING AND DAMAGING TO THROUGHPUT.<sup>107</sup>

The Adsum contract was eventually cancelled due to cost and 'obsolescence'. This was not the end of debates about training machines, but by late 1977 opposition to the idea of an Easy-View simulator was growing. It was pointed out that to be useful it would need to match similar specifications to, and would be more expensive than, an operational coding desk.<sup>108</sup>

These disputes continued into the 1980s as new people in both departments entered the business and grappled with these complexities afresh.<sup>109</sup> One interesting observation was that the closer training machines got to simulating a real coding desk, the more complicated and inflexible the training system became.<sup>110</sup> However it is clear that the distribution of responsibilities for developing and maintaining the mechanisation training programmes underwent changes during the early- and mid-1970s. In this regard the Adsum dispute is illustrative. Senior engineers such as Copping and de Jong were at the end of their careers and witnessing cuts to the R&D budget, with more solutions being purchased externally. The in-house demand for fundamental research in sorting machine and infrastructural design subsided, replaced by people with more management experience. K.L. Williams is a good example. He had considerable experience and knowledge but did not share Copping and de Jong's faith in mechanisation. Williams was given overall responsibility for mechanisation training in 1970, part of a new Training Division established in 1967.<sup>111</sup> He had spent most of his life observing postal operations having joined as an engineer in 1937. He ended his career managing the London Postal Region (LPR) in the 1980s. When in October 1980 he recommended methods of improving management communication in the LPR, he illustrated the problem of overbearing management with the analogy of a husband constantly pestering his wife while she prepared dinner: persistent requests to be updated on progress, he said, might result not only in the enquirer gaining 'a thick ear' but in the 'potatoes being overcooked'. His view was that the

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<sup>107</sup> *Ibid.*, Training Equipment for Operators of the Easy-View Coding Desk: Adsum Ltd Development Contract 544235, 30/09/76; C.S. Wicken to E.G. Hills, 06/10/77; and K. Phillips to E.G. Hills, 04/10/77.

<sup>108</sup> POST 119/896, Coding Desks: Operator Training, Memo: 'Keying Performance of Letter Coding Desk Operators at Norwich', Research Department Report 610 by James Foley (PMB1.4), 23/09/77.

<sup>109</sup> POST 153/uncatalogued, MD/FH/1055, Training: Review of Code/Sort Operators, 1978-9; Butcher to Fletcher (draft), December 1978.

<sup>110</sup> POST 153/uncatalogued, MD/FH/1055... undated memo, 'Operator Training Equipment'.

<sup>111</sup> POST 92/16, PO Report and Accounts, 1967-1970; 1967-68, p.21.

workplace functioned better when down-to-earth communication was used and he supported team-building projects in which management and workers participated on equal terms. ‘The Postal Business is a rather earthy organisation which employs the human machine more than anything else’, he wrote. ‘It is best controlled with the personal touch’.<sup>112</sup> He regarded the mechanisation programme with caution: ‘At the present time I feel that unless a reliable form of OCR can be introduced into the letter mechanisation programme in the near future at an acceptable cost in terms of concessions to the UCW, the whole exercise has been and remains of somewhat doubtful value’.<sup>113</sup>

### **Personnel and the labour market**

The prevailing philosophy among postal engineers on questions of training was therefore similar to that concerning systems modelling and machine design: one guided by the search for the most cohesive system of technology and people. However, this had come to coexist with a growing appreciation of the nuances involved in the human problems of industrial change. This was well summarised by an engineering representative at an international postal conference held in Paris in 1973:

Before a new mechanised office is opened we mount a comprehensive training programme aimed not only at teaching particular machine operating skills but also at familiarising all members of the staff with the broad concepts of mechanisation and the reasons for its introduction. Despite extensive consultation with the Unions at the planning, design and construction stages of large projects we have found that individual members of the staff are often nervous, and sometimes resentful, of the upheaval and change in working methods that is involved in a move from a manual to a mechanised working environment; a soundly based familiarisation programme can substantially reduce these adverse effects of change. For the large projects a small team of two or three training specialists is set up early in the construction stage. They commence their task with an analysis of how the office as a whole will operate, how the major work areas will function individually and how each contribute to the overall plan for the office. Local management is closely involved and consulted during the analysis stage and, of course, need to agree the outcome of the team’s studies.<sup>114</sup>

As the first MLOs became operational after 1969, the staff and managers at the newly equipped offices found themselves exposed to the problems of adapting to a radically new work system, and their feedback

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<sup>112</sup> POST 65/155, K. L. Williams, ‘Review of Working Relationships in the LPR’, October 1980, p.22.

<sup>113</sup> *Ibid.*, p.21.

<sup>114</sup> POST 153/uncatalogued. Previous Ref: MD/FH/0407, Paris Conference: Selection, Training and Grading of Operators for Letter Handling Machinery, 1973, p.2.

on training was collated by policymakers in London for review. The primary concern was to ensure that technical changes did not outpace the capacity of staff to adapt.

The other side of the training question was recruitment and selection, which were the concern of the Personnel Department. The political and economic context of the industry worsened in 1974 following the Miners' Strike and the change of government, with implications for postal wages and the labour market, which had knock-on effects for selection and training policies for code-sorting. The central feature of the postal service's labour market was the shortage of staff. Vacancies stood at between 5-10,000 in the mid-1970s leading to extremely high overtime levels. The problem had been building since the mid 1960s<sup>115</sup> and was linked to the so-called "productivity gap" which had been criticised in 1971 Hardman Report. Productivity per capita had fallen in real terms since 1969, principally due to inadequate resources for dealing with the continual increase of the number of houses in Britain. Each new house added an extra "delivery point" to be served by a workforce that did not grow in proportion. This was thought to add to the stresses of rank and file work and contributed to ever higher turnover rates. In 1973 around 7,000 postmen left the service, 4,600 of them within their first six months.<sup>116</sup> Pay was low, the work involved unsocial hours and it was commonly thought that young recruits lacked sufficient staying power and competence. The Personnel Executive, Dorothy Fothergill, was struck by the claim that postmen on the lowest earnings were paid close to what a married man with two children on benefits received from the state.<sup>117</sup> 'In light of this it is not difficult to understand why postmen recruitment may be falling off.'<sup>118</sup> As discussed by Campbell-Smith, better pay and conditions elsewhere in the economy had caused fundamental changes to the labour market.<sup>119</sup>

During 1974, the Psychological Services Division made investigations. The traditional advantages of PO work, such as security of employment, pensions, sick and annual leave were now matched elsewhere, the relatively low pay combined with shift and weekend work and overtime bargaining was helping to perpetuate vicious circles of recruitment shortage at blackspot offices. New entrants tended to get the worst walks and duties, while 'physical working conditions were in many, but not all, cases, relatively poor, with cramped, outmoded sorting offices'.<sup>120</sup> This conspired to destabilise working groups with constant rotation of supervisors leading to the view that training effectiveness was

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<sup>115</sup> POST 19/266, Reports on the annual returns of work and staff hours for offices in the UK, 1965; Annual Returns of Work and Staff (Postal), 1964.

<sup>116</sup> POST 57/35, 'Recruitment and Wastage of Postmen, an Enquiry of Local Management' by Psychological Services Division, 1974, p.6.

<sup>117</sup> POST 151/uncatalogued, former ref: CH/BV/0722, Comparison of Postman's pay with DHSS benefits.

<sup>118</sup> *Ibid.*, Fothergill to Head, 25/04/78.

<sup>119</sup> Campbell-Smith, *Masters of the Post*, pp.525-7.

<sup>120</sup> POST 57/35... 'Recruitment and Wastage', p.8.

being harmed as staff were deprived of adequate guidance. A climate of wastage meant that supervision was deemed by the old guard to be lenient in order to 'keep their men'. Wastage rates at Wigan and Altringham were then running at 50%.<sup>121</sup> There was a general consensus among all managers that the quality of staff had declined steadily since the mid-1950s, although the investigating psychologists questioned whether this was reality or perception. While analyses of recruitment aptitude tests showed competence was on average slightly lower in the cities than in the provinces, there was no solid evidence as to whether there was any differential over time. It was widely believed the PO had a poor image and publicity could not help improve matters. Morale in general was reported to be low. Many longstanding managers claimed postmen worked only for pay and that pride in the profession had diminished. 'They suggested that men no longer mentioned with pride that they worked for the Post Office and if possible concealed the fact'.<sup>122</sup>

In brainstorming sessions during November 1974, young executives wrestled with these problems and asked how they would affect recruitment for code-sorting. Their attentions were soon focussed on the selection and training of staff. They recognised the overriding purpose of code-sort training was to equip operators with the skills and motivation needed for high throughput rates and that this was essential for the future economic viability of the system. Trainees, they agreed, needed to stay in the job for a minimum time to reduce training costs and to build up skill. In selecting operators they favoured youth, but they knew that applicants who were too young were less likely to stay, making the preferred age range 24-45. The problem was finding such people. 'In Southampton for instance a serious shortfall of operators led to an area trawl in January 1973. This resulted in 2 applications one of which was found unacceptable. A subsequent trawl in April 1973 in the area, after removing the minimum 1 year service qualification, resulted in no applications at all'.<sup>123</sup> Several criticisms were made of existing training methods in mechanised offices, which tended to be done on overtime at end of day when staff were often too tired to give their full concentration. The pass-out examination needed redesigning because many were still not up to the demands of "live" mail. It was also found that practice deviated from theory. National standards were for staff to rotate between manual and coding work with four weeks spent coding for every week of manual work. In reality offices such as Cambridge were operating a 3/1 ratio. Weekly hours on coding were supposed to amount to 25-30, but in practice the average was 20 hours with coding stints lasting 1½ rather than the desired 2 hours. These problems were seen as the most detrimental to throughput rates which they believed could in principal be doubled from the target of 1,600 items per hour (iph) then in

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<sup>121</sup> POST 57/34, Postmen wastage and recruitment – a short investigation, June 1974, p.24.

<sup>122</sup> POST 57/35... 'Recruitment and Wastage', pp.8-9.

<sup>123</sup> POST 63/82... Report of young executives, Section 3.6.

place. The original Letter Post Plan had, perhaps optimistically, assumed approximately 2,500 iph in its costings.<sup>124</sup>

They saw the heart of the problem as the nature of coding itself, described as ‘basically tedious and stationary desk work’.<sup>125</sup> The view was that inherent flaws in job-design contributed to high turnover and absenteeism, offering workers strategic advantages in negotiations with management by leaving a crucial part of the mail flow system vulnerable to staff disruption.

We asked ourselves if coding desk work provided a well balanced interesting job. We do not think it does and feel that great care must be taken to develop staffing policies which allow coding work to be balanced with ancillary tasks in the mechanized area. Our aim would be to avoid the sort of overdeveloped division of labour which plagues the motor industry.<sup>126</sup>

In visits to Cambridge they ‘sensed a rift’ between coding operators and manual staff and argued that the Mechanisation Branch, whose revision of training procedures was then underway, should take note of this and develop methods for better ‘selling’ mechanisation to the whole sorting office, emphasising the virtues of team working between manual staff and machinists.<sup>127</sup> In particular, ancillary staff – those who culled and fed letters to the operator positions – would identify with their colleagues if they too had coding experience. Moreover, the rank and file and inspectorate would gel as the common level of postal knowledge and understanding of the code-sort system improved.

Supervisors in the mech-area need new skills, and have to familiarize themselves with new sources of information on which to base their minute by minute decisions. They also face the problem that those they are supervising know far more about the detail of the jobs in the mech-area than the supervisors do ... The creation of a team spirit may well improve what is essentially a boring, repetitive job, resulting in increased motivation and job satisfaction and the lessening of the minor irritations which can, in a machine environment, lead both to conflict between staff, and conflict between staff and management.<sup>128</sup>

Their discussions ended by listing the qualities of an ideal operator, which the selection tests then being designed were seeking to apply in the real world. Because a trained operator was more difficult to replace at short notice than a conventional postman, general good health was desired. Eyesight should be good at 2-3 feet, and hands should be agile and free from deformities. Touch typing and a sense of rhythm favoured the selection of typists, telegraphists and pianists, or indeed anyone with good hand-to-eye coordination and quick reactions. Those already possessing some depth of postal knowledge should also

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<sup>124</sup> POST 17/329... The Letter Post Plan, 1969, Appendix 3.

<sup>125</sup> POST 63/82, Report of young executives, Section 3.10.

<sup>126</sup> *Ibid.*, Section 3.14.

<sup>127</sup> *Ibid.*, Section 3.15.

<sup>128</sup> *Ibid.*, Sections 3.12 and 4.6.

be sought, but caution was urged when considering a candidate's general level of intelligence. 'Operators who are too intelligent will quickly become bored with the job and not realise their full potential or just leave'.<sup>129</sup>

## Conclusion

In Summary, a wide range of political and technical measures were put in place at the PO before and during the launch of mechanisation, with mixed results. The decision to stand by the QWERTY keyboard layout, albeit in modified form, was important and in part taken on the basis of learning curves and its familiarity to the majority of prospective trainees. But this was just one part of what was later termed a 'total package', with a number of distinct parts. MLO management was catered for at the Postal Management College providing three-week modules in planning, commissioning and operation which began up to two years before a new office was opened. Here, Head Postmasters studied the key concepts of mechanisation and how to manage new types of workflow. A six-week course was in place for "training the trainers". Future instructors learned how to train coding desk operators effectively in local sorting offices where they learned about the keyboards, instruction techniques and the general uses of sorting office technology. Detailed measures were in place for auxiliary duties, while exhibitions and displays prepared all staff before moving to a new office. A full 100 hour programme was established for coding desk operators and, in addition to the specialised hardware described above, metronomes and music were added to reinforce rhythmic, touch-typing skills.<sup>130</sup>

This achievement, its importance and the progressive approach which shaped it was well summarised by engineer J.P.G. Foley when a new round of training reappraisal got under way in 1977.

It is now almost a cliché to say that the advent of mechanisation in the postal business is the greatest change to face those of us employed in the business since 1840. However, like so many clichés, it is true. Mechanisation represents a change in long standing practices, it is a challenge and traditional wisdom seems to find difficulty in readily accepting that the brave new world of mechanisation is necessarily a better world. This is understandable because existing staff are so familiar with the existing mode of work and they are suspicious of change. Given this background there is a two fold duty for training to fulfil. It is necessary not only to teach those who are to manage and work in mechanised offices how the equipment

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<sup>129</sup> *Ibid.*, Appendix K.

<sup>130</sup> POST 119/896, Coding Desks: Operator Training, Training for Letter Mechanisation, Annex; 'Brainstorming Notes' by Colin Clarke sent to K. Phillips, 19/05/77.

works, the planning of its introduction, the skills needed to run and control it including the change in methods and attitudes required, but also to bring about a commitment to mechanisation. This is the total educational process which can bring about the motivation required from all levels which is so essential to make mechanisation successful.<sup>131</sup>

This is not to say all problems were overcome. First, the continuing difficulties over keying rates and training machines were serious concerns and were not solved in 1975. Second, the fundamental flaws in the concept of code-sorting could not be fixed no matter how thorough the training provision. Finally, certain general criticisms of the design of training schemes made by contemporary sociologists may have some application in considering the PO case. One argument was that those designing new schemes often took a one-dimensional 'rational' approach, without fully appreciating that perceptions of occupational skill were tied up with status within grade hierarchies. As a result, once implemented, their designs might have unforeseen consequences.<sup>132</sup> Certainly, some naivety of this kind was evident in the keyboard trials which looked less and less like a good investment when contemporary thinking in human capital was pointing out that workers tended to react more positively to general rather than specific training. Belatedly reverting to the QWERTY keyboard tacitly acknowledged this by utilising and enhancing existing skills.<sup>133</sup> However, considering the industrial climate of mid-1970s Britain and the staffing issues this created for the postal service – and remembering the scale on which the training package applied and the long-term, industrial relations-sensitive nature of the R&D invested across several fields of inquiry – there are reasons to commend the PO's record in producing a sufficient provision of training policies in demanding conditions

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<sup>131</sup> *Ibid.*, Training for Letter Mechanisation by J.P.G. Foley, February 1977.

<sup>132</sup> Phillip Sadler, 'Sociological Aspects of Skill', in *British Journal of Industrial Relations*, Vol. 8, 1 (1970), p.24.

<sup>133</sup> Lindley, 'Active Manpower Policy', p.341.



## Conclusion

This thesis has revealed and documented a particular realm of systems-building in a major British public utility in the twentieth century with a special focus on the interrelation of technological and political changes in the late 1960s and early 1970s during the course of a transition from planning a new system to its belated implementation. The introduction of new technology in the British postal service had profound effects on the political economy of the industry and on the working lives of many thousands of its staff. Its history has here been recorded, thanks largely to the preservation of much of the original contemporary institutional documentation at the British Postal Museum & Archive. This thesis provides an empirical case study based on hitherto unresearched primary material. The resulting findings and themes have been related to debates in the fields of the history of technology, the history of communications, institutional and business history, contemporary British history and industrial sociology. This work adds to a growing historiography of the modern Post Office in Britain and engages critically particularly with arguments in the works of the historians Martin Daunton, Alan Clinton and Duncan Campbell-Smith.

Although relatively little has been published on the fortunes of the mechanisation programme, contemporary commentary and subsequent reflections have been predominantly negative. This is understandable considering that attempts to introduce code-sorting on a national basis coincided with a politically and economically turbulent period in modern British history – in which the nationalised industries were heavily implicated. These conditions served to undermine some assumptions in the original plan, leading to a series of reappraisals, further problematised by acute financial crises and protracted industrial disputes, most notably the national postal strike in 1971 and the subsequent three year embargo. It is also relevant that when journalists and economists reported these events, and when the Hardman and Carter Committees published their in-depth reports, the postal service was widely believed to be in decline. Critiques of the plan's implementation featured in subsequent studies which were highly critical of the postal industry, particularly the work of Michael Corby, and similarly unfavourable references can be found in appraisals of financial and productivity performance in the public sector by economists and politicians in the 1980s – all some years before the full benefits of the decision to mechanise were understood. Among historians now approaching this period afresh, the historiography with anything to say about the postal service is, quite reasonably, drawn to a cluster of highly visible and serious problems with industrial relations and the role which the 1971 strike played in national politics.

During preliminary research in the primary sources, three flaws in the existing account of the LPP became apparent. The first and most obvious was that not only had little been written from a historical perspective (Campbell-Smith's *Masters of the Post* was not even conceived, let alone published at that point), but also that what was available on the subject failed to convey the ambitious and profound nature of the changes being tabled in the 1960s, the extent of planning involved or the central importance of the LPP in defining a new framework for industrial politics in the industry for the rest of the century. Nor was there sufficient recognition that the mechanisation of sorting offices formed the technological underpinning of the mail's most important structural reform of the last 150 years. The second flaw took longer to reveal itself but became the unifying argument. Published reports can lead one to believe that the LPP was a failure and both PO management and unions were culpable. Though strong cases of this sort have been made in the context of contemporary and ideologically inflected critiques of state enterprise, they did not provide a rounded assessment of the financial, political and operational effects of the new technology, nor did they advance understanding of the reasons for its implementation. In short, this approach failed to consider the historical significance of the LPP other than in relation to financial performance, or to explain retrospectively the putative decline of the British labour movement. Finally, it became increasingly clear that, rather than constituting a litany of managerial incompetence and union obstructionism – and contrary to more general, popular conceptions of the period – the sources consistently indicated that there were constructive and progressive aspects to this troubled period, in which real achievements were made in both the operational and political spheres, and that the co-evolution of technology and industrial relations was an important and unifying perspective, previously obscured.

Establishing whether or not such a reappraisal is justified has proved complex, made all the more difficult by the bureaucratic nature of the primary records. Committee minutes, departmental research reports and Board papers were all created with particular purposes in mind and were shaped by potentially unknowable agendas. Institutional documentation tends to include subtle self-justification, rationalisation for past decisions, and may in some instances appear to be apologetics for the goals and policies of the day. As research questions were posed and reformulated in the light of archival work, it became apparent that the line of argument was potentially open to the criticism that an endorsed institutional perspective was colouring my historical interpretation. I trust I have guarded against this by cross-checking sources, by representing the content and context of the documents fairly, by allowing the historical actors their own voice and by acknowledging contrary arguments. This has been an ongoing subject of discussion with archivists at the BPMA, at conferences and with fellow postgraduate students. Each of the chapters wrestle with this tension to some extent and some explanations are offered in order to reconcile any

remaining apparent incompatibilities with the findings of other scholars. Firstly, thematic connections between the different chapters are discussed.

Three internal groups were influential stakeholders in mechanisation – loosely defined as management, staff and engineers – and each had their interests and actions represented by leading figures such as William Ryland, Tom Jackson and Nick de Jong respectively. The history of their interactions and the pursuit of their differing objectives was charted over the course of six roughly chronological chapters, each emphasising a particular theme, though these reappeared in various forms throughout. In the introduction it was suggested that these themes were: design, planning, conflict, reappraisal, consultation and training. They were treated chapter by chapter, reflecting the sequence of overlapping phases involved in the transition from the pre-1969, years when the LPP was formulated, to the post-1975 period of its nationwide implementation. Chapters 1 and 2 offered two levels of explanation for the formation and execution of the Letter Post Plan in 1969. The first, dealing with technical design, highlighted the ways in which long-term IR considerations were important in establishing the design-path. The second approached political and economic planning, looking at how the specifics of the plan were settled and justified in the context of the preoccupation with modernisation in the 1960s.

However, it is possible to step back and see the decision to pursue a nationally integrated and automated processing capability as a response to two broader impulses which have animated the institutional evolution of the PO since the famous reforms of the nineteenth century, if not earlier. The first was the longstanding pursuit of higher speeds and capacity in public communications. As discussed in chapter 1, the world of postal logistics in the modern era underwent repeated re-engineering in the light of experience and through reforms which had the ultimate goal of improving systems-efficiency. Since the establishment of the six post roads emanating from London in the seventeenth century, through the mail coach and, subsequently, railroad and motorway eras, a slow evolution in efficiency and integration has been punctuated by major reforms. These include those associated with Rowland Hill and the universal Penny Post, which facilitated countless communications through the industrial revolution and prompted several decades of unflinching increases in mail volumes and an enlargement of infrastructure and labour to match. The following century saw the phasing in of motor transport and the revolution in mail circulation this entailed, and, as we have seen for the post-war period, the introduction of automated processing and control systems and the design and superimposition of a network of factories for the mass-processing of coded correspondence. In a century in which Britain became a technologically networked society and amidst a sometimes bewildering proliferation in the marketplace of communication mediums, the demand for the collection, processing and delivery of letters continued to grow, from approximately five billion per annum in 1900 to ten billion in 1960 and, after a plateau in the 1970s, to approaching

twenty billion by the year 2000. Higher speeds and capacity were the goals of systems engineers across other fields of public technology, such as energy supply and transport. The PO specialised in data transmission and, although telephones and banking grew in relative societal significance, the postal service, too, was subjected to successive waves of reform and the Letter Post Plan was an important phase in this.

Overlapping with the pursuit of efficiency, the automation of postal services was motivated by the remarkably durable ideals of public service. The engineers who developed the code-sort concept after 1945 were stirred by a desire to see the achievements of technologists during the war applied in peacetime, and to see the successes of systems engineering in the telephone network replicated elsewhere in civil infrastructure. As the rhetoric and artwork associated with the early postcode campaigns testify, the PO reached out naturally to a public sense of duty, cooperation and joint improvement. The public service ethos also involved embracing the virtues of giving the public a reliable service at universally and uniformly subsidised rates, providing the economy with the facilities required for growth, and giving postal staff – still civil servants in a government department when the project was conceived – a less burdensome and more comfortable working life. The coding of the mail and the creation of automated sorting offices promised to deliver on all these fronts while increasing the system's capacity during a period of long-term growth in demand while reducing dependence on unusually high levels of labour. The Letter Post Plan was, on this view, a response to deep seated economic and social forces in British society.

Chapter 3 took up the theme of conflict, culminating in an account of the UPW special conference in the summer of 1972 when, against EC advice, members voted for an embargo on cooperating with further installations. Two lines of opposition to the spread of mechanisation were articulated. The first held that staff were not persuaded that, in an altered post-strike environment, management had met their obligation to offer a sufficiently comprehensive, adjusted plan for the code-sort programme. The staff-side wanted a robust and compelling reappraisal of how the new technology should best be applied and requested greater involvement in its production. The second was that the UPW wanted more than a promise of a future share in the savings expected of the LPP – hence their desire for a more specific reappraisal. This is best explained as a bargaining tactic shaped by the loss of earnings and trust resulting from the strike. Though unease existed about the apparent drift towards commercialism that many suspected was an implication of the PO Act, 1969 – and suspicions about mechanisation tied in with this – the causes of the strike were largely external in that the government held firm in effectively freezing postal wages in a bid to control inflation. Conflict has been a characteristic of postal IR in the post-civil service era and the avoidance of conflict as a motivating factor in the approach of management

and engineering is prominent in this thesis and is evident in everything from extensions to the framework of consultation to the design specifications of machines.

Chapters 4 and 5 were concerned with reappraisal and consultation in the realms of policy and technology respectively. This was a learning period for those involved as things went wrong, a natural consequence of attempting something new in offices which had traditionally gone by the book and were unaccustomed to change. Reappraisal was especially necessary after 1971, but this is equally an inevitable theme in any long-term, large-scale, phased investment project. The concept was built into the financial machinery used to forecast and monitor performance on a rolling basis, and was connected with the need to continually revise the industry's knowledge of its changing environment. Improving the methods of knowledge-acquisition enabled reappraisal to be shaped by better-informed predictions about the future, which led to path breaking innovations in modelling. Advances in computing and long-term forecasting opened up the possibility of equipping the industry with a total-systems model and the 1973 revalidation is best understood within the unfolding of this process. In its widest definition, model-building can be fruitfully applied to understanding the policy stances developed by all three groups – management, staff and engineering – in that any group desiring a stake in industrial restructuring must operate according to a conceptual simulation of the wider mail system, its political economy and its interaction with society. Management strategy had increasingly and sometimes painfully to come to terms with the complexities of investing in and measuring performance in a socio-technical network, often understood by benchmarking with developments in other utility institutions at home and abroad. The union's conception of political economy was centred on the exercise of bargaining power in the pursuit of higher pay, political influence or factional dominance. The lesson of the revalidation was that it paid to involve all three groups on as equal a basis as possible.

The engineering field was best at explicitly articulating the broad applicability of modelling which found an interesting expression in the “philosophy of development” cultivated in the formative decades of postal R&D. This conceived of coding and sorting systems in adaptationist and cybernetic terms. The only viable technologies were those that met certain standards of speed, reliability and environmentally determined specifications. Broadly, three such “environments” are evoked in the technical literature. The wider public/commercial environment presented particular problems which included the need to structure postcodes in order to make them acceptable to commerce, attractive to public psychology and amenable to machine processing. It also included such parameters as service standards for speed of delivery and legal limitations on the carriage of mail. The operational environment presented special problems of designing hardware which could be produced, installed and maintained economically in an integrated, national network. “Software” for the programming of sorting plans needed

to meet local and wider network requirements, while belt systems needed to accommodate heterogeneous types of mail affected by dust, moisture and static with extremely low error rates, again for systemic reasons. The workplace environment was perhaps the most challenging as it involved trying to understand the mental processes of letter sorting and their coordination with body movements. Moreover, the ergonomic adaptation required sustained research into the complex effects of different hardware arrangements on the morale of the workforce. The R&D behind the Easy View Coding Desk in the early 1970s, as demonstrated in Chapter 5, built on the lessons of this long history and the philosophy of development underwent a new wave of adaptation in response to unprecedented financial constraints and a more combustible political environment. A key innovation was the formalisation of union consultation on the R&D process which, in turn, was part of a separate rise in the formalisation of IR machinery discussed in the introduction and in Chapter 3.

The final chapter presented a history of the training programmes devised for the MLO era. The findings were that training was separated from formal state intervention when Training Boards were established in the 1960s, but it was nevertheless influenced by new ideas with roots in behaviourism which were becoming popular in American corporations. What emerges is the story of how the two sides of industry – labour and the inspectorate – were trained in different but overlapping packages of education and instruction involving both IR-heavy, college-style courses and highly specialised on-site inductions using training machines. These were designed to run simulations of sorting under “real world” conditions which demonstrates again the importance of model-building but showed, too, that the ascendancy of engineers in systems-building – or at least in the primacy of in-house R&D – was under threat from two sources. The first was that their models were reaching the limits of their usefulness, as suggested by the failure of the keyboard experiments to yield decisive results and as the messy human realities of implementation came more fully into view. This meant that managing the process of change came to be more equally shared with the Personnel Division which had grown enormously since 1969. The second threat came from abroad.

In the international context, the PO was the “first mover” in the market and, as we have seen, pioneered code-sorting in its formative years. By the late 1960s, the British led the world in the export of sorting equipment and postal mechanisation expertise. The troubled 1970s led to a reduction in funding and an adaptation of the R&D programme to match this, meaning that short term problems and “easy wins” received much greater attention. Since that time, American, Japanese and German corporations have moved ahead of Britain in the market for automated postal solutions. However, this was a gradual process and, in the late 1970s, long term research continued into CCTV coding in which mail was filmed in situ and the images fed to a separate office filled with white-collar staff at PC-style keyboards with

monitors. Alongside this were trials with OCR technology, intended to reduce and eventually graduate beyond reliance on coding desks. OCR trials in the early 1980s sparked industrial action at Mount Pleasant which triggered a threat by management to introduce the technology unilaterally. The Union of Communications Workers (successor to the UPW) – less powerful at that stage, having had their membership reduced after the split with telephones, their powers curbed by the government and their consultative rights curtailed by a more hawkish and corporate management approach – were backed into a corner over the issue leading to the acceptance of a range of work measurement and temporary labour policies. However in the 1990s OCR began to prove operationally viable and the introduction of Integrated Mail Processors followed. The exponential growth of computing power was critical in making postal automation based on OCR a success in the long run. The last Easy-View ceased operation in 2003. Though modern processing technology is now ubiquitous in the Royal Mail, its industrial relations continue to be shaped by disagreements about the use of new technology, modernisation drives and work measurement systems, and is still framed by a national debate about the balance between public ownership and privatisation, as the strikes in 2009 clearly showed.

Nevertheless, the structure of Royal Mail's operations today is based upon a backbone of Mail Centres whose basic arrangement was determined when the embargo was resolved and the revalidated LPP was approved in 1975. This returns us to the question of whether the PO's critics were justified in claiming that mechanisation was a mistake, or at least whether it was poorly conceived and executed. With the benefit of hindsight the answer to the first question is clearly no. Almost all the world's major postal systems now rely on automated processing and many of the subsystems such as mail segregation and the principles used in the manipulation of letters originated in post-war Britain. OCR delivered on its promises and the vision outlined by Carter and Gemmel in the late 1940s was largely achieved, although manual sorting is still universally used for a proportion of unmachineable mail. The question of whether the PO's record of managing change in the 1960s and 1970s should be characterised in negative terms is open to interpretation, as it very much depends on how one chooses to measure success or failure. The evidence presented in this thesis indicates that a robust case can be made to the contrary. The questions posed and critiques levelled by contemporary journalists, economists and parliamentary inquiries seem, with hindsight, to be either ill-posed or products of the political environment of their time, relics of the period under study. Regardless of mistakes in the code-sort design and the considerable delays and disputes which characterised its implementation, the judgement that automated sorting was a worthwhile goal and that, over the long-term, the PO needed to become accustomed to the entrance of new technology, has been vindicated.

It should also be noted that by the 1990s, outside researchers into the use of postcodes, while interested in their many unintended commercial and social uses (such as for censuses, marketing, insurance, schooling, healthcare, house prices, local economic analysis and business and infrastructural planning) acknowledged that the introduction of widespread and detailed postcodes was originally intended to assist mechanised sorting and concluded that, ‘...from the viewpoint of Royal Mail, the exercise has been an extended but successful one’.<sup>1</sup> The geographers Raper, Rhind and Shepard found that automatic sorting had become more common across the world and usually used the same technique: the translation of written postcodes into machine-readable codes enabling simpler machines to automatically identify and direct the mail. Only the UK and Canada used alphanumeric codes. In the 1960s, the US criticised the UK for this because alphanumeric codes were harder for machines to handle. Now, computing has improved making this a non-issue and the British system is now equally workable but easier to remember and more user-friendly.<sup>2</sup>

There were serious and persistent problems with IR throughout this period, something Bill Cockburn and other former senior figures have dwelt on in interviews.<sup>3</sup> Much of the resistance to the LPP was rooted in a widely held view among postmasters as well as the rank-and-file that the PO was a service organisation and that it was unsuited to profit-seeking, efficiency drives and technological change. However an extremely wide range of consultative arrangements were designed and adapted to help alleviate disputes and try to bridge the identity gaps and conflicts between the different grades and departments. As the liberal pluralists recognised, the labour-intensive industries in the post-war period were structured by inherently divergent interests which tended to be exacerbated during severe social and economic turbulence. Cockburn has referred to the ‘transformative power’ on IR of the mutual rewards of management sharing the savings of productivity and mechanisation schemes with the staff.<sup>4</sup> The trade unionist Mike Hogan (who came to adopt a Darwinian understanding of the adaptations required in organisations), was proud of the effects of improved working methods in London and Manchester, which were in his view very poorly managed before their introduction. Nevertheless, he remembers that some managers had a reputation for overestimating the effectiveness of close supervision, resulting in ‘paralysis by analysis’.<sup>5</sup> Others have recalled that management’s faith in organisational theories was at times naive.<sup>6</sup>

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<sup>1</sup> J. F. Raper, D. W. Rhind and J. W. Shepherd, *Postcodes: The New Geography* (Harlow: Longman, 1992), p.49.

<sup>2</sup> Raper et al., *Postcodes* (1992), pp.63-4.

<sup>3</sup> BL, NSA, An Oral History of the Post Office, Interview with Bill Cockburn, C1007/56/01-02.

<sup>4</sup> *Ibid.*, Tape 5 (F11703) Side B.

<sup>5</sup> BL, NSA, An Oral History of the Post Office, Interview with Mike Hogan, C1007/116/01-07, Tape 6 (F13462) Side A.

<sup>6</sup> Baker, ‘Problem of Identity’, p.67; BL, NSA, An Oral History of the Post Office, Interview with Mike Berry, C1007/75/01-12, Tape 10 (F13435) Side B.



Several similar shortcomings have been assessed in the preceding chapters and it is hoped that the supporting evidence has put these in a more realistic and empathetic context.

Finally, several lines of research were conducted during archival work for this thesis that are not represented in this text, but, given space and time, could have been followed up. As noted in the introduction, the periodisation concentrated on the critical years of transition around 1969, hence the early history of the formation of postal engineering in Britain could only be summarised in Chapter 1. The papers of the Mechanical Aids Committee in the 1920s-1960s warrant further scholarly attention and would provide multiple case studies in the intricacies of mid-century R&D. Similarly, this thesis focussed primarily on the planning and transition of the LPP and the story of its implementation in the later 1970s and 1980s is yet to be told. One topic in particular which had to be cut was that of maintenance engineering. Implementation of the LPP created a new grade of sorting office technician for the maintenance of machines. Thousands were employed in this role and their presence altered the dynamics of the working environment and of wider grading and wages issues. During the final year of my study, when attention had turned away from primary research and towards writing, a sizeable tranche of records from the 1970s which has been under “2<sup>nd</sup> Review” by archivists for the past few years began to be catalogued. Though I was able to sample some of this material there was not time to conduct in depth research and a large amount of paperwork on several of the themes and issues addressed here is presently being made publicly available. It will be for future historians to mine these resources and come to terms with how the postal service continued its adaptation to the changing political and technological environment of the 1980s, 1990s and early twenty first century. Finally, it would be interesting to develop the findings of this thesis in the context of a broader history of British communications in the post-war period. The history of technological evolution in the telephone network would make fascinating reading should it be undertaken and, based on the telecoms R&D records encountered during this study, the material available is plentiful.

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