

Hans and Charles Renold: entrepreneurs in the introduction of scientific management techniques in Britain

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Abstract

Using the case study of Hans Renold Ltd, examines a particular form of entrepreneurial activity, namely the introduction of new management techniques. This company was chosen for study because it has long been accepted as having been the first company in Britain to introduce scientific management along Taylorist lines. The paper specifically examines the roles of Hans Renold and his son, Charles, in the adoption of the new management techniques. Utilising the detailed archives of the company, we find evidence to suggest that both were important, though in different ways, and in doing so we throw light on the development of management practice within an important pioneering company, on the specific problems faced, and how they were overcome.

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Introduction

This paper is based on three key ideas:

- 1 that innovation in management organisation constitutes entrepreneurial activity as much as product or process innovation;
- 2 that it is often difficult, in situations where more than one generation of a family is involved in the control of a business and/or leadership passes seamlessly from one generation to another, to ascertain the relative importance of successive generations in the introduction of new ideas; and
- 3 that case studies are an important way in which a better understanding can be gained as to the development of management practice.

In order to illustrate the importance of case studies and to throw light on the other two issues mentioned above, this paper analyses the introduction of scientific management techniques at Hans Renold Ltd during the early twentieth century, paying particular attention to the key phase between c.1908/09 and c.1930. Use is made of both published and archival material to describe the changes that took place and in an attempt to reach an assessment of the relative importance of Hans Renold, the founder of the business, and his son, Charles Garonne Renold, in the implementation of the most significant managerial and organisational changes of the period.

There are three main reasons for choosing Hans Renold Ltd, a chain making business based in Manchester, as the focus of this case study. First, the company is generally accepted as having been the pioneer in Britain before the First World War of the utilisation of scientific management (Urwick, 1956, p. 49; Urwick and Brech, 1953, pp. 162-9).

Second, the company has a very good and virtually complete set of archives dating from the time of the implementation of the ideas of Taylor, which shed important light on the precise nature of the changes and the problems faced by the company in its attempts to implement scientific management (primary and secondary sources are listed separately in the References). Third, existing biographical compilations relating to management development and entrepreneurship yield conflicting assessments as to the relative importance of the two main actors. This paper is divided into two main sections and a conclusion. In the first section a brief sketch of the company's overall development during the study period is outlined, and this is followed by a more detailed study of the introduction of scientific management at Hans Renold Ltd. In section two we examine the issue of who was responsible for the introduction of scientific management at Hans Renold Ltd. Short biographical sketches of both Hans Renold and Charles Renold are provided, and their relative claims to having been the main instigator of the changes outlined will be examined.

Section 1

The development of the Hans Renold chain-making business, 1879-c.1930

From the three persons employed at the beginning [1], sometime around September 1879, the chain making business taken over by Hans Renold developed slowly during the 1880s on the back of the growth of the cycle industry. In 1880, the first full year of production, output was 16,000 yards of chain generating a turnover of £1,300. By 1891, production had risen to 132,000 yards, and turnover to £18,500, by which time the business was employing about 150 hands (M501 657.41 HR882/2; M501 658.89 HR880/4; *Progressive Commerce*, 1892, p. 110). Increased competition in the 1890s following the ending



of Hans Renold's patent for the bush roller chain halted the company's progress, and turnover in 1899 was only slightly above that of the early 1890s. The introduction of new products, however, led to renewed growth during the early years of the twentieth century. At the time of the business's conversion to limited liability status as Hans Renold Ltd in 1903, turnover had reached in excess of £50,000 p.a. and employment about 400 persons. By the eve of the First World War, annual turnover had reached almost £200,000 and employment had climbed to 1,350 (Renold, c.1914, pp. 222, 224). Despite its rapid growth during the pre-First World War period, and its subsequent doubling in size during the war, the business was never sufficiently large to enter into the numerous lists, produced by various historians (e.g. Payne, Shaw, Hannah, Wardley, etc.), of the largest 50 or 100 employers in Britain at various points in time.

Growth of the business between 1879 and 1914 necessitated several moves of premises. Within two years of commencing operations, and due to the old nature and poor condition of the machinery he had originally acquired, Hans Renold had leased new premises in Brook Street, Manchester and installed new machines (Tripp, 1956, pp. 23-4). In 1889 an entirely new factory was built at Brook Street, the new Progress Works, its machinery being paid for out of ploughed-back profits (Tripp, 1956, p. 24). Growth of the business led to a further extension of the Brook Street works in 1895 but, by 1906, increased demand for the company's products made it necessary to build a second factory. A site was chosen at Burnage, some five miles away from Brook Street. It was initially planned to use Burnage as an overflow plant but, following its completion in late 1909/early 1910, it was found that the splitting of operations between the two sites created production and managerial problems. It was therefore decided to move the whole of the company's operations to Burnage, where work on a second building, to accommodate departments still located at Brook Street, was begun in 1913. The whole of the company's operations had thus been moved to Burnage by February 1915, and the Brook Street premises, which Hans Renold had first leased in 1881, were sold off.

During the First World War, Hans Renold Ltd virtually abandoned the production of chains in favour of manufacturing war materials: shells, fuses, turnbuckles, and aero-engine parts. Employment grew to a war-time peak of 2,702 in 1917, double the level on the eve of the war. Having abandoned chain production, the company

was faced with major problems when orders for war materials dried up following the cessation of hostilities in 1918. Competition in the chain making industry had grown and the company had to win back customers it had deserted in order to concentrate on the war effort. The collapse of munitions orders led to the workforce dropping to a low of 760 in January 1922 but a focus on marketing and sales led to a recovery of peace-time markets, and employment remained at or slightly above pre-war levels for most of the rest of the 1920s.

The development of scientific management at Hans Renold Ltd, c.1908 to c.1930

From the outset of the establishment of the business, it was clearly run by one man, Hans Renold. As he noted in the draft of his unfinished autobiography, penned in 1924:

Before the War, the business, having been built up from small dimensions, was naturally in the hands of the one man who had started it and knew most of its details and how they came to be adopted (M501 920 RH924/2: ff. 3-4).

When the business was converted into a limited liability concern in 1903, although there was a three-man board of directors[2], Hans, as governing director, held all the power. Even where decision-making powers had been delegated to other members of the board, Hans was able to overturn such decisions, and he alone had the sole right to appoint and remove directors. It is not entirely clear when this power was finally relinquished: a directors' report for the year ending 30 June 1921 suggests that he had relinquished them during the year but, three years later, in his unfinished memoirs, Hans indicated that he still retained these powers. It is clear, however, that these powers had been relinquished by the time Hans Renold Ltd. merged with the Coventry Chain Co. Ltd in 1930.

The company's archives reveal that major changes in organisational structure were taking place at Hans Renold Ltd from around 1908/1909 but, since the archives are much less complete for the years prior to this period[3], it is unclear whether any changes had previously been in train. It seems more than a coincidence, however, that the transition from a relative dearth of information to one of copious records should occur at the very time of important changes in the organisational structure of the company. Indeed, the development of record keeping can be seen as part of the process of adopting scientific management at Hans Renold Ltd, which encompassed the attempt

to introduce a functional organisation supported by a system of committees.

The committee system at Hans Renold Ltd, c.1908/09 to c.1920

Towards the end of the first decade of the twentieth century, the entrepreneurially-dominated system of management at Hans Renold Ltd gradually began to be replaced by a centralised, functional organisation based around committees. This change, however, was not effected overnight. In his advocacy of the principles of scientific management, F.W. Taylor had recognised that change would take time to implement, not least because detailed studies of workshop organisation and practice had to be undertaken before any recommendations to achieve long-term benefits could be made.

With no clear blueprint of how to implement Taylorism, change at Hans Renold Ltd was bound to follow in something of a piecemeal manner and this is reflected in the numerous changes depicted in the organisation charts drawn up by the company, especially between September 1913 and January 1917 when seven different charts were produced. Those experiments which proved successful were retained, while those which did not were rejected and alternatives tried, providing practical expression to the mantra oft-repeated by both Hans and Charles Renold, namely that the:

... organisation of an up-to-date works ... must be a living organism (Renold, 1913-14, p. 29).

The key elements of the change in organisational structure brought in from c.1908/09 were centralisation and functionalisation:

To successfully carry on a large business like ours, there must of necessity be a strong, central control of the methods of production. Whilst strong and central, this must not be too rigid, so that the heads of departments do not become mere officials to carry out instructions. Their spheres of function should rather be on broad lines, so that there is some scope left for personal energy and initiative to get the work done well and efficiently (M501 650.0124 HR903/5, Hans Renold's speech to AGM, 24 February 1915).

The initial moves in these directions coincided with the development of the company's new factory at Burnage, five miles away from the Brook Street premises where all operations, production, design and management had been initially concentrated under a single roof. In anticipation of the move of the first productive operations, namely those of the wheel department, to Burnage, a central office was set up in 1909. The main rationale for the establishment of

this office, which was to be headed by Harold Rees Lloyd[4], was described as being:

... to relieve Mr. C.G. Renold of all routine duties and enable him to give attention as a Director to this and other Departments of the Commercial Office as occasion required (M501, 650.0124 HR903/4, item 138, entry for 16 August 1909).

The organisation chart for November 1909 thus appears to reflect an attempt to establish an organisational structure which would reflect the company's needs when Burnage became operational. The structure is simple: four operating departments:

- 1 selling and distribution;
- 2 machine and tool making;
- 3 chain manufacturing; and
- 4 wheel manufacturing;

are seen as reporting to a central office which, in turn, is responsible to the board of directors. Central/Head Office functions were retained at Brook Street while some managerial decision making was devolved to Burnage. With Hans Renold unable to oversee all operations personally, a greater devolution of managerial powers was required and, to facilitate communication between the two sites, two separate committees were established: a head office committee (for which minutes date from June 1910) and a Burnage committee (for which minutes date from July 1910). At the company's annual general meeting held on 15 February 1912 it was noted that over the last couple of years it had been necessary "at considerable cost" to revise and increase the whole internal organisation of the business. As a result of these changes, further committees were established during 1912 and 1913: a Board of Trade (i.e. sales) committee (established March 1912); a Drawing Office (design) committee (minutes commence April 1912, but cease September 1912); a Manchester Works committee (minutes commence December 1912); and a Research committee (formally established in February 1913, though informal, unminuted meetings had taken place previously).

The changes in 1912 and 1913 reflected not only the desire for greater functionalisation but also practical problems associated with the gradual movement of various parts of the company's operations from Brook Street to Burnage. The establishment of the Board of Trade committee was in part due to the fact that Charles Renold was to move to Burnage while selling was to remain at Brook Street (M501 650.0522 HR910/3, Board of Trade meeting Minute, 5 March 1912). As more productive operations were moved, it became necessary to establish a Manchester Works

committee to provide links with those operations still remaining there. During 1914 all operations finally ceased at Brook Street, the Manchester Works committee therefore becoming redundant.

The organisation charts for September 1913 and April 1914 depict attempts at further functionalisation. Chain and wheel manufacturing were now combined under a single departmental heading; design had been separated from selling, which became a separate entity, and was spread across the two new manufacturing departments – “chain and wheel manufacturing” and “equipment manufacturing” (the former “machine and tool making” department). The charts indicate the existence of six separate committees:

- 1 general services (including the board and the central office);
- 2 equipment manufacturing;
- 3 chain and wheel manufacturing;
- 4 selling;
- 5 research; and
- 6 sub services.

It is also of interest to note that operations in each of the two main manufacturing departments were divided into three functions: producing, order of work and inspection. By September 1915, the two producing departments had been combined into a single department, “Making”, with four functional elements being depicted (producing, inspection, order of work and stores), and design now constituting a separate department.

During 1916 further significant changes occurred. That making and selling remained the two main functional divisions of the business was emphasised in mid-1916 by the creation of the positions of works director (Charles Renold) and sales director (W.H. Jackson). In addition, an “economy” committee, directly responsible to the board, and comprising the employment (personnel) manager (H.R. Lloyd) and the finance manager (H.G. Jenkins), was created. Simultaneously, a new managerial arrangement was implemented whereby four functional managers, one each for “current work”, “inspection”, “design” and “plant”, were to form a works council which was to be advisory to the works director. Further changes were implemented immediately after the war: the post of finance director (H.G. Jenkins) was added to those of works director (R.O. Herford) and sales director (W.H. Jackson), each of these being responsible to the newly established managing director (Charles Renold), while the attempt to adopt a functional

organisation of production was abandoned in favour of the establishment of product-based departments, each under the responsibility of a separate, wholly-responsible superintendent (M501 650.05 HR918/3: f. 2). Despite this retrogressive move, it was considered vital that the control of planning, that is the arrangement of the programme for the works departments, should be retained under central control (M501 650.05 HR918/3: f. 4). In 1924 a further change occurred following the resignation of Jackson as sales director. Consequent upon Jenkins’ move from the post of finance director to that of sales director, the former post was abandoned, with responsibility for the functions associated therewith (including planning and budgetary control) being added to those of the managing director.

Trials and tribulations

Many attempts to implement scientific management in Britain during the inter-war years, particularly those based on the Bedaux system, were accompanied by labour unrest (Whitston, 1996, 1997). Even some of the attempts made by Taylor to introduce his methods in America before the First World War led to similar problems. At Hans Renold Ltd, however, there was little resistance from the bulk of the workforce, and no major disputes occurred, despite the fact that the company began to introduce time studies from at least 1911. In part, the absence of labour resistance stemmed from the positive attitude taken by the company’s management in communicating with its workforce about the changes being implemented and the reasons for them. The company engaged in discussions with its workforce and held sessions to inform workers as to the reasons for, and benefits (to both capital and labour) of, the application of the new scientific methods.

Despite few problems with the bulk of the workforce, Charles Renold noted, in February 1915, that the organisational changes had not been achieved without a “great deal of unpleasantness and strain” (M501 650.0124 HR903/5, speech to AGM, 24 February 1915). He considered that this had been unavoidable, since the process had involved the breaking up of the old organisation into its component parts and then rebuilding them into new groups. The greatest difficulties had arisen in association with the attempt to introduce Taylor’s concept of the functional foreman. However: ... at a very early stage, [this attempt] led to chaos in the Management and the years 1914 to about 1921 were spent in reconstructing the conception of management organisation (M501 650.05 HR918/1: f. 2).

Under H.W. Allingham, appointed as the company's production engineer in November 1911 and put in charge of reorganising production along Taylorist lines, including the introduction of time studies:

... control of inspection, and at one time even that of order-of-work and stores (M501 650.05 HR918/3: f. 3)

was removed from the superintendents [5]. Not altogether surprisingly, some superintendents resented this loss of power. Resistance was softened by resignations and retirements, but gradually it was realised that functionalisation had been taken too far. During the war, order-of-work and stores were first placed back under the superintendents and this was followed by the restoration to them of responsibility for departmental inspection. The decision, in 1916, to appoint four functional assistant works managers directly responsible to the works director, however, once again led to the erosion of the power of superintendents. This organisational change failed, largely because, with no one individual completely responsible for the working of any single department, a lack of co-operation between the four assistant managers led to problems (M501 650.05 HR918/3: f. 2). By December 1918 Charles Renold had come to the view that:

We must get back to the old scheme of superintendents in complete control of their departments (M501 650.05 HR918/3: f. 4).

This was achieved through the development of product-based departments, a process which was completed in the early 1920s.

One reason for the eventual successful adoption of scientific management principles at Hans Renold Ltd was the recognition that its implementation involved not merely a revolution in the attitudes of the men but also of the management. It was not the case, however, that this had been immediately obvious to those responsible for attempting to implement the changes. Reflecting on the initial experiments some 30 years after the event, Charles Renold commented that:

It is noteworthy that a movement which began with attention focussed on speeding up individual workers ended with attention focussed on management and the means of control, coupled with great attention to the relationship between management and workers (M501 650.05 HR938/1: f. 5)

Section 2

Hans Renold (1852-1943) – a brief biographical sketch

By most, if not all of the normal criteria used, Hans Renold is clearly an example of the

self-made Victorian entrepreneur so beloved of Samuel Smiles. Born in Aarau, Switzerland on 31 July 1852, Hans Renold came to England in 1873. In 1879, with £300 obtained from his soon-to-be father-in-law, Charles Herford (Tripp, 1956, pp. 20, 22), Hans purchased the virtually bankrupt business of John Slater, in Salford, making driving chains for use in the textile industry. As owner/manager he built up the business gradually, not least through his inventive capabilities. Hans Renold was perhaps fortunate in that he entered the chain making business at a time when the development of the safety bicycle by J.K. Starley was providing further market opportunities, but there is no doubt that he was also a key architect of his own success.

While Starley, to power his bicycles, initially used the "common roller" chain produced by Hans Renold for the textile trade, these chains were not a great success because of the rapid wear of the joint pins under cycling conditions. Through his development of the bush roller chain, patented in 1880, Hans Renold was able to make a success of the opportunities afforded by the development of the bicycle. The biographer of the Renold business has also suggested that the relationship was a two-way one, noting that the invention of the bush-roller chain:

... made possible, in conjunction with the pneumatic tyre, the modern bicycle, powerfully affected the development of the internal combustion engine, and by degrees opened the way to new chain driving techniques in every industry (Tripp, 1956, pp. 19-20).

Increased competition after 1894, following the expiration of his patent, spurred Hans Renold to develop new products, one such being the "silent" or inverted tooth chain, developed in 1895 (Tripp, 1956, p. 26). Hans Renold also exploited new markets, including those afforded by the development of the motor cycle and motor car (where early vehicles typically had chain driven rear wheels). As well as patenting many new products throughout his life, Hans Renold also designed machines and machine tools for use in the business (Tripp, 1956, p. 86), including a system of overhead gears, comprising standardised parts, for power distribution in the works (Tripp, 1956, p. 85).

It was not, however, only in relation to the development of new products and processes that Hans Renold acted in an entrepreneurial manner. The author of the company's biography, Tripp, clearly indicates that Hans Renold also:

... made a practical contribution in a number of ways to the new social idealism which was ceasing to regard the employee as a mere "hand"; ... [and] ... he was consistently among the pioneers of better human relations in industry (Tripp, 1956, p. 20).

A more recent writer, Bougen, has noted that, throughout his business life, Hans Renold exhibited a:

... strong religious and humanitarian interest in the welfare of his employees (Bougen, 1989, p. 207).

Charles Garonne Renold (1883-1967) – a brief biographical sketch

While his father had gained his engineering knowledge through on-the-job training, including in the drawing/design office of Claparède et cie. of St Denis, Paris, Charles gained his at university, graduating with a Masters degree in engineering from Cornell University in America in 1905. Though some patents were registered in Charles's name in 1911, his prowess as an inventor in his own right seems to have been much less than that of his father, though it has been claimed that he:

... always realised the vital importance of Research and Development in the affairs of the business (M501 920 RCG967/10, Bertoya).

Charles's main interests, however, lay in matters of industrial administration:

[Charles was] imbued by the principles of good management and administration and he has contributed much in the course of time to their application, not only to Renold affairs, but also to industry as a whole (M501 920 RCG967/10, Bertoya).

This interest of Charles manifested itself in three main ways. First, there was his involvement with newly established management organisations in the 1920s (including the Institute of Industrial Administration, the Oxford management conferences and the Management Research Groups), a process which culminated in his becoming the first chairman (1947-51) and first vice-president (1951-67) of the British Institute of Management. Second, Charles was actively involved in promoting business education from the 1920s, being closely associated in various capacities with the Manchester College of Technology (later UMIST), the University of Manchester, the London School of Economics and, after the Second World War, the Administrative Staff College at Henley. Third, Charles was an important writer of books, articles, and conference papers, publishing at least 36 items between 1917 and 1959. His early writings were concerned with scientific principles of workshop organisation and

worker-employer relationships, while later writings dealt with management (especially budgetary) control and more general aspects of management.

It was not, however, purely with administrative matters that Charles was concerned. Like his father, Charles Renold: ... had a profound respect for the working man and an unshakeable belief in good human relations (M501 920 RCG967/10, Bertoya).

It was Charles who, in 1909, persuaded his father to form the Hans Renold Social Union to provide recreational and welfare services at the works (Tripp, 1956, pp. 29, 94). Further, in 1917 he established a Welfare Committee to promote joint consultation within the company (Tripp, 1956, pp. 107-8) and subsequently introduced what turned out to be an unsuccessful profit-sharing scheme in 1921 (Bougen, 1989). In 1948, as a result of his services to the cause of good management and the development of humane and progressive ideals and practices in industry, Charles was presented with a knighthood (Tolley and Keeble, 1985, pp. 885-6).

The relative importance of Hans and Charles Renold

To be able to assess the relative contributions of different individuals to major changes during a specific period of the development of a business is always difficult, and the case of the introduction of scientific management at Hans Renold Ltd is no exception. Indeed, the situation is made more confusing by the fact that past assessments have focused on either Hans or Charles in isolation. Thus, Lyndall Urwick, in the *Golden Book of Management* (1956), compiled for the International Committee of Scientific Management (CIOS), included Hans Renold as one of only 13 British management pioneers (out of a total of 70 pioneers altogether), but made no mention of Charles. For Urwick, Hans Renold was:

... probably the first British industrialist to appreciate the work of F.W. Taylor and to adapt it to British management practice (Urwick, 1956, p. 49)

an assessment apparently based on a reading of the paper Hans presented to the Manchester Association of Engineers in October 1913 outlining the committee system in operation at Hans Renold Ltd [6]. Urwick, however, never seems to have given any consideration to the possibility that Charles Renold may have been the architect of the revolution in management organisation at the company. In contrast to the *Golden Book*, the *Dictionary of Business Biography*, published in the mid-1980s, contains an entry for Charles Renold but not for Hans. What

does the archival evidence for Hans Renold Ltd suggest, then, in relation to the respective claims of Hans and Charles to be considered as the pioneer of scientific management in Britain?

The claim of Hans Renold

Given the dominant position that he held, as governing director, within the company that bore his name, Hans Renold ultimately determined what did and did not happen within the business. No changes could be implemented without his agreement and thus, at the least, he had to acquiesce in any changes that might be introduced by others around him. However, this is not the same thing as saying that he was responsible for the changes that were implemented. Given his background it is clear that, while Hans Renold clearly did not lack business acumen, his main interest was in the engineering side of the business. While he was clearly concerned with workshop organisation and issues that affected the factory floor, it is less clear that he was concerned with higher levels of administrative control.

Nevertheless, despite his engineering background, Hans clearly realised the importance of developing systems of control. During his early visits to the USA, such as those in 1891, 1894 and 1898, Hans spent much of his time visiting engineering workshops, examining products and purchasing machinery, and generally learning about organisational methods and costing techniques. In 1900/01 it was Hans who brought in Alexander Hamilton Church to introduce a "scientific" costing system at his business and, probably during the early twentieth century, he met F.W. Taylor on three occasions (Renold, 1913-14, p. 21). Hans indicated that he much admired Taylor's analytical approach to the matter of workshop organisation, something which may have been stimulated by the relationship which developed in the early years of the twentieth century between Hans Renold Ltd and the Link Belt Company of the USA. The latter company was one of those where Taylor himself had installed scientific management and, in the view of Epstein (1996, p. 579), was one of only two companies that had installed the Taylor system throughout their factories.

The claim of Charles Renold

It seems more than a coincidence that the main developments marking the application of scientific management ideas at Hans Renold Ltd date from the period shortly after Charles became actively involved in the business. Charles joined his father in the business in 1905, being made a director in

1906. His precise role in these early years is unclear, but he was soon acting as an advisor/assistant/secretary to his father, during a period in which the expansion of the business necessitated the building of the new works at Burnage. It was during this period, from c.1908 onwards, that the company's organisational structure began to be developed according to scientific principles. Charles has been credited with being responsible for the establishment of the central office, "a department which was the beginning of the nerve centre of the business" (M501 920 RCG967/10, Bertoya), an event that was followed by the development of the committee system of management. In all the surviving archival material, including minute books, it is clear that Charles, not Hans, was the fulcrum around which the committee system revolved. However, commenting on the "committee system" just before the First World War, Charles wrote, somewhat caustically, that the:

... term "committee" is not happy one ... [implying] that the power of decision lies with the majority of those present, whereas our meetings are rather councils to advise the presiding director, with whom the decision really lies (Renold, c.1914, p. 233).

Nevertheless, as a member of all the committees, it was Charles who co-ordinated their various activities. Increasingly, during the second decade of the twentieth century, Charles became more and more responsible for the overall control of the business, as witnessed by his eventual elevation to works director in 1916 and managing director in 1919. Legally, however, Hans Renold continued to hold the strings of power.

Two assessments made over the last 35 years have indicated the importance of the role of Charles in relation to management organisation. At an address given at the memorial service for Charles in 1967, Bertoya noted Charles's enthusiasm for scientific management:

These techniques [i.e. the management techniques associated with scientific management] he expounded long before they had become recognised tools of management in Europe, refined and promoted them, adapting them to the conditions of the Company, and indeed supported them throughout his executive career (M501 920 RCG967/10, Bertoya).

Tolley and Keeble, in their entry for Charles in the *Dictionary of Business Biography*, have stressed that:

From the first he was interested above all in problems of industrial management: he worked throughout his career to raise the level of effectiveness of British industrial managers by the example of his own firm, and

by the promotion of management education (Tolley and Keeble, 1985, p. 882).

An assessment of the relative claims of Hans and Charles

As already noted, Urwick's choice of Hans Renold for inclusion in the *Golden Book of Management* (1956) rested on the description of the committee system of management outlined in the paper he presented to the Manchester Association of Engineers in October 1913. It is our view that this paper was most probably written, not by Hans, but by his son, Charles. There are two main reasons for reaching this conclusion. First, their relative track records in respect of writing books and articles. In the *Golden Book*, Urwick lists only the October 1913 paper for Hans Renold (1956, p. 50). In marked contrast, Charles was a significant writer of books and articles throughout his career and, possibly significantly, around the same time, Charles presented a paper to the American Society of Automobile Engineers on the same subject (Renold, c.1914). Indeed, there is sufficient overlap between the two papers to suggest that they probably had a single author, with Charles clearly appearing to be the most likely candidate. It is also instructive to note that, during the discussion following Hans' presentation in Manchester in October 1913, it was Charles who, from the floor, provided answers to certain questions regarding the details of the system, implying that he had a greater familiarity with the scheme. Charles was especially keen to stress the functional approach of the system, a key feature which he felt may not have come over fully in the presentation. But if Charles was responsible for the scheme, and had written the paper, why was it Hans who presented the paper? The reason can only be surmised but, given the status of Hans Renold amongst the local engineering community, and his position as governing director of Hans Renold Ltd, a plausible explanation is that it was done in deference to his father. In America, where his father's reputation was less well known, Charles possibly felt less constrained, and thus presented the details of the scheme himself.

The second reason for suggesting that Charles was the author of the paper delivered by Hans in 1913 is that all of the archival evidence points to him as having been the key person in connection with the committee system of management and to have been the driving force behind the on-going organisational developments at Hans Renold Ltd during and after the First World War. Furthermore, it is clear from statements made at various times that Hans was not altogether enamoured by some of the

developments which had occurred. Although he accepted that a business was a living organism and must continuously change, Hans occasionally provided reminders to his son and the "younger generation" of directors/managers that it should not be a case of change for its own sake. That he was not always happy with what was going on can be inferred from his tendency to bring in the company's solicitor, Dendy, and the company's auditor, Bell, to advise him, particularly at times of disagreements with the younger generation. On one such occasion, Bell even suggested that a fetish was being made of organisational change (M501 650.05 HR918/3: f. 12).

At the height of the early changes in February 1912, Hans noted that although those at the top were getting gradually older and less energetic, they:

... may possess a wealth of Experience without which no business could be carried on (M501 061.51 HR912/20).

Perhaps it was the lack of experience which, at times, led the younger generation to focus on internal structural matters to the extent of ignoring external pressures, especially financial ones, facing the company. The need to return to producing peace time products after the end of the First World War led to much disruption for the company, though the financial difficulties were postponed until late 1924 as a result of the ability of the company to claim back excess profits duty payments made during the war. It was during the early 1920s that the company, first under the guidance of H.G. Jenkins, and then under that of Charles Renold, developed a management control system based on forecasting and budgets. However, a financial crisis at the end of 1924 led to a major row between Hans Renold and the younger generation, with Hans, in the light of the seriousness of the company's financial position, threatening to throw out the new system and re-take control of operations himself. With much to lose, Charles Renold and R.O. Herford negotiated a compromise with Hans, which involved refinements to the budgetary control system in exchange for Hans finally agreeing to give up his powers as governing director.

Conclusion

Clearly both Hans and Charles Renold were knowledgeable of, and open to, the new ideas relating to technical production and administrative organisation associated with the development of scientific management during the first and second decades of the

twentieth century. Although Hans Renold controlled the company virtually single-handedly until c.1908/1909, and retained overall powers for sometime thereafter, Charles Renold increasingly played a key role from that time onwards. This development coincided with a more rapid expansion of the company. Hans Renold's focus on developing advanced methods of workshop organisation and costing, while proving adequate for the circumstances faced by the business in the early years of the twentieth century, needed supplementing in the years immediately prior to, and during the further expansion resulting from, the First World War. Fortunately for the business, Charles took a keen interest in bureaucratic management techniques appropriate to larger-scale organizations, building upon, but clearly going beyond, the ideas initially developed by his father. Thus, both Hans and Charles Renold contributed, though in different ways, to the development of scientific management techniques at Hans Renold Ltd, and therefore both justly deserve to be considered as entrepreneurs in the introduction of scientific management techniques in Britain.

Notes

- 1 The three comprised a man, his boy and a bookkeeper (M501 650.0124 HR903/3, address by Hans Renold to annual general meeting, 3 August 1928).
- 2 The other two members were H.V. Herford, Hans Renold's brother-in-law, and P.C. Webb.
- 3 In part, the absence of records reflects Hans Renold's hands-on approach and his practice of communicating instructions and decisions verbally as he travelled round the works on his regularly daily tour of operations.
- 4 Lloyd was subsequently made a director in August 1910, but was relieved of this position on 30 December 1912. He then disappears from the organisation charts for September 1913 and April 1914, but re-appears as being in charge of the employment (personnel) department from September 1915 through to July 1920.
- 5 Prior to 1909 two types of foremen were distinguished within Hans Renold Ltd: 1st Class and 2nd Class Foremen. The term superintendent was introduced during 1909 to replace that of 1st Class Foremen, with the former 2nd Class Foremen being subsequently described simply as foremen (M501 650.0124 HR903/4, item 127, 6 July 1909).
- 6 In their joint book, first published a few years before the *Golden Book*, Urwick and Brech (1953) provided a paraphrased description of the committee system contained in the paper presented by Hans (Renold, 1913-14), even reproducing some of the organisational charts contained in the original paper.

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