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The Accounting History of the English Brewing Industry 1700-1939: An Exploration of Foucauldian Disciplinarity

by

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A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Industrial and Business Studies

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DEDICATION

Divina Proportione

and to

my wife Tracy and my daughters Catherine Victoria and Amelia Charlotte

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I must pay tribute to the invaluable guidance and encouragement of both my tutors, Professor Keith Hoskin and Professor Rob Bryer in completing this work.

I also acknowledge the assistance of the staff at the various archives where I have undertaken my primary research. In particular I would identify Ms Elizabeth Press at the former Bass Museum, Burton upon Trent and all the staff at the Cumbria County Archives, Carlisle who were exceptionally helpful in providing guidance to the record collections in their care. Special thanks are included for the London Metropolitan Archives who granted me special access to the Whitbread collection when this was being catalogued and was otherwise unavailable for general public inspection.

The financial support of the Institute of Chartered Accountants for Scotland (ICAS), History Committee with the provision of two seed corn grants permitted the research to be undertaken at the Cumbria County Archives. I shall remain indebted to the ICAS for their benevolence and their faith in the research project.

DECLARATION

I declare that this thesis represents my own work and has not been previously been submitted within a degree programme at this or any other institution

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ABSTRACT

The English brewing trade continues to be of social and economic significance having played an important cultural role well into the 21st century. It was, albeit it in 18th century London, initially at the forefront of the British Industrial Revolution. This required unprecedented levels of capital investment to finance the porter breweries that proved highly profitable and created long lasting brewing family dynasties such as Whitbread. This pattern was replicated in provincial 19th century England supported by an effective transport infrastructure, which led to the formation of national companies such as Bass Ratcliffe and Gretton at Burton upon Trent Staffordshire. Although the brewing sector has been covered in several trade and individual brewing company narrative histories the role of brewery management and particularly the role of accounting in the management process has remained a 'mystery' (Gourvish and Wilson 1994:397). The brewery accounting agenda has also been absent from the accounting history debates without any substantive academic work having been devoted to this important industry.

The thesis has been constructed within a disciplinary framework, which has been derived from the work of the French philosopher and historian of thought Michel Foucault (1977), and developed further by the leading Foucauldian accounting historians Hoskin (1993), Hoskin and Macve (1986) and Loft (1986). Modern discipline is perceived as a duality of knowledge and power, which is exercised through disciplinary processes whereby performance and behaviour is conditioned by strategies of power. This becomes an omnipresent web of power relations which are the micro-physics of power within which Foucauldian accounting historians include the accounting discipline. This disciplinary approach is used here to explore accounting as an historical process in the English brewing industry from 1700 until 1939 as a management tool in the decision making process.

Arguably this disciplinary approach will provide a body of historical accounting knowledge where none currently exists and also examine the robustness of the Foucauldian paradigm within this particular industrial context. It will be shown that this approach unsuccessfully explains accountings role within the English brewing industry between 1700 and 1939.

ABBREVIATIONS

BAA	British Accounting Association
BIR	British Industrial Revolution
BHS	Brewery History Society Archive (Birmingham)
BM	Bass Museum, Burton Upon Trent
CCRO	Cumbria County Records Office (Carlisle)
CIMA	Chartered Institute of Management Accountants
CVC	Coors Visitor Centre (formerly the Bass Museum)
DEB	Double Entry Bookkeeping
HMSO	His Majesty's Stationery Office
ICAEW	Institute of Chartered Accountants England and Wales
ICAS	Institute of Chartered Institute of Accountants of Scotland
ICWA	Institute of Cost and Works Accountants
LCCB	Liquor Central Control Board
LMA	London Metropolitan Archives
LRO	Lichfield Record Office
ROCE	Return on Capital Employed
SMS	State Management Scheme
SRM	Staffordshire Regimental Museum, Lichfield.
SRO	Stafford Record Office
WLHC	Walsall Local History Centre
WSLS	William Salt Library Stafford

PART I

Chapter 1 - Introduction

1.1 General Overview

This thesis explores the relevance of the Foucauldian disciplinary paradigm drawing on the author's middle period of work, principally *Discipline and Punish* (1977) in excavating the roles of accounting during the classic period of expansion of the brewing industry. Foucault's theories of power and disciplinarity have been utilised widely in many different fields and in a variety of ways because his works are themselves so diverse. This thesis draws on Foucault's analysis of power relations to explore the nature and role of brewery accounting during this period. A prime motivation is because Gourvish and Wilson (1994) state in their history of British brewing that,

" The precise nature of their managerial hierarchies, the director's areas of responsibility, the functions and status of the salaried staffs, the reporting lines and the control of managers and agents in the brewer's distribution networks, the presence (or absence) of accounting and financial expertise in decision making and control systems – all remains a mystery." (Cited in Mutch 2006: 2)

It is the aim of this thesis to make visible accounting's role in the English brewing trade and the extent to which it did and did not contributed towards management decision making and control. It will be shown that the failure to identify accounting's function is to be found in the absence of the labour process which is consistent with both Marx and Foucault and it remains difficult to

separate out these different paradigms, possibly because Foucault was himself a 'Marxist'. The genesis of the modern management discipline as reflected by contemporary management education usually begins with those venerable management authors Henri Fayol[1] and FW Taylor[2]. The consequence is that management students often accept without question that their discipline is a modern twentieth century construct borne of modern industrial organisation that is normally taken to encompass textiles, coal, iron and steel. The economically and socially significant brewing industry which forms the subject of this research fails to be included within such a framework.

Accounting or bookkeeping as a separate discipline in contrast to management has had a much longer and identifiable genealogy (Thomson, 2001). In this instance accounting is taken to be a discipline which encompasses "A body of ideas, a number of conventions, a set of available tools/techniques and a variety of actual practices" (Boyns and Edwards 1997:1). This is held to be the same case for any subset of accounting such as cost and management accounting as the ideas, conventions, techniques and practices change over time. Formal accounting education regimes (both professional and academic) acknowledge that modern financial accounting is based on the double-entry bookkeeping system (DEB) known as the 'Italian system', first set out in print in Pacioli's

---

[1] *General and Industrial Management* (originally published in French in 1916) that was first published in English in 1949.

[2] *Principles of Scientific Management* (1911). 'Scientific' was a nebulous term. It attempted to accord the certainty of the physical sciences to management practices. This descriptive was initially applied to costing, i.e. 'scientific costing'. The scientific qualification is indicative of an earlier nineteenth century idea of rationality and accuracy derived from the physical sciences it means in this context systematic observation and measurement (Pugh and Hickson 1996). The measurement of business activity is dominated by accounting, often described as the 'language of business'.

(1494) *Summa di Arithmetica, Geometrica, Proportioni et Proportionalita,* (Everything about Arithmetic, Geometry and Proportion), but known to have been in use in Venice and Florence from the 14th century (De Roover 1955, Emmett Taylor 1956, Hoskin and Macve, 1986). Cost and management accounting in Britain is traditionally accorded a more recent pedigree usually attributed to the experiences of the Great War from 1914 to 1918 (Loft, 1986, and 1990) and the need to know the cost of munitions and to the adoption of Taylor's scientific management. Those writers who have contributed to the British traditional cost accounting literature argue that costing was absent pre the Great War and refer to the lack of any significant cost accounting literature (Appendix 2) or practices prior to this period. This is often cited as a justification for assuming of scientific costing comes 'into the light', which served to reinforce existing perceptions[3].

However this doctrine has been under increasing criticism by revisionist accounting historians who are challenging the assumption that no British pre-war cost accounting was practised and that the post war legacy did not directly lead to cost accounting's wider dissemination amongst British businesses (e.g. Fleischman and Parker, 1997, Boyns, 2005, and Boyns and Edwards, 2005). The arguments developed within this thesis will also contribute further to this process

---

[3] This parochial view ignores evidence of prior cost accounting practices operating in other countries. Early examples of cost accounting exist from the Fugger mining accounts from 1487 onwards, the Italian De Bene 1381, and the Medici 1431 woollen accounts, and the Bracci clothing manufacturer accounts from 1415-1432 as well as the Dutchman Plantin's printing accounts of 1563, although these accounting practices seem to have had no lasting legacy (Garner 1954). There also existed a sophisticated cost accounting system operated during the late 16th and early 17th centuries at the Venice Arsenal (Zambon 2005) and there is the later examples of cost accounting being used by management in the cases of The Royal Textile Mill of Guadalajara (Carmon and Gomez 2002) the Royal Tobacco Factory, Seville Spain both during the 18th century (Funez 2005). In the 19th century USA Johnson and Kaplan (1987) have identified cost accounting being operating in the New England, Lyman integrated cotton mills and by Hoskin and Macve (1988) at the US Springfield Armory.

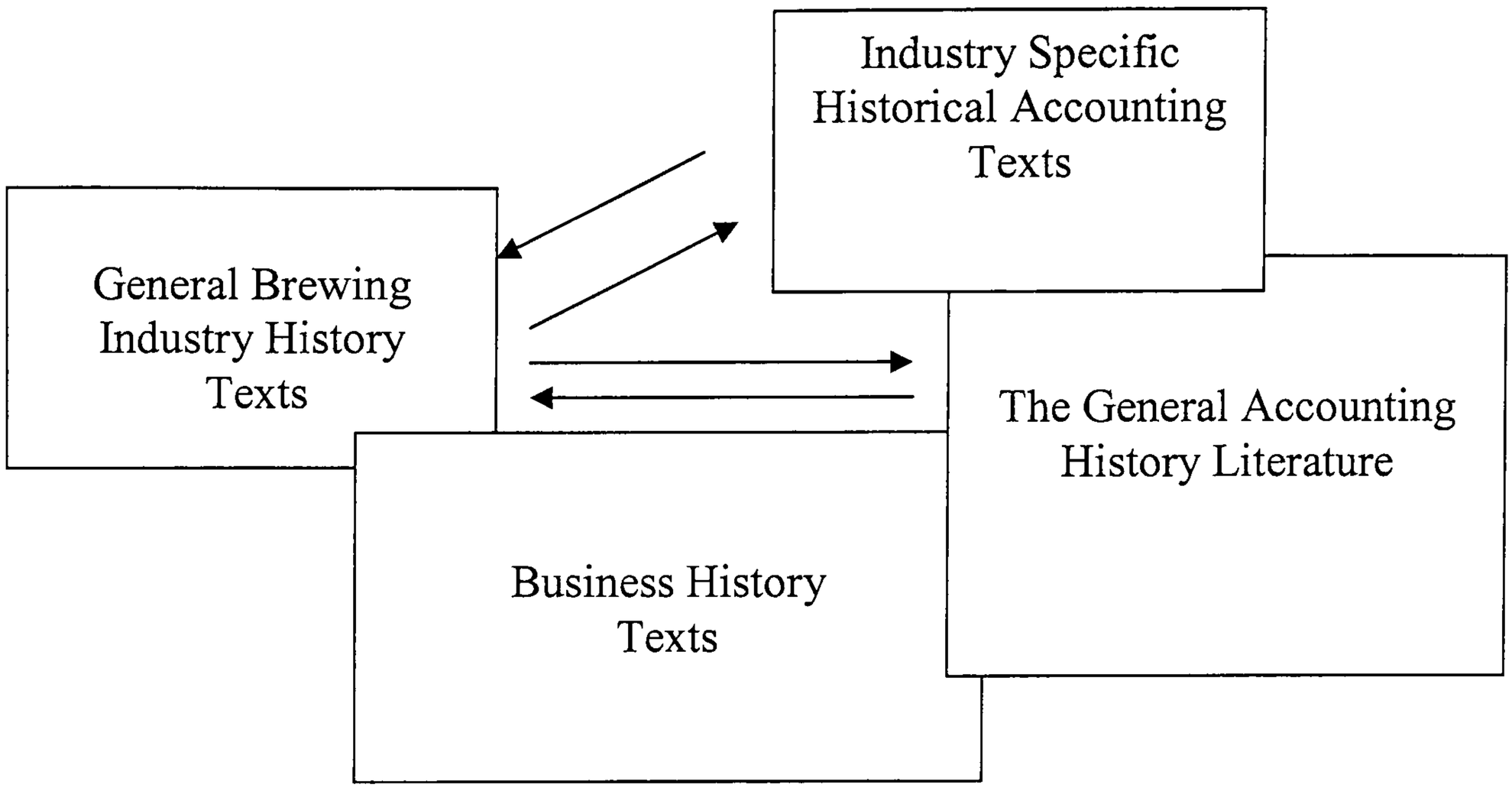
of revising accounting history by challenging the traditional argument that "the story of control in management is the story of the evolution of accounting and cost accounting" (Urwick and Brech 1949: 15).

My motivation for undertaking this research is to discover what preceded the traditional shibboleths of modern management and accounting practices by focusing on the English brewing trade[4]. My preliminary research quickly revealed that brewery accounting practices and brewery management was absent from the existing management and accounting history literature (Figure 1.1). It is this knowledge gap that I am attempting to redress with this work by contributing to widening understanding of 18th century and 19th century costing before the 'costing renaissance' in the late 19th century.

[4] The origin of my research is to be found in the apparently unlikely source of my MA History dissertation[4] on the *Volunteer Military Forces of Staffordshire 1860-1901.* I undertook the primary research at the Staffordshire Regimental Museum, Whittington Barracks, Lichfield where I examined minute books dating from 1879 onwards relating to a volunteer infantry battalion which exhibited the application of what appeared to be a type of cost accounting practice derived from the unit's financial accounts, which was internalised and directed towards managing the unit. The consistent employment of these accounting techniques appeared distinctive for this date and challenged my previously held preconceptions arising from my professional accounting education about the origins of cost accounting. This aroused my curiosity and stimulated me to discover more about the background surrounding this accounting incident and led to some of my initial published work (Talbot 1998, 1999, 2000b). The research trail ultimately led back to Bass Ratcliffe and Gretton and Co Ltd, brewers at Burton upon Trent since the infantry battalion concerned was raised mainly from Bass employees and officered by Bass managers. It became apparent that Bass's commercial brewing accounting practices had been transferred and utilised within a military framework which further encouraged me to extend the research agenda to include other brewery companies.

Figure 1.1

The Existing Management, Accounting and Brewing Literature



1.2 Management: Framing Observations

The formation of a modern management corporate culture (Appendix 3) is both notable and remarkable since it has been said that by 1830 there was hardly a managerial profession as such (Pollard: 1965:159), coupled with the absence of a management science (Pollard: 1965: 249) or even a management theory (Pollard, 1965: 251). The economic historian, Chandler [5](1977) in his seminal text, *The*

[5] Chandler developed eight main management hypotheses

- Modern multi-unit business enterprises replaced small traditional enterprises whereby new methods of administration and coordination permitted greater levels of production, lowered costs, increased profits by internalising economies of scale thus displacing the earlier market control methods.
- The internalisation of business activities necessitated the creation of management hierarchies to administer the managerial capitalist systems.
- Modern business emerged for the first time when the value of economic activities made administrative coordination more efficient and profitable than market mechanisms.
- The successful creation of management hierarchies ensured that they survived permanently.
- Managers became increasingly technical and professional as training, experience and performance rather than family relationships and individual wealth became the necessary criterion for advancement.

Visible Hand, The Managerial Revolution in American Business, claimed that modern management was a much later phenomena whereby the formation of 'big business' organisations was created by the administrative co-ordination exercised by a new class of permanent salaried managers. This led to the formation of a new economic institution, the modern business enterprise and new type of capitalism whereby business decisions were exercised by salaried managers rather than the owners (Chandler 1990:1-2). Specifically Chandler located the very beginnings of this management revolution in the formation and operations of the mid-nineteenth century American railroads but also at the Springfield Armory where its successful application he argued became diffused amongst other American large-scale business enterprises.

The brewing industry as a contributor towards these management agendas has so far been mostly ignored. This is intriguing given that Pollard (1965: 101) acknowledged that the London beer industry was displaying problems of size well before 1750 but fails to develop this theme further. This date is significant as it preceded the First British Industrial Revolution (BIR) which most historians generally acknowledge as commencing from 1760[6] onwards. Metropolitan brewing was

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- Management and ownership became increasingly divorced with the development of two identifiable groupings: the financial capitalism of the disorganised and diverse groups of the financial investing class and the managerial capitalism of the professional managerial class, which determined business policy and operational activities.
- Career managers appeared for the first time who favoured long term stability and growth rather than short term profit maximisation, the full employment of business activity became the force for continuing force for further growth.
- The creation of larger entities led to domination of major economic centres that altered the basic structures of market sectors and the economy as a whole (Chandler 1977: 6)

[6] Eric Hobsbawm a leading Marxist historian states that the economic take off for industrialisation in Great Britain which was the first industrialised nation occurred in the mid

distinguished by its requirements of substantial capital that were unmatched by any other commercial activity excluding banking: brewing operations in this environment went beyond the control of the single owner manager which necessitated the creation of albeit small managerial hierarchies and the assumption of functional responsibilities that were replicated by provincial brewers in the nineteenth century. Thus,

> organizational imperatives it has been claimed had "By [the end of the eighteenth century] the standardized staff positions of common to all the great breweries show how institutionalized, almost how professionally bureaucratic, their organisation had become" (Mathias 1959: 31).

Even so Chandler (1990: 266-267) has categorised brewing management as representative of a distinctive type of British backwardness. In a Chandlerian context this is justifiable in the context of the Trade whereby its 'backwardness' reflected a dominant and long standing adherence to traditional management structures and this explanation offers a plausible interpretation of why the 'Beerage' imploded during the 1960's. The management research questions arising from this hypothesis which will be addressed and answered within the body of this research are:

1. Locating the temporal professionalisation and impact of brewery management as a disciplinary process.
2. Identifying the educational management regimes as conditioning brewing management practices.

---

eighteenth century and that older historians usually date this at 1760 but is now generally regarded as to be found in the 1780's (Hobsbawm 1995: 28).

3. Locating accounting practice and its influences within the management process.

These questions are framed within the wider context of contemporary management debates of why and how professional management has achieved its current position of importance and dominance, its ubiquity and the origins of the culture of managerial capitalism (Hoskin and Macve, 1990).

1.3 Accounting: Framing Observations

The transition from bookkeeping[7] to a recognised formal body of professional accountants in Britain did not occur until 1854 in Scotland with the formation of the ICAS and in England 1880, with the formation of the ICAEW and the Society of Auditors and Accountants 1885 (Brown, 1905) followed by many other professional accounting bodies (Appendix 4). This professionalism was reinforced by the adoption of rules of conduct, ethics, education and examination. Nonetheless cost accounting prior to the Great War was largely absent from the syllabuses of these bodies and restricted to cost clerks (Loft 1990: 10-11). Although this may appear to reinforce Pollard's statement that the "practice of using accounting as direct aids to management was not one of the achievements of the British Industrial Revolution" (Pollard 1965: 248) he acknowledged that some innovative partial, costing applications were present at Wedgwood (Pollard 1965: 261), and Boulton and Watt (Pollard 1965: 217, 247).

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[7] Bookkeeping has ancient origins that have been dated back to the ancient Egyptians, (Ezzamel, 2001) and the ancient Babylonians (Chatfield, 1977). These systems were singly entry and combined pictorial and symbols as methods of recording transactions although later Roman accounting used Latin numerals. The persistence of Latin numerology lasted into the medieval period. However the adoption of Arabic numerals from around 1200 by Fibonacci of Pisa represented a huge step forward in commercial accounting (Spufford 2002:29).

However costing is not synonymous with professional accounting and it has been argued by others that it was practiced in supporting management business decision making prior to 1830 (e.g. McKendrick, 1970, Edwards, 1989, Fleischman and Parker, 1991, Fleischman and Tyson, 1993, Fleischman, Kalbers and Parker, 1996, Fleischman, Macve and Bryer, 2005a, and Bryer, 2005) whereas others have acknowledged these as ad-hoc ephemeral examples that largely support Pollard's viewpoint (Hoskin and Macve, 2000). Chandler implicitly agreed with Pollard's assumptions with his identification of accounting innovation occurring in the mid nineteenth century American railways and armouries which became instrumental in the development of bureaucratic administration that were heavily dependent on the creation of effective internal accounting and statistical[8] controls (Chandler, 1977: 89). Thus, the 'visible hand' of managerial capitalist intervention in the market place Chandler claimed was founded on the production and application of accounting data. This he has stated replaced the former system of the 'invisible hand' of laissez-faire identified by the economist Adam Smith in directing market operations. Chandler has therefore firmly located modern accounting as having had its origins outside the BIR and within the relative economic backwater of the US railroads which in turn spawned the widespread employment of accountants (Chandler 1977: 39) and the diffusion of new accounting practices. However, both Pollard and Chandler lack an accounting background and have failed to provide a consistent analysis of how accounting worked at the detailed level and instead have presented accounting functions as being either supportive or as a primary

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[8] Statistical controls imply in this context cost accounting techniques and not statistics in the modern sense. The use of 'accounting statistics' is covered in detail later in this thesis, see Bass's statistical accounting/costing and the work of William Sealey Gosset at Guinness discussed in Chapter 5, The Modern.

technology in achieving business objectives, e.g. the operations of the US Springfield Armoury. Although these accounting developments are important historically they do not necessarily support accounting developments elsewhere and both Pollard and Chandler make no mention of brewery accounting within their respective work. This approach had been replicated by prominent technical writers during the 1880's and 1890's. This was a period labelled as the 'Costing Renaissance' era (Solomons 1952: 17-18) based on the appearance of a tranche of technical literature which had been previously absent (Appendix1). Therefore the brewing accounting research questions arising comprise the following:

1. To identify how any other 'accountings' beyond financial tracking of incomings and outgoings function was utilised as a source of knowledge by brewery management for business administration both as a controlling and co-ordinating discipline.
2. To examine the role of bookkeeping and accounting within the education regimes of brewery management apprenticeships and its place within the available brewery technical literature.
3. To evaluate the agency role of professional accountants in providing financial expertise as an external source of financial knowledge to the brewing industry arising from the lack of internal expertise.
4. To locate brewery cost accounting practices and their calculative alternatives as an innovative Foucauldian micro-discipline and how these were used within a brewing managerial context.

These questions will be located within the wider framing observations as to the location and origins of the modern accounting discipline as a source both of knowledge and power.

1.4 Alternative Truths: Accounting History Paradigms

Adam Smith observed "it is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from the regard to their own interest" quoted by Porter (2000:389). Smith therefore identified commercial brewing to be part of this new capitalist mentality which endorsed market forces and one of the objects of this research is to locate where accounting figured within the brewers' capitalist mentality. Capitalism in this context is the pursuit of wealth within a new and emerging political economy uninhibited by an outmoded medieval moral economy whereby both Greek and Christian theology had condemned the love of lucre (Porter 2000:384). Therefore, "capitalism is essentially the investment of money in the expectation of making a profit" (Fulcher 2004: 2).Werner Sombart attributed the progression of accountancy as an essential ingredient in the creation of the 'capitalist spirit' since "it is one of the fundamental characteristics of an individual capitalistic economy that it is rationalised on the basis of rigorous calculation" (cited in Winjum, 1972: 16). Weber concluded that DEB was essential to this capitalist objective since, "more specifically, a rational capitalistic establishment is one with capital accounting, that is an establishment which determines its income yielding power by calculation according to the methods of modern bookkeeping and the striking of a balance" (Weber 1927: 275), although this assertion has been challenged (Yamey, 1964, and Funnell, 2001). The Weberian socio-historical model

therefore identified a new mentality (capitalism) whereby DEB "was the most perfect, crystal-clear expression of this process" (Auyeung and Ivory 2003: 6). Furthermore Weber identified a new type of rational capital accounting as a distinguishing and essential mechanism in the successful operation of modern capitalism (Weber, 1968). The German poet, novelist and dramatist Goethe considered DEB as one of the "loveliest inventions of the human spirit" and the writer James Buchan has called it "a machine for calculating the world" (Boyle 2001: 11). DEB is thus seen as significant in developing capitalism although no universal agreement is present: Sombart alleged it created capitalism whilst Weber and others acknowledged it as a major contributing factor.

The earliest identifiable texts to consider the origins and application of accounting[9] were an attempt at constructing a creditable identity and the establishment of a reputable lineage that befitted accountancy's newly acquired prestige arising from its professionalisation from the mid nineteenth century onwards. Nevertheless the output of academic accounting history texts and related papers remained insubstantial up until the 1960's. The existing accounting history until this point had been criticised for adopting a technical approach rather than in a social and organisational context having

"...adopted a rather technical perspective delineating the residues of accounting past rather than more actively probing into the underlying processes and forces at

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[9] Worthington's (1895) *Professional Accountants,* Brown's (1905) *A History of Accounting and Accountants,* Littleton's (1933) *Accounting Evolution to 1900* excluded industrial accounting. This could be because this was not accorded any merit or it may be a systematic error because they were the first accounting histories (Previts et al, 1990)

work. Until recently most historical analyses of the accounting phenomenon, if not adopting a quite a theoretical stance, have been content to see accounting change as a process of technical elaboration and almost inevitably improvement" (Hopwood, 1983 cited in Napier 1989: 244).

Accounting practices had been studied by several social scientists since the 1950's but they remained both neglected and the social scientists were relatively few in number (Miller 1994: 5). By the 1970's the emergence of what has been dubbed the 'new accounting history' or 'critical accounting history' resulted in a burgeoning critical scholarship that embraced a wider social context analysing accountings role. The net result has been that the profile of accounting history has been significantly raised not only at the level of the work and the controversy produced by its members but through a proliferation of new dedicated journals, e.g. Accounting History, Accounting, Business and Financial History and the Accounting Historians Journal. The significance of this new approach has been to reconsider what accounting was and is, and the roles that it has played in different eras and also in the recent and distant past. It has also served to display the many diverse directions by which accounting history can take in content, epistemology and methodology. This has encouraged accounting historians to extend their research parameters into a heterogeneous range of theoretical approaches (Miller et al, 1991: 395-400). Accordingly this has developed into the emergence of three major and competing paradigms leading to the 'academic antler clashing' (Hoskin 1994: 59) of the Economic Rationalist, the Marxist and the Foucauldian paradigms of accounting history which are considered later and in detail within the chapter three. Even so, the dynamism and reinvigoration of

approach through the 'new accounting history' agenda has not yet examined the British brewing industry.

A detailed examination of accounting's role within the brewing industry can be justified on several levels. The study of accounting history has been legitimised as intellectual, since it "illuminates the process by which accounting thought, practices and institutions develop, identifying the factors in the environment that induce change and revealing how this change actually occur" and utilitarian because it illuminates the past and on the origins and concepts, practices and institutions in use today, yielding insights for the solution of modern accounting practices (Napier 1989: 239). This justified as presenting "a better understanding of human nature, tolerance, avoiding mistakes of the past and giving greater control of the present" (Funnell 1996: 41). Accordingly, historical research presents a substantial opportunity for a challenging and worthwhile study from which we can hope to increase our ability to make judgements on a broader more informed basis (Zeff, 1982). The significance and inherent limitations of accounting and particularly management accounting in management decision-making was exposed to a broader audience with the publication of the influential work, "Relevance Lost; The Rise and Fall of Management Accounting" (Johnson and Kaplan, 1987) which provoked a plethora of subsequent accounting history texts and dedicated journals that subsequently stimulated a broader interest in the socio-realities of accounting. There exists a central belief that it can inform the present by illuminating the path to the present (Funnell, 1996). Miller in particular has identified complex linkages whereby accounting is seen "as a set of practices affecting the world we live in, the type of social reality we inhabit,

the way in which we understand choices open to business undertakings and individuals, the way in which we organise and manage activities and processes of diverse types, and the way in which we administer the lives of others and ourselves" (Hopwood and Miller 1994: 1), which demand an explanation.

The broad programme of accounting history in this context is seen to comprise,

1. The impact of technological and organisational change on the content, structure, content and dissemination of accounting information as precursors of modern practice
2. The development of the annual report and accounts and other reporting documents.
3. The emergence and use of alternative reporting practices and techniques.
4. The responses to demands for the recognition and measurement of assets and liabilities.
5. Information user needs.
6. The transfer and dissemination of accounting practices between private and public sectors.
7. The development of the forms of and processes of financial assurance

(ICAS, Scottish Committee on Accounting History: 2001)[10].

[10] The ICAS provided two separate£500 seed corn research grants in 2001 and 2002 for the purpose of examining the archives of the state brewery at Carlisle.

All of these impinge and have influenced the research on the brewery sector and extends to include the public sector not only because of the social context of the liquor trade and temperance but also to incorporate the operations of the Liquor Central Control Board (LCCB) and the State Management Scheme (SMS), the state's nationalised brewery at Carlisle (1916-1974).

1.5 A Theoretical Approach

I have made consistent references to both management and accounting knowledge as a discipline. The use of this descriptor requires clarification as the thesis takes a disciplinary approach to the research problem in order that a closer examination and explanation of the complex issues arising within this field of study may be presented.

The content of discipline as enunciated by Weber is that it is a consistently rationalised, methodically trained execution of a received order whereby all personal criticism is suspended and the actor unswervingly is set for carrying out the command. Such a discipline effects mass organisations such as a factory or a brewery and promotes uniformity. What becomes decisive for discipline to effectively function is that the obedience of a plurality of men (such as the factory/brewery workforce) remains uniform (Gerth and Wright Mills 1967: 253). Although such disciplinary regimes are recognisable in military organizational structures Weber identifies their second manifestation amongst the large-scale economic organisation. Weber indirectly links accounting to these industrial disciplinary regimes whereby,

"With the help of appropriate methods of remuneration, the optimum profitability of the individual worker is calculated like that of any material means of production. On the basis of basis of this calculation, the American system of 'scientific management' enjoys the greatest triumph in the rational conditioning of and training of work performances. The final consequences are drawn from the mechanisation and discipline of the plant and the psycho-physical apparatus of man is completely adjusted to the demands of the outer world". (Gerth and Wright Mills 1967: 261)

This approach reflects the industrialisation and the mechanization of brewing in an industry that was in the vanguard of industrialisation and amongst the largest manufacturers when measured by the size of capital and it was machinery that ultimately forced the worker to accept the discipline of the factory (Pollard 1965: 184).

A new insight and approach to discipline was substantially explored and extended by the French philosopher Michel Foucault on whose work this study draws. Foucault's observation was that the chief function of disciplinary power is to train and link individuals together not to reduce them but in order to bind them together in a manner as to multiply their power. This disciplinary power it is claimed has invaded the modern world in which it functions as a calculated, but permanent economy (Foucault 1977: 170). The training therefore of managers, in this case brewery managers, by means of a form of disciplined educational regimes was reinforced by the discipline of numbers, which Foucauldian

historians (Hoskin, 1993, and Hoskin and Macve, 1986) have claimed was achieved by using calculative and accounting information. It is maintained that such regimes became a self-reinforcing dynamic, as individuals became expert professionals in their field through being well-disciplined, and who then in turn exercised power over others via a hierarchy and surveillance arising from their own expertise gained through their own knowledge and measuring their own performance. This power and knowledge in turn produced a hold upon the body, by which he meant the individual through, investing it, marking it, training it to carry out tasks, to perform ceremonies and emit signs. The Foucauldian approach is thus framed on the study of institutions such as the factory, and a brewery is simply a beer factory, to uncover the strategies of power which individuals adopted in relation to other institutions in a dense web of power relations. This is described as consisting of the micro-physics of power (Horrocks and Jetvic 1997: 112) amongst which accounting may be justifiably included. Such a power is not exercised as obligatory or as prohibitive on those who do not hold it, but it is transmitted by them and through them by placing a pressure upon them to comply with the established disciplinary regime. Factory workers were thus accorded posts, skills and timetables which subjected them to improvement and usefulness via a constant process of monitoring of behaviour against the recognised disciplinary code.

The research chapters have therefore been constructed within this Foucauldian disciplinary schema applied to the brewery industry in order to test its conclusions. Consequently the micro-physics of disciplinary power will be

examined within a brewing industry framework whereby the major focus of the research is concentrated on management processes and accounting systems.

1.6 A Historical framework

A chronological approach has been adopted as the structure for examining the importance of the role of management and accounting in the brewing trade from 1700-1939. This has been deliberately selected in order to apply a Foucauldian genealogical approach and thereby reveal the significant discourses in the management and accounting discipline from the moment that they first appeared in history. It will thus attempt to study the effects of those discourses that claimed to be rational and scientific, e.g. 'scientific management' and 'scientific costing' in brewery management practices from where they first appeared. In this circumstance a genealogical approach permits locating historical change, not by discovering any universal truth to history or through the description of neutral structures of knowledge, but instead, it is interested in history as a series of changing power and knowledge structures that permits the identification of how current practices were derived

The thesis therefore proceeds as follows. In Chapter Two - The Literature Review - I appraise the relevant literature on accounting and management history and discuss the genealogy of this new academic field and its acceptance as a legitimate field of study. In Chapter Three - Research Methodology and Methods - I examine the alternative theoretical frameworks for studying accounting history, the neo-classical, Marxist and Foucauldian, and introduce and justify the methodological approach applied in this research. I also provide the details of the

fieldwork carried out, by specifying the targeted selection of primary and secondary documentary sources and including an oral history element within the overall project.

The empirical work (Appendix 5 - British Brewery Companies and Associated Primary Sources) is divided into five chapters, each recording one stage of the development in accounting and management practice within the brewing trade. These are chronologically uneven which is reflective of the discontinuity of practices. They are as follows, Chapter Four - The Feudal and Pre-Modern - which covers the period from the inception of organised industrial or 'common' brewing regime until 1830 though brief reference is made to domestic brewing. This extensive timeline is not as unwieldy as it first appears since the feudal period provides a brief and necessary background to the precursor of production and accounting practices where the pre-modern-account is mainly devoted to metropolitan brewing and the rise of the first of the great brewing family dynasties, but it also includes the provincial brewing businesses of Burton Upon Trent in Staffordshire that was an important centre of production. This timeline conveniently coincides with existing work on the brewing trade (Pollard, 1965, and Gourvish and Wilson, 1994) and legislation that charted the rise of the provincial breweries. Chapter Five - The Modern (1830-1914) - covers the period up to the start of the Great War commencing in 1914 and examines the impact of the scientific revolution on production and the widespread incorporation of breweries from the 1880 onwards and its effects on brewery organisation, management and accounting. Chapter Six is devoted to the agricultural arm of brewing and focuses on the role of malting and its accounting methods of

valuation. This diverges from the discrete chronological structure by considering the malting industry in its entirety from 1600-1939 in order to better contextualise the agrarian revolution and agrarian capitalist implications for the brewing industry. Chapter Seven - The State (1916-1974) - examines the nationalisation of the beer industry in Carlisle and district as a Great War induced exingency and social engineering project heavily influenced by Temperance. It will be claimed that the state brewery was a potentially significant site for change for both brewery management and accounting for dissemination and influence to the commercial brewing sector. At the same time it engages with the Loft theorem of the development of modern British cost accounting since distinctive parallels are prima facie evident. The final research section Chapter Eight -The Inter-War Period (1919 - 1939) - deals with the impact of rationalisation of the industry and the potential legacy of scientific management, scientific costing and the state brewery up to the outbreak of the Second World War. Each chapter discusses the events of the relevant period within the context of the aforementioned framing observations.

The Final section Chapter Nine – Conclusions, analyses and reviews the overriding themes before discussing the limitations and possible extensions of the work.

Chapter 2 - A Literature Review

2.1 Introduction

'The Trade'[11] as it was normally referred to, between 1700-1939, is a significant sector because it began to develop cost and labour efficient ways of mass batch flow production of its product before other more closely studied sectors such as wool, cotton and iron manufacture. Yet it has not so far been the subject of much scholarly research in the debate in the development of modern management and accounting practices. I have therefore imposed a timeline for this project of 1700 to 1939 on the basis that this enables me to trace how brewing drew upon forms of accounting and management in developing industrialised mass production regimes and then to trace the development of that approach to a mature phase within the UK brewing market before the development of international mergers and the emergence of trans-national brewing empires in the 1950's and later. The inter-war period (1919-1939) is a useful final period in this context, since it permits an evaluation of the significance in the brewing context of innovations that are normally held to have occurred in both management and accounting practice during and immediately in the aftermath of the Great War (1914-1918) both in the Trade and in the wider field of British Industry. At the same time, this cut-off point ensures that this study is not a purely parochial nationalist study because it allows for an evaluation of the extent of the diffusion and importance

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[11] 'The Trade was even by 1905 an outmoded collective label attached primarily to brewers and publicans, but often extended to hop and barley traders, brewery equipment manufacturers, distillers, coopers and sugar manufacturers etc to cover everyone with a commercial interest in alcoholic beverages. Both the members of the trade and its critics readily accepted the term (Anderson 2005: 2).

of American management practices which were widely and variously touted as means for the improvement of British management in the early twentieth century.

The aim of this chapter therefore is to review the existing literature on the brewery industry, management and accounting both in general and specific terms and in the terms of the significance that the brewing industry contributed to these areas. The component parts of the literature review draws on various bodies of knowledge that are relevant to this study of the British brewing industry during this era. According to Cooper (1988),

"A literature review uses as its database reports of primary or original scholarship, and does not report new primary scholarship itself. The primary reports used in the literature may be verbal, but in the vast majority of cases reports are written documents. The types of scholarship may be empirical, theoretical, critical/analytic, or methodological in nature. Second a literature review seeks to describe, summarise, evaluate, clarify and/or integrate the content of primary reports".

The relevant existing literature has been segregated into distinct classes for the purpose of the literature review. This structured approach has been adopted to meet the objectives of the literature review process, as articulated by Cooper and others.[12]

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[12] Another more detailed specification by Bournier (1996) suggests the following:

of In this instance I propose firstly to review key texts specifically devoted to the history of the brewing industry and then to review the nature and the extent of the general and brewing specific primary technical accounting and management texts that were available to the industry. Finally I propose to review the secondary accounting and management history literature locating this literature within the wider theoretical literature on historiography, which has contributed to expanding the range of ways in which scholars now approach the problem of understanding the development and significance of accounting and management interrelations. These classes of literature are considered chronologically in order to reflect the genealogical development of both the brewing industry and the historiography of accounting and management. Within this literature has arisen competing theories that present a range of possibilities and explanations concerning the issues arising around the origins of management and accounting. These theoretical frameworks can be broadly divided into the neoclassical, the Marxist or the labour-process theory and the Foucauldian, which I explore in more detail later. I intend to embrace the latter, which as an approach to historical investigation and analysis is concerned with discerning those factors as underlying the explanations of events and patterns of behaviour (Stewart: 1992).

- Avoid reinventing the wheel [that] at the very least… will save time and [avoid] the same mistakes as others.
- Carry on from where others have already reached [by] reviewing the field allows build[ing] on the platform of existing knowledge and ideas.
- Identify other people working in the same fields [because] a researcher network is a valuable resource.
- Increase[the] breadth of… [personal] knowledge of …[the] subject area.
- Identify seminal works in [this] area.
- Provide the intellectual context for [the] work enabling [the] position[ing] of [the] project relative to other work.
- Identify opposing views.
- Put[this] work into perspective.
- Demonstrate that.. access [to] previous work in an area.
- Identify information and ideas that may be relevant to [this] project
- Identify methods that could be relevant to [this] project.

In this context management and accounting offer the possibilities of not only operating as a disciplinary economic surveillance system geared towards efficiency and competiveness of business but also as a system capable of subjecting human activities to measurement and control. As such discipline is a political anatomy of detail (Foucault 1991:139) and the emergence of disciplinary practices require the questioning of both the roles of historical investigation and the manner in which it is carried out so that the emphasis is on the general, in this instance the development of modern management and accounting techniques rather than a total history. Therefore I intend that this type of approach will shed light on the data I have excavated to make a more informed understanding as to the origins of modern management and accounting by giving nuances to its development and its causal factors.

The coverage of the specific industry historiography and technical literature is dealt with first in order to contextualise the ensuing intellectual debates regarding the origins and location of both the common themes and imperatives for modern managerialism. This is because,

> "Although those who concern themselves with details are regarded as folk of limited intelligence, it seems to me that this part is essential, because it is the foundation, and it is impossible to erect any building or establish any method without understanding its principles. It is not enough to like architecture. One must know stone cutting". (Marshall de Saxe cited in Foucault 1991: 139)

The technical literature consequently provides a reference point for the ensuing academic debates and discourse. It is intended thereby to identify common critical management and accounting arguments about the accounting we should expect to find in industry by locating appearances and absences within a wider business historiography.

2.2. The History of the British Brewing Industry and its Significance

As briefly noted above the brewing trade has been selected because during this period in Britain it was both an economically and socially significant industry. Moreover it was a mature industry that underwent early industrialisation, which continued to retain strong links with the agricultural sector. Thus far the brewing industry's accounting and management practices have not been subject to any detailed research. This is not to deny the existence of some relevant secondary texts, i.e. Littleton's (1954) consideration of Medieval brewing recorded within a framework of stewardship charge/discharge accounting and Arnold's (1997) review of early twentieth century published brewery company financial statements. The more numerous existing brewery industry texts however, are narrative business economic histories, i.e. *The Brewing Industry* (Lovett: 1905), *The Brewing Industry in England 1700-1830,* (Mathias, 1959), *The Brewing Industry: An Economic Study* (Vaizey, 1968), *The Brewing Industry: A Study in Industrial Organisation and Public Policy* (Hawkins and Pass, 1979), *A History of the Brewing Industry in Scotland* (Donnachie, 1979), *The British Brewing Industry 1830-1980* (Gourvish and Wilson, 1994), *The Dynamics of the International Brewing Industry Since 1800* (Gourvish and Wilson, 1998), and *Beer and Britannia An Inebriated History of Britain* (Haydon, 2001). These texts

either ignore or consider indirectly brewery managerial practices and as a consequence accounting's role has been marginalized. This omission in the main of any detailed evaluation of accounting's function may have arisen because the authors' have not been drawn from an accounting background and thus have lacked the technical and interpretive skills to appreciate the accounting archival information before them. Also the Trade was notoriously guarded with its accounting information, indeed "brewers were extremely secretive about their accounts" (Gourvish and Wilson 1994: 209), which some explain as arising from the vociferous and sustained hostility of the Temperance Movement from the mid nineteenth century onwards,

> "Brewers certainly assumed that any outsider seeking to investigate their past was looking for ammunition. They kept their records to themselves and well they might". (Mathias 1965: 3-4)

This secrecy has also extended to the neglected agricultural arm of the brewing trade, malting, which was described as being "this essentially private trade" (Brewer's Gazette: 1907). The most recent history of this trade *The British Malting Industry Since 1830* (Clark, 1998) provides no early examples of accounting practices prior to 1900. Nonetheless it does provide evidence of established internalised calculative practices at the beginning of the twentieth century that measured both quantitatively and financially unit production costs and yields (Clark 1998, 118-122) which are largely absent from the main brewing texts.

The remaining brewery literature is focused on the scientific production process, e.g., *The Art and Science of Brewing* (Kloss, 1949), *Seventy Years Progress in Malting and Brewing* (Hough, 1969) and *Country House Brewing in England 1500-1900* (Sambrook, 1996), and company histories and biographies. The scientific literature at least from the later nineteenth century is indicative of advances in improved quality production through pasteurisation and improved yeast cultures and many of the larger leading breweries, e.g. Bass, Allsopp and Worthington employed chemists to this end. The Institute of Brewing, formed in 1886, disseminated much of this type of research through its own journal literature and meetings. However it remains unclear how the average brewery implemented these findings in a conservative industry. Thus, the literature implies that a more scientific and disciplined approach to brewery production was adopted but the contradiction of the Trade was that brewing was still widely regarded and atavistically referred to as an art.

There exists various narrative brewery company histories e.g. *Noted Breweries of Great Britain and Ireland,* (Barnard, 1889 - 1891), *The Highgate Brewery Walsall,* (Lloyd. K. J, 1976), *Greene King: A Business and Family History* (Wilson, 1983), *An Uncommon Brewer, The Story of Whitbread*, (Ritchie, 1992), and *Good Company: The Story of Scottish & Newcastle* (Ritchie, 1999). The restricted extent to which these types of literary sources have been employed in this review has been imposed by necessity due to the existence of the numerous British brewery companies since there were 4,512 separate companies in 1910 and even with war induced rationalisation there was still 2,914 brewery firms in existence in 1920 (Richmond and Turton 1989: 14). The inherent weakness of

these texts is that the companies involved have commissioned them as 'House Histories' although they have the strength of providing additional relatively objective data. Typically the texts therefore minimise or gloss over aspects of failure in the companies' business history and avoid critical and adverse comments (Duke and Coffman 1993: 218-219). At the same time they remain valuable sources both on specific events and as a means to generating a broad overview of common themes in the development of the industry across different regions and periods. There also exist several autobiographies of prominent brewers, the most notable being that of Sir Sidney Nevile a former director of Whitbread, *Seventy Rolling Years,* (1959), which provide personal insights into brewery management and indirect references to brewery accounting from the late nineteenth century onwards. Autobiographies are subject to many of the same constraints as House Histories but again have a real value as source materials. However inspection of these sources reveals that none of them devote more than a minimal consideration to the role of accountancy within the Trade, which this research seeks to redress.

2.3 Historically Contextualising Accounting and Management

Before accounting's role in the Trade is identified the precursors of modern accountancy practice requires contextualisation. Bookkeeping, which later evolved in technical sophistication, was the precursor of accountancy and is similar to brewing to the extent that both are ancient knowledge technologies that have been identified as extant in ancient Sumeria from at least 3500 B.C. (Chatfield 1997: 5, Haydon 2001: 1) or in the form of token accounting even earlier around 8000 B.C in the Fertile Crescent of Mesopotamia, (Schmandt-

Besserat, 1992). However these were not the forerunners of DEB as they remained linguistic and numerical signs where each token both named and counted a specific quantity of a particular designated item (Ezzamel and Hoskin 2002: 343).

The early modern technical accounting literature of bookkeeping is based on the dominant techniques of the Italian method of DEB that was first formally recorded by Fra Pacioli's (1492) *Summa Arithmetic* although its antecedence may well date back to the thirteenth and fourteenth Venice and Florence (De Roover, 1955). Pacioli acknowledged that his own work was a compendium of earlier writers, chiefly Leonardo da Pisa (Taylor 1956: 179-180) but the system remains a Western European Medieval invention. This invention of double-entry bookkeeping represented a significant application of disciplinary practices, which created an opportunity for business administration that became increasingly diffused throughout Western Europe. Crucial to the development of DEB was the notion of balance arising from the dual entries of a transaction through a debit and credit that was enhanced with the adoption and application of Arabic numerals and the introduction of the figure zero. The use of Arabic numerals in itself cannot explain the success of the new bookkeeping system otherwise its origins would have been in the Islamic Arabic world but it did permit the development of an alphanumeric system of notation. Hoskin and Macve (1986) have suggested that this Italian system of bookkeeping appeared not just as a technical advancement but because it was a particularly significant new way of textual writing and reading generated in the thirteenth and fourteenth centuries which had been articulated mainly in the university world. They

perceive this systematic writing of accounts in terms of a new textual complexity that firstly involves the doubled character of the monetary sign to represent what was given and received in an exchange and then its transformation into a double-sign as a representation of monetary value in the form of an account entry. Within this schema the analogues of textual changes in double-entry not only mirror the equal and opposite effects of the debits and credits but also mirror a new quality of textuality that was already existent in the elite literate world in the principals of textual columnar layout, alphanumeric discourses, cross referencing, indexing and the integration of primary and secondary texts (Hoskin and Macve 1994a: 78). It was only after a long and hesitant development that these signs manifested themselves in the form of double writing on paper of paper money (Thompson 1994: 47). The first English text describing this method of mercantile accounting was Hugh Oldcastle's, (1543) *Profitable Treatyce* (Thompson, 1994) that was followed later by an increasing volume of similar works.

Brewing at first in the metropolis and later in the provinces became an industrial manufacturing process exemplified by the great breweries such as Whitbread and Truman in London from the early eighteenth century and Bass and Worthington at Burton Upon Trent in the nineteenth century whilst the double entry accounting literature remained focused on mercantile accounting systems. The early texts that considered accounting from a manufacturing perspective were comparatively few (see Appendix 2). Brewing was absent or ignored by this early technical mercantile and manufacturing accounting literature. Whilst there were developments, e.g. Josiah Wedgwood's system of unit cost calculation

(McKendrick, 1976) and other diverse examples in the iron and textile trades (Fleischmann and Parker 1991: 364) it has been claimed that this was not evident of modern management practices,

"recent re-evaluations of the evidence… fail to discover an integrated management structure taking place. Cost experiences (such as those at Wedgwood) were not utilised to coordinate production, control costs and maximise productivity on a regular basis. What appears to be lacking is any approach which simultaneously analysed both financial and human performativity, rendering the interrelated but separable values of products and persons jointly calculable. Instead, as Alfred Chandler details in *The Visible Hand* (1977), these managerial breakthroughs were first developed in the USA from the 1830's. (Hoskin and Macve1994: 80)

It was only from the late eighteenth and nineteenth century onwards with the ensuing technological developments and new factory working disciplines, which permitted accounting to reconstitute itself in a recognisably modern knowledge form. The latter part of the nineteenth century and the period of the second Industrial Revolution has been recognised as an era known as the 'costing renaissance' whereby accounting data was systematically internalised by manufacturers for management decision-making (Solomons, 1952, Chatfield, 1977) and was thus directly employed as a control mechanism to discipline performance. This period witnessed a growth in the publication technical literature devoted to cost accounting comprising Garcke and Manger Fell's (1887) text. G.P Norton's (1889) work and Slater-Lewis's (1896) book (see

Appendix 2 for a more detailed consideration of these texts). The Great War (1914 - 1918), which involved direct government intervention in the economy forced manufacturers to place greater attention to cost with the government actively recommending Elbourne's 1914 text *Factory Administration and Accounts* (Loft, 1990). It will be demonstrated that the nature of this state involvement was reflected in the operations of the LLCB/SMS (1916-1974) the state controlled and operated brewery at Carlisle. The publication and public dissemination of these various texts is thus often cited as evidence of the 'costing renaissance' and thus improved management practices. On the eve of the Great War Elbourne's text completed this class of literature, which synthesised administrative methods, including cost accounting, within a framework of production planning and stock control. Elbourne in his text emphasised the work of the cost accountant and the text was reissued in 1918 with the strong endorsement of *Ministry of Munitions Journal* (Loft 1990: 15). The apparent increased interest in costing by manufacturers in the war and post war period it was alleged was stimulated by economic recession and increased competition (Garner, 1954). Thus an economic imperative was normally accorded as driving forward more accurate calculative practices in the form of product cost accounting yet the technical literature of the immediate post Second World War explicitly links costing to modern management in that "the story of control in management is the story of the evolution of accounting and cost accounting" (Urwick and Brech 1949: 15).

Literature searches have revealed a paucity of brewery accounting texts during this costing renaissance immediately before the Great War with tantalising and

unrealised secondary references. *Amsdon's Guide to Brewery Bookkeeping* (1881) is cited by Solomons: 1968 but has proved untraceable, as indeed has been *Hoskins' Improved System of Bookkeeping for Brewers* that was advertised in the contemporary brewery press (*Diary for the Brewing Room 1898*) and De Peyer's (1915) paper *Brewery Accounting* makes no mention of the technique. It appears from the available textual evidence that brewery accounting did not explicitly contribute or form a significant part of the costing renaissance and that by implication Foucauldian modern management within the Trade was absent. The evolvement of costing imprecisely around 1900, which had been referred to by Elbourne, is also directly linked with management control and is generally associated with the American phenomenon of 'scientific management' (Solomons, 1952, and Epstein, 1978). Taylor's (1911) *Principles of Scientific Management* detailed and disciplined measures that could be adopted by management to improve productive efficiency and remove antagonism between management and the workforce. This involved the systematic study and measurement of work practices to discover the most efficient ways of work performance and then a systematic study of management to control the workforce. According to Taylor this was achieved through the four great underlying principles of management, the development of a true science of work, the scientific selection and progressive development of the worker, the bringing together of the science of work and the scientifically selected and trained workers and finally the constant and intimate cooperation of both management and workers.

Taylor's management theories belong to the classical school of management that focused on efficiency and bureaucratic administrative management whilst the

application of the defining and imprecise term of 'scientific' attempts to accord he theory with a legitimacy and accuracy of the natural sciences. In this context 'science' has subsequently been defined as systematic observation and measurement to promote efficiency (Pugh and Hickson 1996: 104) and thus provides the linkage with cost and standard cost accounting. This qualifying prefix was extended in Great Britain post 1918 to include 'scientific costing' although a precise definition was never provided (Massey, 1919, and Todman, 1922). Taylor, an engineer, had devised scientific management for application within a factory environment (a brewery is simply a beer factory), which would be beneficial in complicated manufacturing processes although arguably brewing is a relatively uncomplicated production process. Thus Taylor's intricate pre-production measurements and calculations permitted the computation of accurate costs and performance standards that could be applied in budgeting, scheduling and incentive payment schemes that were developed by cost accountants that led to standard costing (Chatfield 1977: 195-196).

Hoskin and Macve: (1986, 1988) have argued that Taylor's approach to management and costing was presaged by innovative time and motion studies enacted by Daniel Tyler in 1832 at the Springfield Armory an American government arsenal. Tyler undertook a time and motion study that established production norms for time and activity so permitting the calculation of a standardised cost per manufactured item that became implemented in 1841. It is thus within these schemata that the development of standard performance benchmarks provides a technique of 'hierarchical surveillance' that rendered labour calculable and total 'human accountability achievable' (Fleischman,

Kalbers and Parker 1996: 325). There also exists evidence to disprove that Taylor's approach to management was unprecedented with isolated British examples of a 'scientific approach' to management. Urwick and Brech cite the Boulton and Watt's (Birmingham) Soho factory in 1797 and Slater-Lewis's *Commercial Organisation of Factories* (1896) but they appear to have made no enduring or widespread impact as Taylor did who "made a new synthesis of older practices" (Urwick and Brech 1949:7-9). Nonetheless the extent of the adoption of Taylor's techniques and the Americanisation of business practices in Great Britain both before and after the Great War is debatable and it appears to have made limited progress where "British interest remained vague, cool and distant" (Urwick and Brech 1949: 88).

In post-war Great Britain Sheldon's (1923) *The Philosophy of Management* acknowledged scientific management but warned against it being perceived as quick short cut to success and then that no system however scientifically founded would lead to success without the sound human faculty. Nevertheless the technique was acknowledged as offering an opportunity of reducing large parts of business management to a science (Sheldon 1923: 35), which was directly attributed as part of the new "electrifying impulse from America in every sphere of industrial management" (Sheldon 1923: 45). Sheldon however is less explicit concerning the role of accounting and he indexes costing under 'Comparison' that involved the computations of the statistics of cost and that "costing is the scientific treatment of costs generally accepted in industry" (Sheldon 1923: 203). Towards the end of the period under review the management literature included Elbourne's (1934) *Fundamentals of Industrial Management* which classified

'management as occurring within three distinct phases, the earliest being the 'traditional' or rule of thumb phase beginning with industrialisation that was followed by a 'systematic phase', which was subject to strong American influences reflected in the wide adoption of office equipment and appliances. It is the final metamorphosis of management, the 'analytical phase' that Elbourne records as part of scientific management, which had occurred within the last generation. (Elbourne 1934: 567-569). Elbourne also noted that cost accounting had only recently developed as a separate profession best described as accountancy applied to administrative records that lay outside the strictly more limited fields of financial accounting.

The brewing industry is absent from all of these scientific management texts without even fleeting references and the paucity of specific brewing management literature is even more pronounced than the sparse availability of brewery accounting texts. Tripp's (1892) *Brewery Management* is the only example of its typology and contains no grand theory of management practice although it devotes a considerable detail to a Byzantine system of financial accounting without any mention of cost accounting. The unfortunate Tripp's reputation however suffered when under his management Ind Coope was reduced to bankruptcy in 1909 and his text '*How to Run a Brewery'* was widely lampooned in the Trade for allegedly omitting the qualification 'not' after the word 'how'. It is only just prior to the Second World War that the brewery technical literature reveals that cost accounting was not an unknown technology and it is first formally recorded, albeit briefly, in Hamilton's (1939) *Brewery Accounting*.

2.4 The Normative Accounting Agenda

The volume of the technical literature consequently indicates that the major and seminal changes in management and accounting practice occurred during the latter part of the nineteenth century and the early twentieth century. The key word that was attached to these new practices by contemporary practitioners was scientific because it bestowed a new credibility and implication of superiority to these over older practices. It was recognised that cost accounting was an important facet of this movement and also that it was a relatively recent phenomenon. Yet much later Johnson and Kaplan (1987) have argued that these advances of using accounting for management purposes, i.e. management accounting had all been established within several years after the end of the Great War and which had then stagnated,

> "By 1925 virtually all management accounting practices used today had been developed: cost accounts for labour, material, and overhead: budgets for cash, income and capital, sales forecasts, standard costs, variance analysis, transfer prices and divisional performance measures" (Johnson and Kaplan 1987: 12).

Johnson and Kaplan's criticisms of the retention of inappropriate early management accounting techniques into the latter part of the twentieth century fostered critical debates that still persist. It also served to focus attention on the origins of current management and accounting practices and thus "moved accounting history centre stage" (Ezzamel et al 1990). Thus a growing re-

examination of accounting historiography has been stimulated that continues apace. It is within this focus of re-examination that accounting's place inside the brewing sector is sought. This has been evidenced by the international growth of the field, the number of specialist journals devoted to the field, the American *Accounting Historians Journal* (1973) and *The Accounting Historians Notebook* (1977), the British *Accounting Business and Financial History* (1990) and the Australasian *Accounting History* (1996) that publish materials beyond the confines of an Anglo-Saxon accounting universe. As a result a vibrant and emerging field has developed with an expanding network of researchers, who are raising a range of new and contested questions (Fleischman, Mills and Tyson 1996: 65). In particular the adoption of accounting as a tool of modern management practice continues to be robustly debated by seeking to locate the source and origins of such practices and its effects on organisational culture and the individual self (Miller, 2001).

The belated professionalisation and disciplinary basis of British accounting did not occur until the mid and latter part of the nineteenth century with the formation of the various professional bodies, (Appendix 4) and thus it becomes understandable why accounting history texts did not appear until relatively recently. The earliest texts were institutional and narrative histories, and Previts et al (1990) cite Worthington's (1895) *Professional Accountants* as the first of this typology followed by Brown's (1905) *A History of Accounting and Accountants*. However, both excluded industrial accounting from their work which implicitly removes it from the realm of professional accounting practice. Later Littleton's (1933) *Accounting Evolution to 1900* established accounting

history as a legitimate academic discipline, which was later complimented by the work of Solomons (1952), Garner (1954) and Littleton and Yamey (1956). Consequently it is unsurprising that the volume of accounting history literature prior to 1960 is limited and why this remained primarily narrative. These works focus on heavy industry and textiles and are noteworthy for largely ignoring the impact that accounting had in the brewing sector during the period under investigation. Moreover this typology presented the evolution of accounting within an advancing industrial society, which explicitly accepted accounting as a teleological progression,

> "Accounting is relative and progressive. The phenomena, which form its subjective matter, are constantly changing. Older ideas become less effective under altered conditions: earlier ideas become irrelevant in the face of new problems. Thus surrounding conditions generate fresh ideas and stimulate the ingenious to devise new methods. And as such ideas and methods prove successfully they in turn begin to modify the surrounding conditions. The result we call progress" (Littleton 1933: 361).

2.5 The Wider Social Agenda of Accounting: The Great Theorists

The early and normative agenda of general accounting historiography focused on and emphasised the technology of accounting practice that often bordered on antiquarianism. This inevitably created a restricted literature on the sociology of accountancy although Sombart (1902), Weber (1958), Marx (1974) had referred to it and represent the first generation of accounting theorists that attribute more

than a narrow technical function to the accounting discipline. Sombart in his *Der Moderne Kapitalismus* had concluded that DEB had been the critical factor in the successful formation of German capitalism since it was,

"...both a manifestation of the spirit of capitalism in its formative decades as well as a propulsive agency furthering a significant economic and cultural development...The characteristic patterns of business organisation resulting from systematic bookkeeping has been of crucial importance for the development of capitalism in its most essential aspect. One cannot imagine what capitalism would be without DEB: the two phenomena are connected as intimately as form and contents" (Winjum 1972: 21).

The invention of DEB in this schema is portrayed as a seminal event that was largely responsible for the broad based thesis that systematic or scientific accounting, identified with DEB, played an important part in releasing, activating, stimulating or accentuating the 'rationalistic pursuit of unlimited profits' an essential element in the capitalistic spirit. The main strands in this thesis may be set out as follows:

"...by transforming assets into abstract values and by expressing them quantitatively as the results of business activities, DEB clarified the aims of acquisitive business; moreover it provided the rational basis on which the capitalist could choose the directions in which to employ his capital to best advantage: and finally, it made possible the separation of the business from its owners and hence the growth of large joint-stock business. Sombart's work

gave prominence and prestige to the humble art of the accounting by ascribing to it wide economic significance" (Yamey 1964: 117-118)

Inside the emerging successful European capitalist schemata the values that counted became those, which could be counted and expressed in monetary terms and the only system that could adequately deliver this type of information was double entry book-keeping as all human activity became reduced to quantitative and cash based metrics. (Funnell, 2001). Thus, Sombart's hypothesis created an academic debate that extended beyond the confines of technical accounting to include other fields of scholarship, authorities from such disciplines as theology, history, economic history, sociology and economics which have subsequently been drawn into the ensuing arguments (Winjum 1972: 16-17). Although Yamey (1964) challenged Sombart's theory by claiming that DEB was not necessarily superior to alternative accounting methodologies the Sombart thesis has received support from other scholars such Weber (2002), Schumpeter (1947), Eucken (1950), and Winjum (1972)[13]. As previously stated Weber identified the

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[13] Winjum attributes the following reasons to double-entry bookkeeping in post Medieval economic expansion

- It contributed to a new attitude toward economic life replacing the old medieval goal of subsistence by a capitalistic goal of profits. The spirit of acquisition was promoted and encouraged and double-entry bookkeeping was imbued with a search for profits. The goals of the enterprise could be placed in specific form and the concept of capital was made possible.
- The new spirit of acquisition was aided and propelled by the refinement of economic calculations. The use of an integrated system of interrelated accounts made it possible the pursuit of profits rationally. Rationalisation could now be based on rigorous calculation and present economic status could be readily determined and rational future economic planning entertained.
- The new rationalism was enhanced by systematic organisation. Systematic bookkeeping promoted order in the accounts and organisation in the firm. Its duality provided for a check on accuracy and its mechanisation and objectivity contributed to an orderly and continued recording of business affairs. It was a unique system of classification.
- Double entry permitted a separation of ownership and management and thereby promoted the growth of the large joint-stock company permitting the autonomous

capitalist schema as synonymous with the pursuit of profit and renewed profit through rationalist capitalist enterprise although without any detailed explanation being offered.

Similarly Schumpeter identified the rationalist capitalist mentality that became influential in the development of cost and profit calculations of which the towering monument is DEB which reacts upon that rationality by crystallizing and defining numerically, it powerfully propels the logic of enterprise (Schumpeter 1947: 123). Eucken correspondingly accords significance to DEB whereby the constant refinement of economic calculation altered the character of business management which subsequently influenced economic development (Eucken 1950: 283). Thus within this overall schema capitalism developed rationality and economic rationality produced cost and profit calculations that the profit calculation in its highest form, double-entry bookkeeping propelled the logic of the enterprise and thus capitalism (Winjum 1972: 17).

However the emergence of this capitalist mentality has been interpreted within an alternative Marxist schema with its materialist conception of history as central to a wider change in social construction whereby older social constructions based on estates comprising the monarchy, aristocracy, church and commons was replaced by a system of industrial classes. Thus the previous feudal modes of production aimed at creating surpluses were replaced by capitalist production modes that pursued the maximisation of returns on capital employed by extracting surplus value from the sale of commodities or services produced by a

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existence of the enterprise. Its standardised techniques made it a means of mass communication (Winjum 1972: 236-237).

wage labour, the 'labour-process', which in turn required measurement by the completion of accurate financial statements. The capitalist classes as owners of the new industrial modes of production employed waged labour, the proletariat by exploiting the workforce by minimising costs and maximising returns. Thus,

> "The development of the productive forces of social labour is the historical task and privilege of capital. It is precisely in this way that it unconsciously creates the material requirements of a higher mode of production…But the demonstration of the rate of profit shows that the capitalist production has a barrier, that is relative, that is not absolute but only a historical mode of production corresponding to a definite and limited epoch in the development of the material conditions of production" (Marx, 1933).

The rationalising of social relations by extracting a surplus became a particular calculative mentality and mode of accountability (Bryer: 2005a: 27). Bryer has linked the Sombart and Weber thesis between accounting and the spirit of capitalism by focusing on accounting calculations rather than recording methods and arguing that the calculations performed reflect mentalities and the spirit of a period, i.e. feudal, capitalistic and capitalist (Chiapello 2004: 11). Much of Marx's work is devoid of specific accounting references and he relied heavily on the practical input of his collaborator Engels. Marx however stated that,

> "Bookkeeping, as the control and ideal synthesis of the process, becomes the more necessary the more the process assumes a social scale and loses its purely

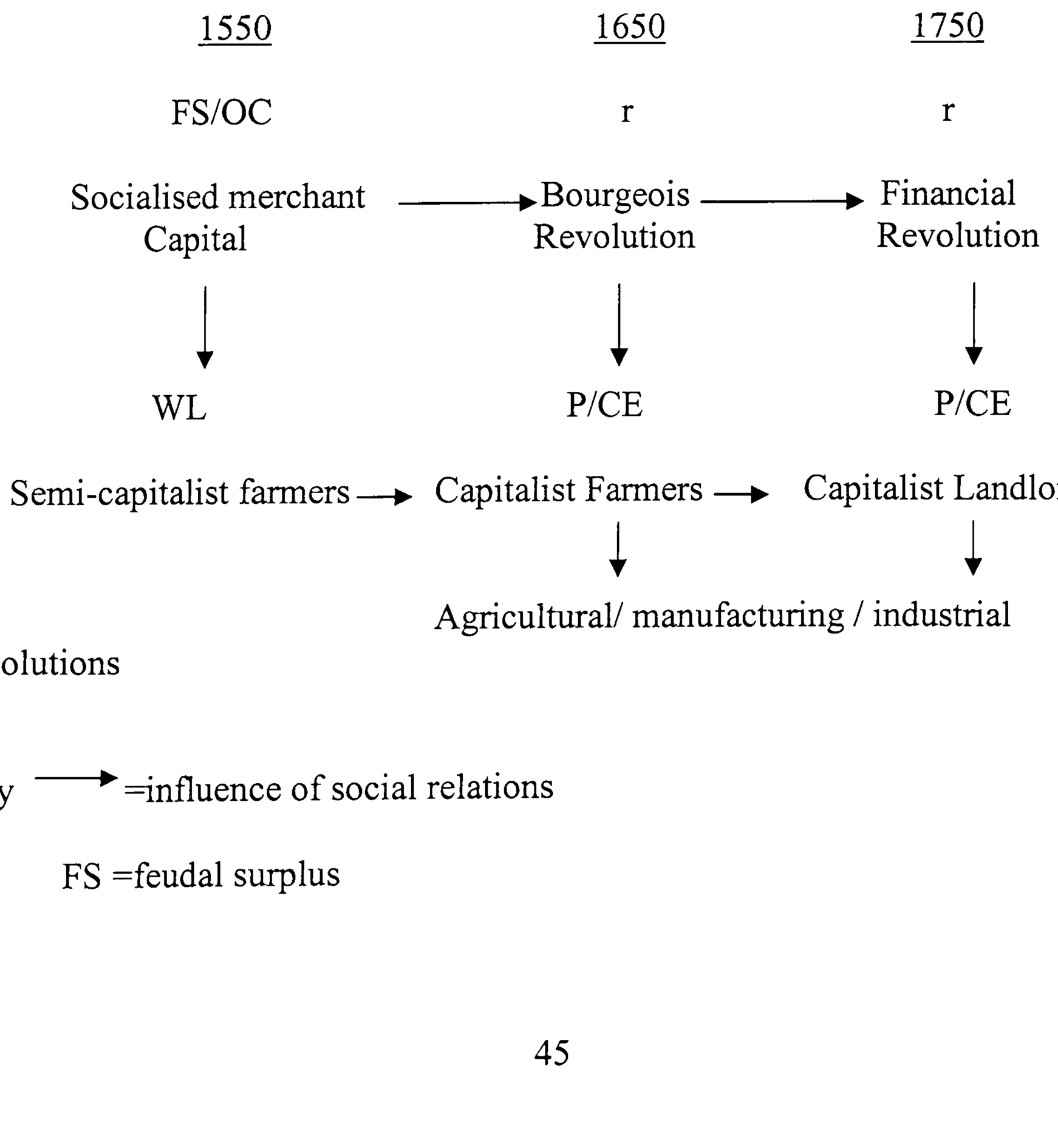
individual character. It is therefore more necessary in capitalist production ...."

(cited in Chiappello 2004: 17)

Bryer has linked Marx's theories and those of Sombart and Weber by showing that it is possible to map accounting changes as indicative of the change from feudalism to capitalism and thus isolate the emergence of capitalist mentalities in different business sectors. Therefore accounting within this schema becomes a necessary coercive tool that elevated bookkeeping to a new level of importance, as an intermediate bourgeois class of professional accountants emerged allied and supportive of capitalism and the capitalist class. Accounting thus provided the necessary accounting signature for the successful and effective exploitation of capitalist modes of production.

Figure 2.1

Marx's History of the Capitalist Revolution



OC =opening capital

WL= wage labour

P = profit

CE= capital employed.

r =the required rate of return on capital (Bryer: 2005a: 31)

2.6 The New Accounting History

However, it is readily apparent that initial disagreements and interpretations of accounting's wider sociological role were entrenched from the beginning and which continue to the present day. Thus a recent example relating to the eighteenth century Carron Iron Works which draws on the same empirical evidence has led three leading accounting history scholars to draw three different and plausible conclusions derived from an economic rationalist, Marxist and Foucauldian interpretation (Bryer et al 2005b). Similarly Weber's earlier critique of the Marxist hypothesis labelled it as an untenable mono-causal theory that had become prejudicial to an adequate reconstruction of social and historical connections. This arose it was claimed through Marx raising a segmental perspective to paramount importance and thereby reducing the multiplicity of causal factors to a single theorem (Weber 1948: 46-47).

Nonetheless the earlier exponents of the sociological implications of accounting informed the emergent critical accounting historiography, which appeared from 1980 onwards with the publication of the influential journal *Accounting Organisations in Society.* This proclaimed, "Our discussion of the organisational and social roles of accounting has tried to identify an area of enormous and

largely unchartered complexity" (Burchell et al 1980: 22). The field of the 'new accounting history' or 'critical accounting history' has increased the volume of critical research that has embraced a "pluralisation of methodologies' and a 'heterogeneous range of theoretical approaches" (Miller et al 1995: 395-400). Subsequently there emerged an array of alternative schools of accounting historiography labelled as, 'traditionalist', 'post-modernist', 'Foucauldian', 'critical history' and 'Marxist', which have applied a range of theoretical perspectives to the research agenda by probing into the underlying processes and forces at work. These research agendas emphasise the importance of accounting as a social practice existing amongst many others that can only be understood in the context within which accounting operates, as a phenomenon local in both pace and time. This has paralleled trends in mainstream historical scholarship that has moved into more interpretive modes beyond conventional narrative (Fleischmann et al 1996: 46). This proved to be an important change in the approach to accounting historiography in that it signalled the recognition of the multiple and underlying complex factors that had affected accounting development. Such an innovative approach proposed that accounting was operating within a previously unrecognised social context, which presented new challenges for academic research. Consequently by expanding the research parameters beyond a narrow technical horizon the new research agenda posed questions that could only be approached by seeking out and applying new frameworks to address all the questions arising. These questions pose challenges to our current understanding of the origins of modern management, its evolvement and those who have shaped its character. It specifically focuses on why the management discipline has become so ubiquitous and where precisely

management and its associated 'culture of managerialism' originated (Hoskin and Macve 1990: 17-18) and the degree to which accounting has contributed towards these roles.

The Foucauldian approach to historical research is based on themes of archaeology and genealogy to emphasise the general rather than a total history (Dean, 1994). Foucauldian historians argue that from the late eighteenth century onwards industrialists developed economic surveillance systems as form of disciplinary power and that management and accounting systems as examples of this new discipline were not only rational economic systems designed to deliver economic efficiency but also as systems to calculate human activities so that these could be controlled. The Foucauldian focus is to identify how the current position has been reached by rejecting notions of evolutionary progress and instead identifying the discontinuities of history of the primacy origins and economic forces (Parker 1997: 128). Thus the emergence of disciplinary practices in the form of accounting and management necessitates the probing of historical research via detailed and documented accounts of numerous contingencies, which combine at different periods of history as in the brewing industry. The implementation of this approach demonstrates that objects are discovered at specific historical moments and subsequently persist for certain temporal periods, "under the positive conditions of a complex group of relations" (Foucault 1972: 45). In particular the Foucauldian emphasis is on the manner in which knowledge was acquired and disseminated and focused on the epistemological shift in the world of knowledge that occurred in the nineteenth century from ways of knowing that were dominated by the spatial or

representational approach such as mapping out of species in the field of natural history to systematically embrace the new and different ways of knowing. The Foucauldian schemata depended on the deployment of micro-technologies to co-ordinate all the disciplines, which were affected by the emergent trained managerial class, which pursued an organisational strategy inculcated with those micro-disciplines. Although Foucault does not expressly refer to accounting as an agent of co-ordination he does specifically identify the need for 'tactics' to achieve this end to ensure, "The product of the various forces is increased by their calculated combination" (Foucault 1991: 167). Foucault employed the example of the trained psychiatrist but equally the trained manager or accountant was pursuing the same tactics. According to Foucault disciplinary power was one the 'great' inventions of bourgeois society whereby a social cohesion was ensured and maintained. The creation of a modern society from the eighteenth century Enlightenment onwards ushered in an era in the age of government of 'life' and 'life-processes',

"Government is possible only when the strength of the state is known... The state's capacity and the means to enlarge it must be known. The strength and capacity of other states, rivals of my own state must also be known. A certain specific knowledge is necessary; concrete, precise and measured knowledge as to the state's strength. The art of governing is intimately bound up with the development of what was called from this moment, political arithmetic".

(Martin, Gutman and Hutton 1988: 151)

In this case for government read 'management' and for the state read 'business' and for political arithmetic read 'accounting' (Hoskin 1994: 65). In this sense DEB was such a representational system in that the micro-technology of accounting permitted a new locus of power to be formed. Foucauldian historians view accounting techniques as a vehicle to establish a normalising or Benthamite 'panoptic gaze' necessary for micro-level discipline in the work place where accounting numbers allow for a nexus of power relationships that harness the activities of all actors in the enterprise toward a common goal (Fleischmann, Mills and Tyson 1996: 67). The harnessing of modern accounting in this manner has been identified as being first implemented within the mid nineteenth century US railroads in order to facilitate effective administrative co-ordination (Chandler, 1977) without appreciating the wider sociological roots of this innovation,

> "Accounting … was extended from being an accounting for objects or the best use of objects to a concomitant accounting for human performance, including a new kind of decision-making concerned with the best use of human and physical assets within a defined organisational structure of accountability" (Hoskin and Macve 2000: 95).

Thus a new critical form of organisational accountability was formed that extended to what Hoskin and Macve have labelled as 'human accounting', (i.e. the putting of numbers on people') thereby creating a management tool as a disciplinary process that elevated the significance of the accounting process. Such revisionist approaches have sought to build on the empirical work of the

earlier school of traditional management and accounting historiography which has been pursued through the reconsideration of both existing work and known primary sources and building upon this knowledge by the evaluation of newly discovered materials such as those professed by this work. Thus,

> "We are always rewriting the past whether through the new evidence, new interpretation or a new focus on old overlooked events. Revisionism constitutes something newly read into some particular aspect of the past – a new discovery of new evidence, a discerning of new patterns, a dislodging of old and cherished verities" (Hoskin and Macve 2000: 92)

Accounting is now widely recognised as representing a powerful knowledge discipline that has shaped organisations to improve organisational performance through planning, control, and decision-making so that a technical appreciation of its role has been infused with the rhetoric of economic and managerial rationality. In turn this knowledge has been extended to have "an existence and dynamic of change which are not dependent on the practice of the accounting craft" (Hopwood 1987: 210). As a result accounting has become acknowledged, as a social and institutional practice that can no longer be categorised as derivative and secondary since it has become intrinsic and constitutive of social relations but the nature of its application remains disputed.

2.7 Conclusion

It is the purpose of this work to contribute further to the ensuing research agenda within the field of the new accounting history by exploring the neglected field of accounting within the British brewing industry. This chapter has highlighted the

genealogy of bookkeeping from its ancient lineage to its transition into a recognisably modern professional discipline in the mid and latter part of the nineteenth century. It has further identified the emergence and technical dominance of the double entry system not only as an economic response to emerging capitalistic enterprises but as a textual breakthrough, a product of the shift to Arabic numbers and plane number along with the new practices of gridding texts plus a critical reading of them which allowed formal examination. Industrial brewing, initially was centred on London, and was later replicated in the provincial breweries of the nineteenth century. The scholarly debates as to the origins and location of modern management and accounting as a management tool have been distinguished and how competing theories locate accounting within wider social frameworks that extend beyond the economic and technical.

A literature review has identified the existing knowledge gap in this field with regard to the brewing sector, which I aim to redress by identifying patterns of practice from primary and secondary sources located within a wider socio-economic framework. The paradox of the Trade has already been alluded to in that a prosperous capital intensive mass production industry,

"The readiness of brewers to adopt the latest technology on the one hand, with an inclination to dismiss the latest scientific findings in their field as inappropriate on the other, is an interesting dimension in the important discussion about the quality of late Victorian businessmen" (Richmond and Turton 1989:13).

In short the literature implies that a more scientific and disciplined approach to brewery production was adopted, but the contradiction of the Trade was that brewing was still widely regarded and atavistically referred to as an 'art'. At the same time brewing became an industrial process without professionalisation whereas accounting had become a modern discipline, a profession that played a significant and wider economic role. The aim of the following is to explain that apparent contradiction.

Chapter 3 - Research Methodology

3.1 Introduction

Methodology[14] has been by compared by Westwood and Clegg (2003) as akin to seduction: it is portrayed as an ideologically informed language game in which discourses of persuasion are produced with real consequences. This implies that discourses classify the bias of the researcher and the resultant production of the researcher's script is a consequence of the researcher's ideological persuasion. Consequently by inference it may be reasonable to accept Kuhn's and Lakatos's project of referential monitoring of the historical processes that causes a theorist to propose specific bodies of work as representing fact as long as the process culminates in a conclusion that lends itself to replication. Both Kuhn and Lakatos argue that observational statements are both 'theory laden' and that all theoretical predictions are conditioned by qualifying assumptions from which no test can uniquely determine a given theory's validity or whether the qualifying assumptions are at fault (Ryan, et al 2002: 21). Thus if as a researcher I can clearly establish the problem and object of the research, the process and its ideological persuasion should be rendered unambiguous in order to classify it within the appropriate frame of reference to enable a credible assessment. In order to accomplish this task this chapter has been structured in three parts that correspond to clear themes.

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[14] The distinction between method and methodology requires explanation. These two terms are often used widely and inconsistantly in any research literature. However 'method' can be understood to principally relate to the tools of data collection or techniques, such as interviews and questionnaires. 'Methodology', on the other hand, can be interpreted as having a more general and philosophical meaning (Blaxter et al 2000: 59).

The first theme briefly recaps on some of the key issues identified within the preceding chapter with particular emphasis on the strengths, weaknesses and gaps previously identified. On this foundation I further develop the purpose of the research, the conceptual framework and the objective of the research. The second part involves a discussion of the philosophical and theoretical development in historical enquiry. This is followed by a review of the relevant dominant paradigms - epistemologically and ontologically that have influenced the discipline of interpretive and critical accounting history. The third theme is devoted to the methodology and methods applied within this research. It is grounded in the empirical research of historical archival materials that is complemented by individual brewery business histories, which were examined within a Foucauldian theoretical framework. I will seek to explain and justify the adoption of the Foucauldian paradigm by drawing on the characteristics of the historical evidence which has been uncovered. The tools for data collection, its management, analysis and the inherent challenges arising from the evidence are reviewed with the proviso that methodology is generally the theory of how enquiry should proceed. The investigation also considers the quality, quantity and reliability of this evidence as an indicator of the accuracy and truthfulness of the research findings.

3.2 Reflection

In the previous chapter I have identified the comparatively recent emergence of accounting and management history as a legitimate field of academic research. I have also reflected on the ancient lineage of bookkeeping and the temporal discontinuity of its practice before it emerged at some time in the nineteenth

century as a professional discipline with the creation of the professional accountancy bodies in Great Britain (Appendix 4). I have further indicated that accounting as a calculative technology became a pre-eminent management tool with the development and expansion of industrial capitalism and that the latter's success was accorded by some theorists, for example Weber, Sombart, Schumpeter, Eucken and Winjum, as being inextricably linked with rational DEB. Thus Chandler (1977) allied accounting developments with entrepreneurial aspirations to improve efficiency whereas Williamson (1975) links accounting progress to organisational theory whereby business sought to economise on internal transaction costs and Fleischman and Parker (1991, 1992) suggest that accounting innovation was a rational response to the prevailing economic environment. However, the economic rationalist argument,

> "…is in danger of tautology — accounting routines survive because they are 'best' in the circumstances, but we can only infer that they are 'best' because they survive. It is in this sense only that 'economic rationalism' is such a general explanation that it can embrace both Marxism and Foucauldianism—but it is then so general that it explains nothing at all" (Bryer et al 2005: 22)

In the brewing sector, advanced industrialised production succeeded apparently without any major accounting or managerial innovation which requires explanation. The research conducted on the published literature dedicated to the brewing industry, which although rich in technical and production matters is largely barren in accounting and management matters until the Great War and beyond. Therefore an explanation of this thus far neglected aspect of

accounting's role within the brewing industry must be sought outside the narrow field of technical innovation but through a wider historical methodology.

3.3 Traditional and Critical History: Methodological Issues

Historical methodology encompasses the variety of techniques available to all researchers. Historical theory concerns the philosophy of history, theories of historical development and process, the nature of historical explanation and judgement, and the roles of historical criticism, rationality and analytical process. This includes the discussion of problematic issues of the historian's art, such as the ideas of fact, historical truth, impartiality, assumptions and narrative (Previts, et al 1990a: 145). My research methodology attempts to synthesise the disciplines of traditional history drawn from the humanities with those of critical accounting that is supported by both my professional accounting knowledge and my academic historian's background. Each of these research approaches although they are complementary often provoke conflicting interpretations of the historical record which I will attempt to resolve within this study.

The traditional history discipline may be construed as an event, story or a way of knowing (Standford 1987: 1) whereas Hegelian logic of history perceives it as a journey of the "World Spirit" in a series of stages until it reaches the highest form of self-realisation, the realisation of absolute knowledge (Sim and Van Loon 2001: 17). Historians generally define their work as being either narrative or interpretational. Narrative history is focused on establishing and or describing items of fact and history relates episodes in a particular, specific, non-analytical manner. History is thus narrative: an interesting story, which recognises that the

inherent limitations upon the human understanding of human history diminish and confound approaches which are rigorously patterned in the investigative style of the physical sciences (Barzun cited in Previts et al 1990b).

Interpretational historical method in contrast attempts to evaluate relationships and provide interpretations in the manner of a social science. Even pure narrative histories must employ explanation and seek in some manner to predict even as the more rigorous forms of science (Degler cited in Previts et al 1990b).

Interpretative accounting research is thus concerned with understanding the social world and the social nature of accounting practices without providing a social critique or promoting radical change (Ryan et al 2002: 42) and its dominant assumptions are identified in Figure 3.1 below.

Figure 3.1

Interpretive Accounting Research

A. Beliefs about knowledge.

   Theory is used to provide explanations of human intentions. Its adequacy is assessed via logical consistency, subjective interpretation, and agreement with the actors' common-sense interpretations.

B. Beliefs about physical and social reality.

   Reality is socially created and objectified through human interaction. Human action is intentional and has meaning grounded in the social and historical context. Social order is assumed and conflict mediated through shared meanings.

C. Relationship between accounting theory and practice.

   Accounting theory seeks to explain action and to understand how social

order is produced and reproduced (Chua, 1986 adapted, cited by Ryan et al 2002: 42).

This interpretative historical approach fits in with the objectives of accounting history as laid down by the American Accounting Association Committee on Accounting History (1970) which describes it as, "The study of the evolution in accounting thought, practices and institutions in response to changes in the environment and societal needs. It also considers the effect that this evolution has worked on the environment" (cited in Napier 1989).

Traditional history thus seeks to render the past familiar whereas the term critical, refers to those inquires that try to render the familiar, unfamiliar (Merino and Mayper 1993: 238). Traditional history consequently attempts to examine the past on its own terms by attempting to gain an empathetic understanding of events and behaviour in particular circumstances. Epistemologically and logically it is impossible to actually know the past when it is not personally experienced and all evidence is derived from it in the form of texts. Therefore historical knowledge is "likely to be tentative and constructed by historians working under all kinds of presuppositions and pressures which did not, of course, operate on people in the past" (Jenkins 1991: 13). However, Jenkins concedes that through hindsight we may come to know more about the past than the people who lived in it (Jenkins 1991: 131). Notwithstanding this the modern professional historian accords pre-eminence to primary sources to form the basis of reputable historical narratives since "the practice of always going to the primary or original sources has been associated with the emergence of on a

professional and scientific basis" (Evans 1997: 94). However, this does not isolate primacy sources from engaging in what Evans terms a 'conversation' in which new contributions may be made to produce "a useful corrective to earlier historical interpretations" (Evans 1997: 88).

The traditional or documentary model of historical methodology is therefore focused on data collection with prominence being accorded to primary source materials over secondary sources which are then assembled chronologically and evaluated objectively. This method is grounded in the Rankean[15] approach to historiography and historicism[16] where primary sources are examined and critically evaluated to allow the 'facts' to speak for themselves (Parker 1997: 118-119). Thus,

> "When historians want to discover what happened in the past they feel constrained to find evidence which will enable them to draw inferences about the people and events which interest them. This constraint seems perfectly reasonable, because it has long been thought both the necessary and sufficient means of discovering the truth about the past" (McCullagh 1998:20).

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[15] The German Leopold Von Ranke (1795-1886) is considered to have founded modern historical professionalism. He applied and elaborated Barthold Niebuhr's scientific method of historical investigation. It is based on exhaustive archival research and philological criticism of sources. The accumulation of facts and details serves the purpose of preparatory research and practical training was a prominent feature of Ranke's methodology.

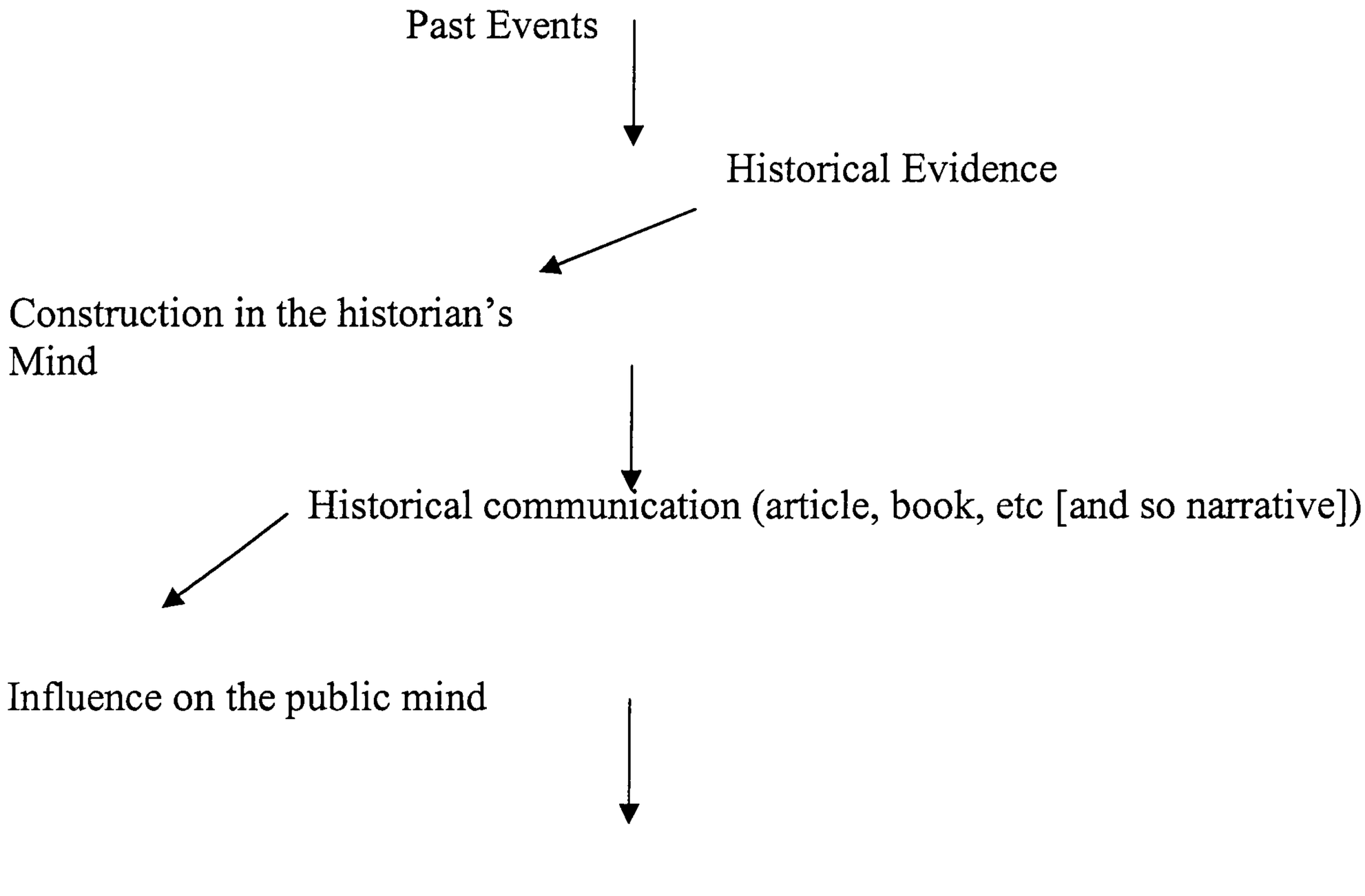
[16] The premise of historicism is that each age is a unique manifestation of the human spirit, having its own culture and values. Therefore present day values have to be set aside and an earlier age seen from inside, within its own time-bound context and beliefs. Accordingly historicism can only be understood from the standpoint of that period itself. Historicism aims to reconstruct the events and mentality of the past. Thus historicism seeks that which is durable and what is contingent upon present condition or unique situation of a particular point in time. Recreating the past in context becomes a necessary precursor for explaining the past through the identification of trends, influencing and conditioning factors, consequences and an understanding of history as a process. Thus historicism lays claim to a legitimate facilitating role (Parker 1997: 124-125)

This chronological assemblage of data provides both continuity and coherence to the ensuing narrative account although in extremis it may reduce the historian to an archivist and a recorder of facts (Elton, 1967).

Critical historians reject this implicit prioritizing of such primary sources since it ignores the processing or reworking of that reality. Furthermore the use of such sources may be applied in a partisan fashion or may mask the reconstructive use of historical evidence (Merino and Mayper 1993: 242). Nonetheless Napier (1989) has argued that the examination of original accounting documents provides contemporary theories and generalisations some empirical content and I have adopted this method to support my critical historical enquiry by accessing a range of brewery industry primary sources. Standford has provided a useful diagram for examining the structure of traditional historical enquiry,

Figure 3.2

Structure of Historical Activity



(Standford 1987: 6)

By contrast the critical historical approach uses discursive and traditional techniques to challenge the previous scope of traditional histories. Discourse is taken to consist not only of linguistics systems or just texts (such as primary source documents) but also as practices (such as accounting and management). Through the analysis of statements, which form a discursive formation, the constraints and the situation of the speaker may be located and identified (Horrocks and Jetvic 1997: 84). Thus a non-chronological approach as identified by Mandelbaum (1977) favours the recognition of discontinuities created by

cultural importation. The critical accounting research agenda is summarised in Figure 3.3 and it serves to identify the underlying epistemological and ontological differences between the interpretive and critical alternatives.

Figure 3.3

Critical Accounting Research –Emphasising the Discursive

A. Beliefs about knowledge

The criteria for judging theories are always temporal and context bound.

Social objects can only be understood through a study of their historical development and change within the totality of relations.

B. Beliefs about physical and social reality

Empirical reality is characterised by objective real relations, but is transformed and reproduced through subjective interpretation. Human intention and rationality are accepted, but have to be critically analysed because human potential is alienated through false consciousness and ideology. Fundamental conflict is endemic in society because of social injustice.

C. Relationship between accounting theory and practice

Theory has a critical imperative, in particular the identification and removal of domination and ideological practices (Chua, 1986 adapted, cited by Ryan et al 2002: 43)

The critical approach is further identified as an important phenomenon in specialised histories such as accounting and management histories where such discontinuities are apparent whereby an ancient bookkeeping practice did not mutate into its current professional and influential structure until the mid nineteenth century onwards. As such a critical history approach perceives

accounting as neither neutral nor objective but as an interested and influential activity. As articulated by Burchell et al, (1980) Hopwood (1983), Cooper and Sherer (1984) and Chua (1986) (Previts et al 1990a: 143) accounting is studied within a wider economic and socio-political environment where it is regarded not solely as a reflective phenomenon but also as constructive of organisational and social relationships but not necessarily as a focus on the discursive. Theory has subsequently become a growth area in cultural analysis and various theoretical tools can be applied to the study of texts, societies or gender relations for example. Consequently any area of culture (such as business and accounting) is amenable to the latest theories and that the application of such theories will lead to a significant increase in understanding of the working of cultures (Sim and Van Loon 2001: 3).

The major critical theories applicable to accounting history as previously identified are the Marxist or labour-process theory whereby human actions are governed by social structures created to serve the interests of the capitalist classes. This paradigm or 'grand narrative' of history posits that all history is the history of class struggles, of oppressor and oppressed. As such the development of capitalist structures simplified this class struggle between private ownership of the means of production and the workers who sold their labour to the system of capitalist production. This is a seductive theorem because the brewing industry was amongst the first to move to capitalist production that entailed the creation of brewing factories that demanded substantial financial investments. Yet as Weber observed Marxism appeared to be an untenable economic 'mono-causal theory' and thus prejudicial to an adequate reconstruction of social and historical

connections. It allegedly suffers from raising a segmental economic perspective to paramount importance and reducing the multiplicity of causal factors to a single factor theorem (Gerth and Wright Mills 1967: 47).

Therefore, I have chosen to apply a methodology that seeks to identify those diverse factors beyond the purely economic by examining the social, political, and scientific and education frameworks that were influential in the accounting frameworks adopted within the British brewing industry. This methodological approach is guided by the work of the French philosopher Michel Foucault who has been described as "the thinker who wielded philosophy and history and in doing so developed a dazzling technique of modern civilisation" (Merquior 1985: 16).

3.4 Foucauldian Methodology

Foucault was a philosopher and historian of thought and although he never wrote about accounting or developed a 'grand narrative' his ideas and methods have been adopted by alternative accounting researchers. He professed that 'truth' is not the product of the beliefs and intentions of individuals and that it exists only within the context of and is constituted by discursive practices of a particular historical period. In his work he developed two epistemological techniques which he called archaeology and genealogy.

In his earliest studies of psychiatry, clinical medicine, and social sciences, Foucault developed an 'archaeology of knowledge' that treated 'discursive formations as independent of the beliefs of individual' (Concise Encyclopaedia

of Philosophy 2000: 290). Such archaeology displaced the central role that the human individual had in humanism since Kant. Foucault applied the term archaeology to the investigation of that which renders necessary a form of thought that implies the excavation of unconscious sediments of thought. This does not assume that knowledge is accumulated towards an historical conclusion; furthermore it ignores individuals and their histories preferring to excavate impersonal knowledge structures (such as accounting). Foucault later introduced a genealogical approach whereby he sought to explain the changes in discursive practices by linking these to non-discursive practices in social power structures. Thus the Foucauldian approach like that of Weber refutes the comprehensive explanation of Marxist dialectical materialism, but Marxists have retaliated by accusing the Foucauldians of under-theorising material, and political realities (Niemark 1990, 1994 and Armstrong, 1994). Rather, Foucault perceived systems of thought as contingent products of a multiplicity of small unrelated causes that when applied to accounting cannot be restricted to purely economic factors. Foucault's genealogical interpretation also signifies the importance of and the connection between knowledge and power,

"… we should admit…that power produces knowledge (and not simply by encouraging it because it serves power or applying it because it is useful); that power and knowledge directly imply one another; that there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations" (Foucault 1991: 27).

Foucault is now generally regarded as a theorist of power plus a minority view as theorist of practices and his most cited work on the subject of the power-knowledge nexus is in *Discipline and Punish: the Birth of the Prison* (1977). The 'power' theories were largely produced in the genealogical middle period of Foucault's work. In terms of modern management research, Foucault has been widely used in this field, mostly his ideas of management as surveillance, partly through the application of accounting techniques as a management tool and of the organisation as a Benthamite panopticon[17], wielding an all seeing power which remains invisible (Hoskin 2001). Although avowedly about prisons it is far more general in scope and its subject matter may be used as an exemplar of a wider phenomenon in the growth of modern society, of disciplinary institutions dedicated to the control and surveillance of every day life within them. It is about the genealogy of the body in the political, judicial and scientific fields, particularly in relation to punishment and above all to power over and within the body. Pre-modern societies had exerted a visible sovereign power to enforce control whereas with the birth of modern societies from the nineteenth centuries onwards a new innovative form of power was exercised in a co-ordinated manner,

"… we have production of an important phenomenon, the emergence or rather the invention, of a new mechanism of power possessed of highly specific procedural techniques, completely novel instruments, quite different apparatuses,

[17] Jeremy Bentham (1748-1832) was an English philosopher of the Enlightenment. The panopticon was a tower from which a prison warder, doctor, teacher or foreman can spy on and penetrate behaviour. It locates bodies in space, in relation to each other. The subjects under surveillance never know when they are being observed, and thus effectively police themselves. Foucault interpreted this as an all seeing machine that has become a transparent building in which the exercise of power maybe supervised by society as a whole.

and which also, I believe, absolutely incompatible with the relations of sovereignty" (Foucault 1980: 104).

It is argued that the implementation post 1800 of new methods of social control created an institutional form within the prison were henceforth exercised via a panoptic surveillance,

"It is a type of power which is constantly exercised by means of surveillance rather than in a discontinuous manner by a means of a system of levies or obligations distributed over time. It presupposes a tightly knit grid of material coercion rather the physical existence of a sovereign. It is ultimately dependant on the principle, which introduces a new economic power, that one must be able simultaneously both to increase the subjected forces and to improve the force and efficacy of that which subjects them" (Foucault 1980: 104)

Consequently Foucault suggested that power became intelligible by the techniques through which it was exercised and these techniques adopted many forms which Foucault explored through the prison, hospital, education and military organisations. He noted that it was unsurprising that prisons resembled factories and others too noted this characteristic,

"The jail might have been the infirmary, the infirmary the jail, the town hall might have been either, or both or anything else, for anything that appeared to the contrary in the grace of their construction" (Dickens 1989: 66)

The inmates of these physical structures and institutions became docile bodies that could be subjected, used, transformed and improved (Foucault 1991: 201). Subsequently modern man became born of regulations, a docile body subjected to improvement and usefulness through the introduction of enforced disciplines. The operation of these new disciplines necessitated the development of what Foucault termed certain 'micro-technologies' to exercise control over people, while at the same time being a means to exercise a specialist, discipline based, expert knowledge. These technologies became the base from which new ways of being individuals and being social developed (Hoskin 2001: 2). Although he never specifically included accounting in his work many subsequent researchers have categorised accounting as fulfilling the role of a disciplinary micro-technology capable of exercising an omnipresent panoptic surveillance of individuals through the representation of humans and their activities in a numeric form. Within this schema accounting satisfies both a 'hierarchical surveillance' and a 'normalising judgement'. The hierarchical surveillance thus is met by through a 'panoptic gaze' that creates self – discipline rather an enforced discipline,

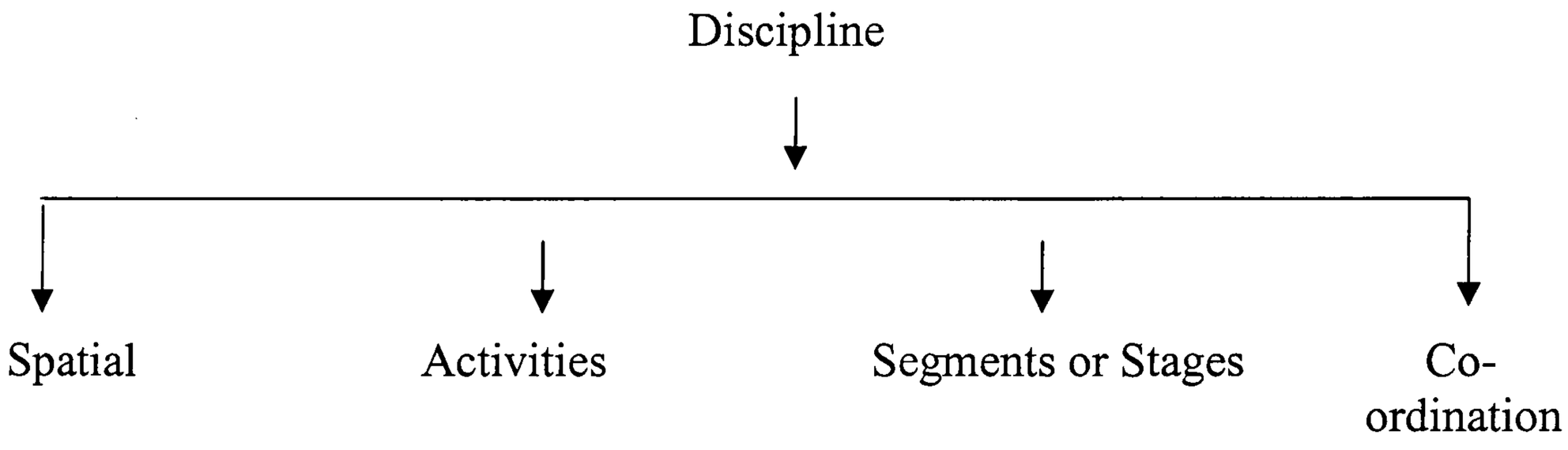
"Hence the major effects of the Panopticon: to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power. So to arrange things that the surveillance is permanent in its effects, even if it is discontinuous in its actions: that the perfection of power should tend to render its actual exercise unnecessary: that its architectural apparatus should be a machine for creating and sustaining power relations independent of the person

who exercises: in short, that the inmates should be caught up in a power situation of which they are themselves bearers" (Foucault 1991: 201).

The normalisation of human behaviour involved the participation of inmates in morally worthy activities such as work that has accompanied the movement towards modernity which became pre-requisite for the government of life processes. Thus by these means the individual entered into a framework of power that explored it, broke it down and rearranged it (Foucault 1991:201). It is from within this framework that Foucault identified how discipline operates within four different aspects.

Figure 3.4

Foucault's Four Disciplinary Models – Knowledge and Pedagogical Practices



According to Foucault disciplinary power was one of the 'great' inventions of bourgeois society whereby social cohesion was ensured and maintained and that became essential to the effective pursuance of industrial capitalism whilst it also determined the characteristics of bourgeois life (Foucault 1980: 105). Each of these separate disciplines requires an explanation to enable the location of accounting as a constituent and important discipline.

Spatial discipline was created through enclosure in the prison where the inmate was separated from the community. It was also achieved by the separation of individuals from others or by integrating them within frameworks of production housed in the same place, as in the architecture of the factory or through a hierarchy of relations. Such an organisational structure became important and necessary for the successful operation of the emergent larger-scale industrial capitalist industries, for example brewing. The control activity of workers accorded defined positions in such organisations was facilitated by implementing a system of surveillance and through the creation of records of individual performance. The creation of such records facilitated the comparison of worker performance that became widely diffused in business (Loft: 1986: 139).

The second aspect of discipline, activities, or time and labour were exerted by extracting productive time from the individual. This was achieved by the introduction and observance of daily timetables, the marching in step of soldiers, military weapons drill and most importantly writing. The objective was to become time efficient and avoid idleness in order intensify the use of the slightest movement (Foucault 1991: 155). It was because humans are inherently un-mechanical that they required training to learn these disciplines on the basis of a truer knowledge for the successful operation of a modern society. In industrial capitalism the imposition of the factory timetable created a working week aligned to the operation of production machinery and the brewing industry was in the vanguard of industrial mechanisation.

The third aspect of discipline involved the acquisition of knowledge through segments or stages of training via pedagogical practices. This entailed the transition from student to master, brewing pupil to master-brewer, by movement or promotion within a recognised meritocratic hierarchy based on increasing levels of practical skill and knowledge. The Foucauldian educational process is monitored through examination, so that by assessing acts with precision, discipline becomes capable of judging individuals "in (their) truth"; (Foucault 1991: 181). This form of the examination is significant in that it became transformed from an oral, alpha graded system to a written examination that was hereafter graded numerically (Hoskin and Macve, 1986). Thus the increased demands of wider literacy promoted the dissemination of education throughout society. The increasing penetration of science throughout industry to which brewing was no exception meant that the educational system eventually became crucial to industrial development so that brewery chemists, scientifically trained brewers, brewers clerks and book-keepers and professional accountants became more important.

The final aspect of discipline necessitated the administration and co-ordination of all the other disciplines so that individuals became integrated within the overall disciplinary process. To achieve this aim 'tactics' were evolved to ensure that the product of the various forces is increased by their calculated combination (Foucault 1991: 167). Those who applied and operated these tactics were trained individuals, inculcated with those micro-disciplines in the pursuance of an organisational strategy. Foucault used the example of the trained psychiatrist but equally the trained manager or accountant is arguably pursuing the same tactics,

"In order for a certain relation of forces not only to maintain itself, but to accentuate, stabilise and broaden itself, a certain kind of manoeuvre is necessary. The psychiatrist had to manoeuvre in order to make himself recognised as part of the public hygiene system" (Foucault 1980: 206)

Therefore in the Foucauldian scheme of accounting historical methodology one may begin to see how a discourse like accounting may now appear, in its turn, such a significant practice for analysis (Hoskin 1994: 65). Subsequently the importance of numbers and factual calculative analysis, became paramount because, "What you couldn't state in figures or show to be purchasable in the cheapest markets and saleable in the dearest, was not, and would never be, world without end, Amen" (Dickens 1989: 66).

I consequently intend to apply this model in the research chapter when discussing the evolution of accounting as an instrument of disciplinary knowledge within the brewing industry by evaluating each sub-discipline. Although this Foucauldian theoretical model will be applied it will be grounded in empirical research and the nature and types of evidence which I have excavated. The objective nature of this evidence will now be considered.

3.5 Methods of Historical Objectivity

In general history offers a variety of potential uses by permitting the construction of the past from which professional accounting and management consciousness and cohesion may be constructed. This in turn may reveal parties, practices and outcomes, which have been remained unheeded and at the same time overturn long-standing shibboleths and thereby provide indicators of precedents and experience that affect future policies and actions (Tosh, 1991). As such the past is the prologue of the present that may offer insight into precedents and the economic, political and social conditioning factors (Fleischman and Parker, 1997).

This assumes that an objective knowledge of the past is possible and thus truth identified despite the past being represented as a foreign country where the actors did things differently (Hartley, 1953). This search for truth is conditioned by the mental attitude of the historical researcher and by elements and factors that influence the historian's "angle of vision" (Tholfsen 1967: 258), which defines the approach, the questions asked and the methods employed. In my case these are influenced by my Anglo-Saxon centred cultural baggage and historical and professional accounting education and experiences. Conversely my historical understanding of the various eras involved and the ability to knowledgably handle the technical data is enhanced by my prior experiences which are essential in this historical study for understanding governing presuppositions, assumptions, values and characteristics of people, institutions and organisations of the periods being researched (Standford ,1987). Nonetheless even then the apparent certainty of objective technical accounting definition is misleading

since it poses unforeseen problems. Technical terminology was and is not static and current meanings are not necessarily those understood in the past. Thus for example the terms statistics employed at Bass in producing annual accounting statistics is reflective of the early Victorian Statistical Movement. This is radically different from a modern concept of mathematical statistics which was applied by Guinness from 1900 onwards and position becomes further confused when the term 'statistics' was used by early management writers.

The debate of maintaining historical objectivity consequently remains unresolved and claims for history ever becoming objective allegedly cannot be realised (Ricoeur 1965: 5) which inevitably leads to history being rewritten by successive generations as sources are interpreted differently (Gadamer 1986: xx). Therefore I recognise that the role of the historian as narrator cannot achieve total objectivity because "the theoretical framework for an empirical analysis of everyday behaviour has to be conceptually integrated with the frame of reference within which participants themselves interpret their everyday lives" (Habermas 1990: 27). However as the past is the prologue of the present the connection between both exists since the now is always present, if only 'in utero' in the then (Miller and Napier 1993: 639) and my interpretation represents such an attempt at a generational revision.

3.6 Methods of Evidence

Hopwood and Johnson (1986) allege that the wide failure of historians to examine the actual records of past companies has contributed to ignoring the development of modern managerial accounting and Napier's (1989) observation

that empirical evidence contributes towards contemporary theories and generalisations has already been noted. Therefore I have attached importance to examining a range of primary sources to underpin my overall methodological approach. The primary sources (Appendix 5) selected for this research are by necessity constrained because an examination of the total population of sources is both impossible and unnecessary in order to derive an overall conclusion. The brewery companies selected for the project were chosen (with two notable exceptions) through a process of non-probability sampling via convenience sampling i.e. sampling those most geographically convenient for ease of accessibility in the museums and public archives of Staffordshire and the West Midlands. The two exceptions were firstly Samuel Whitbread and Co of London which was the leading national brewery of the eighteenth and early nineteenth centuries and the LCCB/ SMS, the Cumbrian state owned brewery, which provided a unique example of a public managed brewery operation. The Whitbread records have been dispersed amongst numerous county archives from the former central holding point of the Whitbread Museum in Chiswell Street in London following its closure in 2000 when Whitbread deliberately exited the brewing trade to concentrate on the leisure and amenities sector. Nonetheless a range of late eighteenth and early nineteenth records were identified as being held at the London Metropolitan Archives which were subsequently examined in 2005. The examination of the LCCB/SMS records was undertaken over two separate week long visits undertaken in 2001 and 2002 which was funded by two seed-corn grants provided by the Institute of Chartered Accountants of Scotland (ICAS). As will be demonstrated later the SMS provided a significant input to the development of brewery accounting and the application of the largely

forgotten technique of 'disinterested management' as part of a state sponsored attempt at social engineering. The brewery companies and associated sources in the research sample therefore represent a diverse scale of operations that range from large national concerns to regional and local breweries. The pre-eminent historian of the early British brewery industry, Mathias has identified the importance of primary accounting sources in conducting research,

"[business historians]…have been alerted in more specific terms than they used to be about the significance of accounting techniques as instrumental to managerial methods and organization… as an influential attribute of a management system offering insights into the nature of business organization and decision making, one of the variables in management efficiency" (Mathias 1993: 271).

The primary source documentation utilised in the research comprised published public financial accounts and the private internal accounting records, management correspondence, board minutes, government reports. It is recognised that inevitably these records are not comprehensive since they record only partially past events which remain fragmentary because many original documents have not survived. Additionally existing documentary evidence remain as only a part record because many human events and occurrences remain unreported and forgotten and have now vanished from human knowledge (Standford 1987: 26-27). Documentary evidence in this instance does not equal 'the facts' because the evidence does not speak for itself since as the researcher I have to make evidentiary choices of selection and ranking in significance

.(Fleischman et al 1996: 63). As such these preserved documents represent the written surviving archive of past transactions and the actions of the actors involved which emerges as history-as-events with which I attempt to reconstruct the past to produce as a history-as-account.

3.7 Methods of Evidence - Oral History

An attempt was made to engage in oral history as part of the historical research Oral history as such provides first-hand recollections of participants in events or situations being studied and their views are obtained through interviews, which are preserved electronically or in written formats. Requests were made for participants to be either interviewed or to complete a postal questionnaire with assurance of anonymity if required as part of the research project. This invitation to participate was unsuccessfully published several times in *Brewery History: the Journal of the Brewery History Society* and the *Bass Magazine.* These requests elicited only one response so this research project method was reluctantly abandoned (Appendix 1).

The one respondent however was the late Anthony Avis (Appendix 9) a former brewery company secretary and brewery history author who provided useful feedback to the structured questionnaire that he supplemented by additional information. This source is anecdotal but nonetheless it should be acknowledged that the telling anecdote can be revealing (Blaxter et al 2000: 7). However the level of response is palpably inadequate to draw any firm conclusions.

3.8 Methods of Evidence – Biography and Prosopography

The organisation and management of the brewing industry cannot be understood with out references to some of the major actors who have contributed to its development. This will allow emphasis and focus to be placed on subjects' ideas and theories. This will include prosopography, the examination of the common background characteristics of group of historical actors by means of this collective study (see Appendix 4). This will include identifying a range of characteristics such as family and social backgrounds, career paths, political and religious connections and wealth accumulation that led to the formation of the 'beerage', the family dominated brewing firms that endured well into the twentieth century. In the early British brewing industry this will include the key founders of brewing dynasties exemplified by Whitbread in London and later key players such as Samuel Bass at Burton to the lesser known actors at other brewing companies. A key source that will be made use of is the autobiography of Sir Sidney Nevile who rose to become a director at Whitbread and in the SMS as well as holding high office amongst the brewing industry associations. The SMS will feature prominently in the research not only because of its accounting innovation but because of its novel management practices that led to its proposed extension nationally that was propounded by the Labour Party radicals of the immediate post Great War, most notably Arthur Greenwood, M.P. The auto-biographical accounts and political texts of this type are recognised as inevitably reflecting inherent bias but nonetheless provide a broader base to both historical content and the political and social debates surrounding the British beer drinking culture.

The number of specific brewery accounting actors by comparison is limited and is represented by those who published in this field although even here some such as Amsdon, 'brewery accountant' has disappeared into obscurity. This will include the Chartered Accountants, Edward De Peyer and G.A Hamilton and other non-professional qualified practitioners, Howard Tripp, brewery manager and author, and Joseph Henderson who rose from assistant accountant through to chief accountant and eventually manager of the SMS. These individuals have left a legacy of brewery accounting practice that can be utilised to reflect the technical evolvement of calculative procedures in the industry.

Calculative practice within breweries as an aid to management will be shown to be not the sole preserve of accounting but extended to the employment of recognisably modern statistical techniques at Guinness mainly due to William Sealy Gosset, brewery chemist and brewery manager who was more prominently known under his pseudonym, 'Student'. Gosset rose to become one of the most influential of the early modern statisticians developing key statistical measures based on brewery data.

3.9 Conclusion

The primary purpose of this research project is to attempt to explore the nature of accounting as a managerial tool in the English brewing industry from 1700-1939 and thereby help to fill in the void in documentation and empirical knowledge. I have identified the basis of my approach as a trained historian[18] to the examination of primary and secondary source materials and widening it to

[18] I hold BA Honours first in history from the Open University (1993) and an MA in history from Wolverhampton University (1998).

include a 'new historical' theorising of historical events along Foucauldian lines. This will involve examining the emergence within the accounting history field of non-traditional interpretations of accounting's past and its roles in the economic and political world, and applying and testing the Foucauldian approach as the most appropriate for the investigation of the problems posed in studying brewing history. By these means I shall seek to present a convincing body of research that represents a plausible and coherent story of the brewing industry's accounting and management experience.

PART II

Chapter 4 - The Feudal and Early Modern Eras

4.1 Introduction

The research has been organised chronologically with the exception of Chapter Six which is devoted to malting 1700-1939, into five separate research chapters which identify the main eras of discontinuity in brewery accounting and management practice. These chapters focus on the brewing industry in the Middle Ages and from 1700 to1830, the period from 1830 to 1914, a chapter devoted to agricultural arm of the Trade the malting industry; a chapter devoted to the LCCB later the SMS both because of its social, accounting and management significance and a final chapter on the inter-war period 1919-1939. To facilitate convenience of reference I will label these respectively as the feudal and the early modern, the modern, commercial and brewing maltsters, the State intervention and the post war periods. This construction has been utilised to provide historical continuity and a coherent narrative of brewery accounting and management. The two existing major brewing history works are Mathias's (1965) *The Brewing Industry in England 1700-1830* which forms the basis of most of the other existing work of this early modern period and Gourvish and Wilson's (1994), *The British Brewing Industry 1830-1980.* The chronological dichotomy coincides with both Pollards (1965) *Genesis of Modern Management* that has a temporal cut off at 1830 and also with the passage of Beer Act 1830. In industrial brewing development and organisation this legislative date is significant since it effectively 'freed' the trade in the sale of beer which initiated

structural changes towards concentration and oligopoly that led ultimately to the creation of the modern industry. The Great War period and its legacy has been chosen because it represents a significant period of change in both accounting and management practices arising from the state intervention in the brewing industry with the creation of the LCCB/ SMS that effected the wider industry which has not been previously acknowledged.

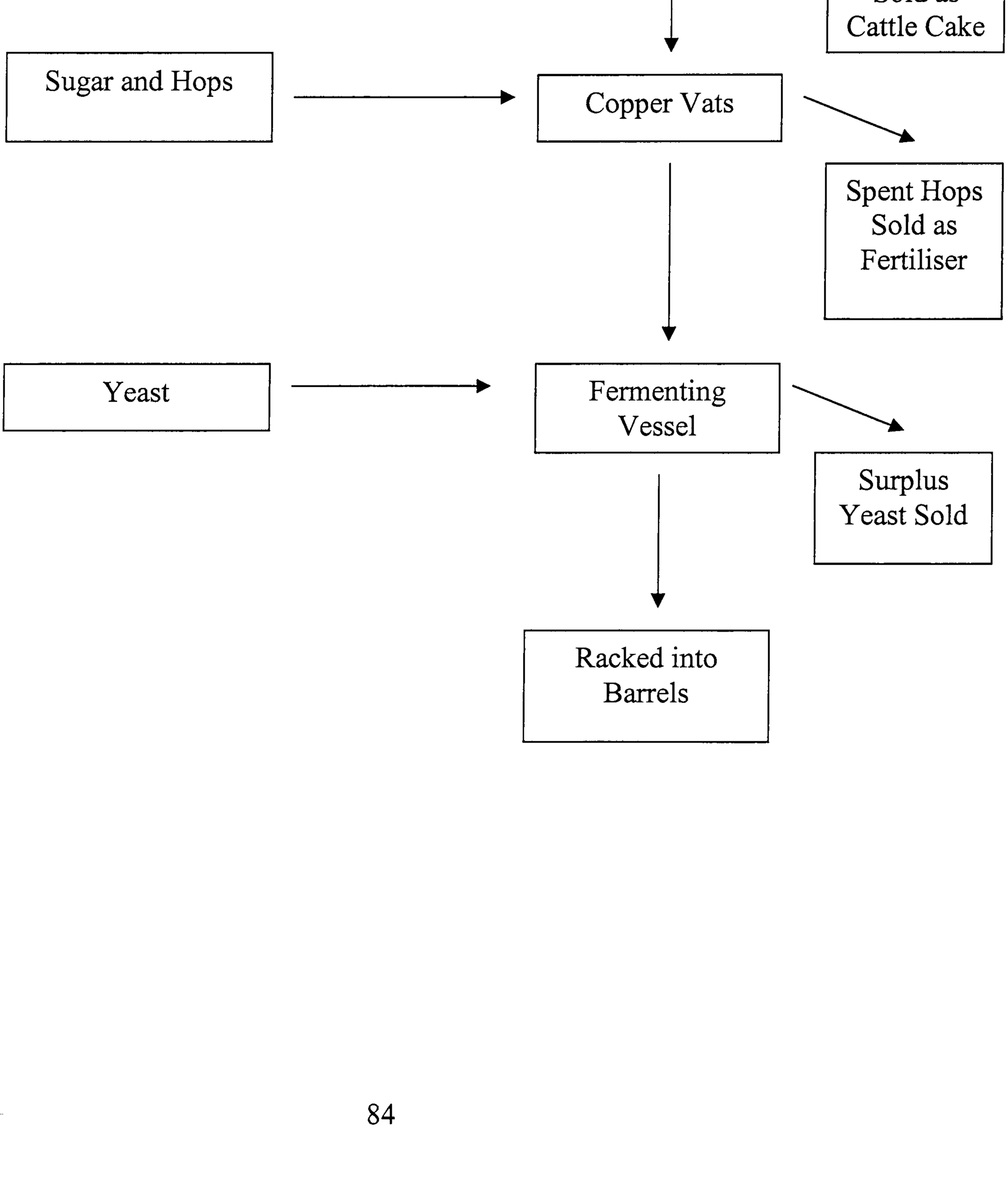
As indicated previously the research agenda comes from a Foucauldian disciplinary schema whereby the separate knowledge disciplines specifically relating to the brewing industry are explored and which ultimately lead to a concentration on the micro-technology of accounting as an administrative and co-ordinating activity of brewery management. I intend by adopting this methodological approach to highlight and expose the discontinuities of brewery accounting practice and its application.

4.2 Production Processes

Before a detailed exploration of brewery accounting is undertaken it will be necessary to briefly outline and demonstrate the beer production process and the nature of the product which accounting has attempted to record and control via a numerical format.

Figure 4.1

The Brewing Process



Beer is produced through a chemical process of the fermentation of grain, usually barley which is flavoured with hops. The process was known since the ancient Sumerian and Egyptian era of 1000 BC and the word beer derives from the Sumerian and Hamitic languages (Haydon 2001: 1). The term ale is now used to denote stronger beers but originally it was an alcoholic drink derived from malted grain alone and it is named from the Saxon word 'ealu'. Ale and later beer became a staple product replacing mead a honey based drink in the absence of regular sanitary drinking water. The Romans are accredited with bringing ale to the British Isles and hopped beer was introduced in the late medieval era from the Low Countries which had the advantage of extending the longevity of the final product.

"Ale is made from malt and water. Ale for an Englishman is a natural drink. It doth engender gross humours but yet maketh a man strong. Beer is made from malt, hops and water; It is much used in England to the detriment of many English people; it killeth those who be troubled with the colic, the stone and the strangulation; for the drink is a cold drink, yet it doth make a man fat and doth inflate his belly". (Andrew Boarde – Dietary of Health 1524 cited in Staffs C.C: 1977a: 5).

Other alcoholic drinks, stout and lager are produced in a similar manner, stout being top fermented and using heavily roasted grain whereas lager is bottom fermented and matured over a longer period. Thus the production process is a well established simple chemical procedure that has remained constant albeit

with some refinement with the advent of industrialisation and scientific discovery.

4.3 The Feudal: Medieval Brewing and Accounting.

Since ale and beer was a staple product brewing was widely undertaken domestically and continued to be so until the modern era or it was manufactured in house by publican brewers. The only large scale brewing was undertaken by monasteries, universities[19] and the feudal manor.

The Medieval system of brewing and accounting has been indirectly referred to by Littleton (1954) and Chatfield (1977) within the wider overall management of the feudal manor. Feudal bookkeepers did not carry any high social status other than that of lowly clerks and the acquisition of these skills normally was achieved outside the parameters of the educational élites. Bookkeeping had appeared briefly in the Oxford University curriculum during the thirteenth century driven by the imperatives of an expanding agricultural prosperity that had led to a temporary shortage of manorial clerks and auditors (Chatfield 1977: 28) but it disappeared from privileged institutional education until the twentieth century. The manorial steward used the single entry technology of the charge / discharge system of accounting in documenting various manorial assets such as malted grain. The manorial brewer was recorded with having received or charged with the receipt of a specified amount of grain and expected to deliver or discharge a given level of ale (Littleton 1954: 196-200). Hence the concept of

[19] The brewery with the longest record of continuous brewing is Queen's College, Oxford, established in 1340. In accordance with practice a brewer was appointed and brewing only ceased on the site at the outbreak of World War II in 1939 (Lovett 1996: 10)

stewardship was applied whereby the brewer was made answerable for the discharge of certain charges and made responsible for these after the fact.

"The brewer and butler cross checked as to beer: the slaughterman checked against the glover as to hides, against the larderer for meat, and against the 'chaundler' as to tallow candles" (Chatfield 1977: 26).

This responsibility was reinforced by a periodic audit conducted by the bailiff or steward when the brewer was made liable to account. Littleton and Chatfield both implied that this system acted as a rudimentary form of production costing by prescribing yields to discipline human performance. Hoskin (1996: 275) has denied this as evidence of the modern notion of accountability because the focus was on the present but principally it addressed the past. Hoskin and Macve (1986: 115) have also argued against this type of medieval bookkeeping as disciplining performance because the feudal auditors in drawing up the final account would enter,

"Not merely the actual transactions, but those which the auditors considered should have occurred. They would rewrite the entries in the accounts to reflect, e.g. the 'expected' yield of a field or a flock, and thereby surcharge the bailiff or reeve for the additional amounts due to his lord".

Thus according to Hoskin and Macve the nature of this type of control was flawed since it was based on inflated yields, which encouraged both parties to indulge in building in levels of accounting slack within their evidence of account

and because the 'control' was exercised ante-production as a results control without any regard to future events. Therefore commensurate with this interpretation the auditors' projected yields were unrealistic and historic so that any disciplining of human performance and production targets was both absent and imprecise. Manorial officers kept accounts not for the sake of the business entity but for their own protection (Chatfield 1977: 25).

There is one indirect and obscure reference to brewery cost accounting being practiced in the sixteenth provided by Urwick and Brech (1949: 17). They cite an imprecise reference in the *Cost Accountant* to illustrate the principle of overhead and establishment charges attempted in 1591 entitled, *'A General Reportion and Order of Provision for a ye*ar *for 365 days, to victual a garrison of 3,000 Soldiers – The Order for the Brewhouse'*. Extensive searches at the CIMA library and by a researcher in the library archives of Newcastle University have thus far failed to locate this reference. This has proved frustrating given that Urwick and Brech's second cited reference of early cost accounting occurring in 1620, '*A Computation of a Baker's Particular charges Ariseing upon the Bakeing of Ten Quarters of Wheat by Weeke in London'* has been readily located (Cost Accountant 1941: 211-212). Nevertheless a rudimentary form of cost calculation has survived from domestic brewing carried out on the landed estate at Alton Abbey (now Alton Towers), Staffordshire the home of the Earl of Shrewsbury. In 1570, the steward of the estate, William Harrison calculated whether it was economically viable to manufacture beer domestically or purchase it from the Common Brewers. This is not evidence of a routine operational

costing system being employed but rather an incidence of a classic make or buy decision making process.

Figure 4.2

Alton Abbey – Ten Score Gallons of Beer Cost Calculations 1570

Malt	10s 0d
Wood	4s 0d
Hops	1s 8d
Spice	2d
Servant wages, including meat and drink	2s 6d
Wearing of vessel	1s 8d
Total	20s 0d

William Harrison, Description of England in Shakespeare's Youth, edited by F J .Furnivall, London (1887-1881) ii, p.159, cited in Owen 1996: 258)

The steward maintained that based on these calculations that the estate could brew a gallon of beer for 1¼d cheaper than the commercial equivalent. This would result in a saving of £70 per annum on the annual cost of brewing approximately 1,500 gallons of beer. The calculation is notable not only for its calculative methodology but also for incorporating a depreciation charge in the unit calculation reflective of the emergence of an agrarian capitalist mentality (Bryer, 2005). It remains uncertain how widespread this type of calculative methodology was practiced but a similar method was being promoted in the mid nineteenth century for domestic brewing (see Chapter 5, Section .5.6).

4.4 The Early Modern 1700-1830: The London Porter Breweries

The existing historiography of the Metropolitan breweries of the eighteenth and early part of the nineteenth century has been mainly produced by Mathias (1959) which is London centric and which has formed the major basis of evidence employed by other authored texts. A visit was made in September 2005 to the London Metropolitan Archives to examine the Whitbread records to re-evaluate Mathias's primary accounting sources. Whitbread was deliberately selected for this exercise because it was the leading London brewer of the later eighteenth and early nineteenth centuries and consequently the most powerful of the British brewers. However, the economic factors and social conditions which led to the formation and concentration of the first industrial brewing industrial sector must be outlined.

The growth and urbanisation of London from the Middle Ages onwards formed a large concentrated market whose demands and consumption of beer could not be satisfied by the small-scale domestic brewing of the earlier period which enabled beer to become transformed into an industrially manufactured commodity. Unlike the textile industry increased output could not be satisfied by either the 'putting out process' or by sub-contracting production to overcome the problems of servicing large markets. This encouraged the formation of the commercial brewers known as 'Common Brewers'. These London common brewers numbered twenty-six in 1578-1585 (Mathias 1959: 6) and one hundred and ninety four in 1699. It was evident by 1598 that these 'Great Brewers' were concentrated along the River Thames for water supplies and they had also begun sinking their own wells which required considerable private capital investment.

After the Restoration in 1660 the growth of the London Common Brewers was accompanied by conspicuous increased wealth and social status (Haydon 2001: 108). This accumulation of wealth became inextricably linked with the production of a new type of beer, 'porter'. Porter was a dark robust and durable beer unlike ale that could be brewed from coarser and hence cheaper grains which became a popular drink in London from the early eighteenth century onwards. Traditionally porter is accredited as first appearing in 1722,

"...it became to call for a pint or tankard of three threads, meaning a third ale, beer and twopenny: and thus the publican had the trouble to go three casks and turn three cocks for a pint of liquor. To avoid this trouble and waste a brewer by the name of Harwood conceived the idea of making a liquor which would partake of the united flavours of ale, beer and twopenny. He did so and called it entire or Entire-Butt, meaning that it was served entirely from one cask; and as it was very hearty nourishing liquor it was a very suitable for porters and other working people. Hence it obtained the name porter" (Cornell 2003: 30).

More recent research suggests that the invention of porter was not so precise and that it arose from the improvement of the heavy and glutinous brown beers that had existed since 1720 and it was first recorded in a Whig political pamphlet of 1721 (Cornell 2003: 37). Notwithstanding the origins of the new beer the production of large amounts of porter was unprecedented (Figure 4.3) which could only be satisfied by the introduction of capital intensive production methods through the creation of unprecedented new brewery factories widely known as the 'Great Porter Breweries'.

Figure 4.3

Examples of Metropolitan Porter Breweries Output 1748-1826

(1 barrel equalled 36 gallons or 288 pints)

Year	John Calvert	Sir Wm Calvert and Felix Calvert	Meux Reid	Thrale Barclay Perkins	Truman	Whitbread
	000's barrels	000's barrels	000's barrels	000's barrels	000's barrels	000's barrels
1748	53.6	55.7	?	35.6	39.4	?
1760	74.7	2.8	?	32.7	60.1	63.4
1777	106.4	87.0	27.5	85.3	80.9	110.1
1788	127.0	81.8	48.2	112.6	82.3	156.0
1796	97.6	68.0	103.8	137.8	109.2	202.0
1803	75.6	56.6	170.4	150.6	130.7	131.8
1815	-	119.3[20]	182.1	337.6	172.2	161.6
1826	-	100.1	172.5	380.2	219.1	202.1

(Mathias 1959: 551-552)

The extent of the large volumes of metropolitan beer production achieved in this era can be gauged by comparing these with the output of contemporary provincial common brewers and with that achieved much later on. In 1700 the average provincial common brewers annual output was a mere 1,388 barrels rising to 2,412 by 1799 (Burton Upon Trent brewers were an exception but even then its output was not comparable – see Section 4.8) whilst the publican brewer in the same period increased production rose from 65 to 109 barrels (Staffs CC 1977: 10). Chandler (1977: 256) states that the largest American breweries in the 1860's achieved an annual barrelage of 5,000-8,000 that rose to 100,000 by 1877

[20] The brewers William and Felix Calvert combined with John Calvert in 1810.

and 500,000 to 800,000 by the late 1890's. By this latter date the London brewers Barclay Perkins annual barrelage had risen to 580,213, Truman's to 494,196 and Whitbread to 693,706 (Gourvish and Wilson 1994: 611) whilst Bass achieved 840,000 barrels in 1872 and 1,400,000 barrels in 1903 (Staffs CC 1977: 10).

The reason for the popularity of porter remains unproven although beer consumption was officially encouraged by the government both for patriotic reasons and because it provided a healthier and more nutritious alternative to the pernicious gin craze,

> "Gin! Cursed fiend with fury fraught,
> Makes Human race a prey,
> It enters by a deadly draught,
> And steals our life way.
> Beer! Happy produce of our isle,
> Can sinewy strength impart,
> And wearied with fatigue and toil.
> Can cheer each manly heart".
>
> (William Hogarth, 1751 cited in Lovett 1996: 13-14)

Beer drinking had become respectable which was reflected in the works of contemporary and reputable artists. William Hogarth depicted it in a series of works illustrating the evils of gin and social ruin in 'Gin Lane' compared with

the honest industry undertaken in 'Beer Street' a view which the brewers heartily encouraged (Dillon 2002). George Cruiksank's 'The Gin Shop' (1829) included the inscription,

"Now Oh dear how shocking the thought is,
They make the gin from aquafortis,
They do it on purpose folk's lives to shorten,
And tickets it up at two pence a quartem".

This contrasted markedly with Thomas Rowlandson's 'The Beerhouse' (1800) that depicted beer drinkers as wholesome British characters (Ritchie 1999: 24-25)

The business implications of undertaking industrialised brewing in the capital city thus served social and economic imperatives which had wider business implications It established a wealthy, economically powerful and influential business élite, the 'beerage'. The capitalist 'beerage' class formed enduring brewing dynasties exemplified by, Barclay-Perkins, Charrington, Meux, Thrales, Truman, and Whitbread. It also created unparalleled needs for financial capital since to become a major brewery required somewhere between, £2,000 to £10,000 which, were sums exceeded only by silk manufacturers, vinegar-markers, and merchants, potters and merchant bankers. "The Business of a Brewer requires a large Stock of Ready Money to set up with and the Profits returned are proportionally considerable" (Combrune 1762 cited in Mathias 1959:24)

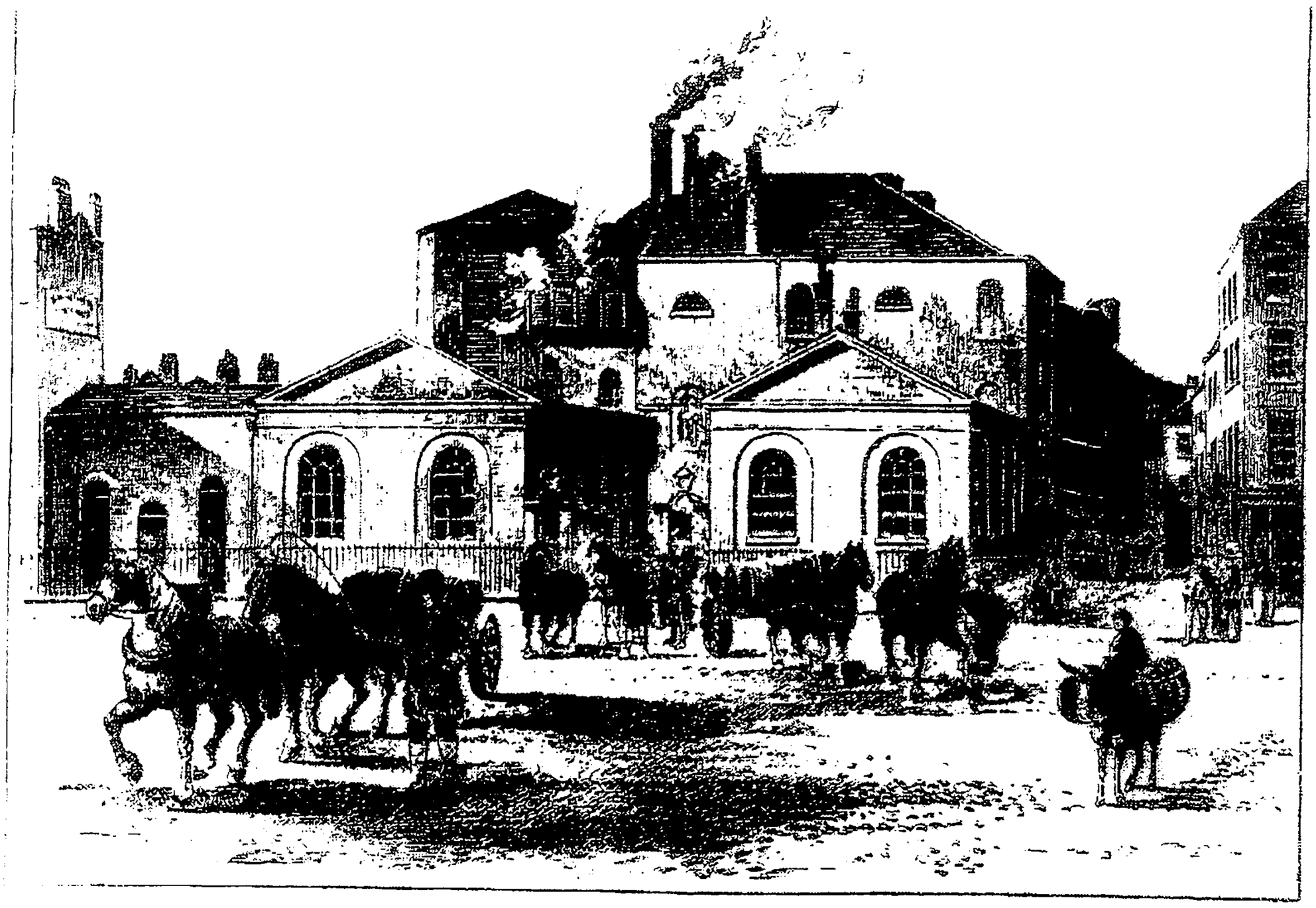
The size and scale of the metropolitan brewery operations created management problems well before 1750 (Pollard 1965: 101) which have never been adequately addressed in the literature. Pollard's identification of the mid-point of the eighteenth century is also significant: the Industrial Revolution has tended to be dated as occurring from 1760 onwards but careful inquiry now focuses on the 1780's as the key decade for this economic take-off point (Hobsbawm 1995a: 28). Thus the metropolitan brewery industrialisation predates by some decades the wider industrialisation of the British economy. It is these questions that I shall now debate within the Foucauldian disciplinary schema.

4.5 The Early Modern Brewing: Spatial Discipline

In order to meet the market demands for porter the new breweries had to be scientifically planned and constructed so that the production process became systematically organised within a single functional site, the identifiable modern brewery. By 1740 the 'Great Common Brewhouse' of London porter had become a distinct phenomenon (Mathias 1959: 42). All the porter breweries were distinctive for their unparalleled size and scale (Illustration 1) The Meux brewery as an example continued to manufacture beer until 1914. It became notorious when in 1814 the porter beer vat burst and expelled its contents which drowned eight people. The scale of operations may be judged by the size of this smaller vat, which was twenty-two feet high and contained 3,555 barrels of porter beer equivalent to 127,980 gallons.

Illustration 1- The Meux Horseshoe Brewery Tottenham Court Road

Built pre1764



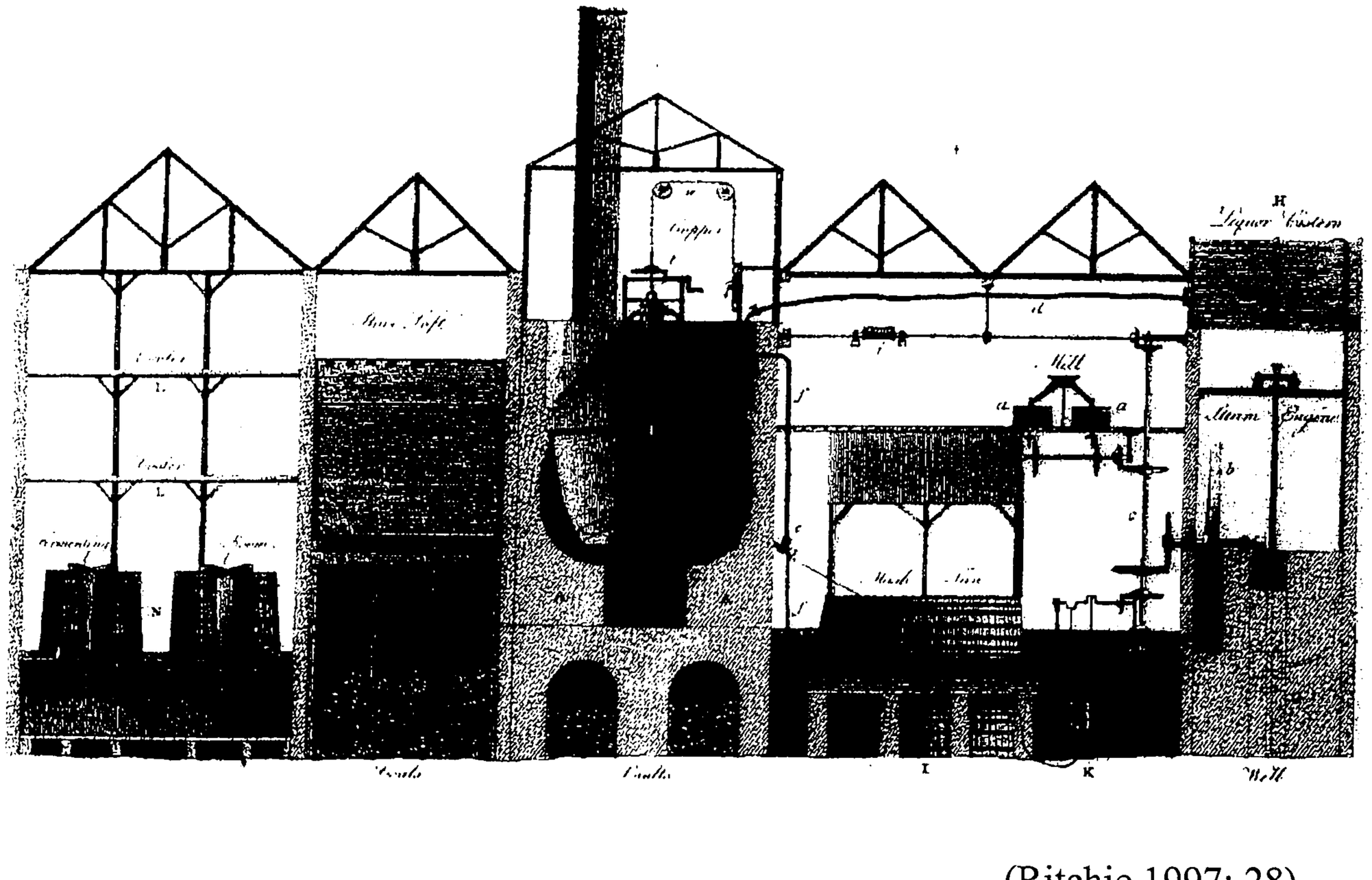
(Lovett 1996: 13)

The archetypical of these porter breweries was Whitbread's Chiswell Street brewery built in 1750 which was continually improved and extended so that it represented the pinnacle of its type so much so that it attracted domestic and international sightseers including a royal visit in 1787 (Ritchie 1992: 31-32). The new breweries initially entailed the distribution of the Foucauldian docile bodies of the workforce within the enclosures of the brewery and integrating these workers alongside the horse driven machinery, later replaced by steam

machinery of what effectively had become a factory for the mass manufacture of beer (Illustration 2). The illustration reveals the economy of spatial layout for efficient production integrated later with the Boulton and Watt steam engine depicted on the extreme right. The imposing structure of the Chiswell brewery was considered to be so impressive that it was painted by the distinguished artist Garrard both in 1783 and 1792 and served as the background for Samuel Whitbread II's 1816 portrait by James Northcote.

Illustration 2 - Plan of Whitbread's Porter Brewery

By J Farey for the Pantalogia New Encyclopaedia 1813



(Ritchie 1997: 28)

Direct production labour in brewing unlike in mining or textiles was never substantial and it became increasingly marginalised as it was replaced by steam machinery and gravity so much so that although the distribution system was all bustle in the brewery yards the brewhouse remained quite solitary (Mathias

1959:96). Thus the workforce was never substantial and by the end of the eighteenth century the largest breweries employed up to only 100 workmen each together with an equal number of horses (Pollard 1965: 97). The majority of the labour was used in mashing, carrying raw materials, racking cleaning and delivery which remained unskilled and readily available. Therefore brewing labour costs relative to other industries were low and especially so in the new breweries where unlike in other industries there were no intermediate grades of skilled workers. The skilled production knowledge and expertise rested with a small élite cadre, invariably headed by the master brewer who was either the owner or closely family related with the owner. No other eighteenth century manufacturer had the means of cutting their wage-bill by reorganising the 'flow of production' (even the phrase is significant) and increasing the scale of his manufacture as the brewer had (Mathias 1959: 39). Specialised ancillary tasks when required could be sub-contracted and Samuel Whitbread I did so with his wheel repair and cooperage requirements in a manner prevalent in the building industry (Pollard 1965: 47).

The increase in the size and volume of the porter breweries operations increased the brewer/ owner manager's reliance on a cadre of professional managers, or 'senior clerks' that directed and controlled operations. Consequentially the spatial division of managerial responsibilities became evident when the managerial workload and administration became beyond the capabilities of the owner manager. Many of these senior clerks were educated brewers - for example, John Perkins rose from master brewer to a full partner in the renamed Barclay-Perkins brewery in 1781 (Mathias 1959: 36).

The surviving archives of Whitbread have left a more detailed picture of these senior clerks and the esteem in which they were largely held with the odd exception such as David Jennings (Figure 4.4).

Figure 4.4

Examples of Senior Clerks Whitbread Eighteenth Century

Name	Dates of Whitbread Employment	Evidence of Esteem
Mr Green and Son	1752 -?	Head brewer .. 'if falling the very Brewing is at an end'..
Broughton Maysey	1747-1794	Represented Samuel Whitbread I, had access of the bank account and cash book – 'there is no replacing of him'.
William Slater	1743- ?	
Robert Sangster	1764-?	Placed in charge of malt and hop purchases: loaned personal monies to the business rising to become a partner in 1796.
Joseph Delafield	1764-?	
Samuel Green	1752-1795	Placed in charge of brewing
David Jennings	1753-?	'It is a matter of indifference whether he continues or not'. He loaned £5,000 to the brewery in 1796.
Joseph Delafield	1764-?	
Elijah Pryce	1772-?	Collecting clerk and a very faithful intelligent man, very proper for his situation and filled it now for twenty years. ..he is the first collecting clerk and a very faithful intelligent man..

"I have also had in conducting this business the best of Clerks and that have lived the longest with one Master, as is not be met with anywhere else" (Samuel Whitbread I, 1791,(constructed from Ritchie, 1992)

Each of the senior clerks, and they never numbered more than six or eight in one of the great breweries was accorded specialised responsibilities, e.g. Principal Clerk or brewery manger in contemporary parlance, 'Collecting Clerks' in obtaining and maintaining trade and 'Counting House Clerks' charged with administration. Thus, "By [the end of the eighteenth century] the standardised staff positions common to all the great breweries show how institutionalised, almost how professionally bureaucratic, their organisations had become" (Pollard 1965: 133).

The establishment of these formal hierarchies as a spatial division of managerial activities albeit small both in numbers and extent is notable in that it occurred a century before those identified by Chandler (1977) on the American railroads. Mathias (1959: 275) accords these senior clerks substantial importance and status,

"In such circumstances, the clerk promoted to partner in the eighteenth century was really the ancestor of the salaried director of today …increasing business led to specialisation, i.e. buying, brewing and accounting".

4.6 The Early Modern Brewing: Activities

The disciplining of activity to promote efficiency was evident in the new breweries. As described above the need to discipline and supervise a large manual workforce was absent. Rather efficiency was derived from the scientific planning of production through the design of the brewery factory for undertaking one of the earliest examples of mass production and thereby achieving economies of scale.

"In erecting a large work of this kind everything is to be considered that can save the labour of people employed, for as everything is done in quantities, the difficulty of removing the ingredients from place to place would be very great, but for the help of such early care…." (The London and Country Brewer 1742 cited in Mathias 1959: 42)

The Georgian porter breweries were large high-rise constructions exemplified by Whitbread's in Chiswell Street and Combrune's (1762) *Theory and Practice of Brewing* indicates that the efficient brewery had been long established noting that "in general the construction and disposition of most brewhouses would admit of very little further improvement" (Mathias 1959: 46). The technical efficiency of the production process was enhanced by the early adoption of mechanisation through the installation of steam engines. The first four horse power Watt steam engine was installed in the London Goodwyn brewery in 1784 followed in the same year by a ten horse powered version at Whitbread. Steam power became widespread within the London brewing industry, with upgraded and more powerful engines adopted such as Thrale's twenty horse powered engine in 1787

such that by 1795 only the cotton and coal industries employed more steam engines than brewing (Lord 1965: 167-175). The porter brewing industry as Foucault indirectly recounts reflected advanced efficiency, "The English reveal their genius for mechanics in everything they do… and they want their buildings to function as a machine subject to the action of a single motor " (Baltard 1829, *Architectonagraphie des Prisons* cited in Foucault 1997: 319).

Thus was realised the creation of a disciplined functional site by the enclosure of the overall production process which was based on the requirements of he production machinery (Foucault 1997: 143-144)

Scientific advances potentially aided exact calculation of this new production with the use of thermometers from 1768 onwards in monitoring vitally important brewing temperatures and later on from 1780 the employment of the hydrometer and the saccharometer permitted the accurate measurement of the strength or gravity of the beer.

"The implications of the hydrometer's value in costing (sic) are worth emphasising Reddington [21] implied its utility in by marking [the] instrument in the valuation of different qualities of beer according to depth it sank in each" (Mathias 1959: 74)

Pollard (1965: 248) repeats this source as evidence of cost calculation existing in the porter breweries. However Reddington's suggestion was only a crude calculation carried out by a proportional comparison to the strongest beer but it

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[21] Wm Reddington, brewer authored *Practical Treatise in Brewing,* in 1760. Costing in this context is not cost accounting but raw material and output costing by volume.

remains uncertain as to whether this practice was widely adopted. Nonetheless it permitted the construction of 'brewery tables' that were also used by the government's Board of Excise which commissioned Sir Joseph Banks in 1797 to produce accurate tables for use in a tax collection system based on gravities (see Appendix 6 - Beer Tax Regimes). It was the production of these tables that realised another of the Foucauldian new knowledge systems and that created a disciplinary power that relied on a continuous surveillance achieved via detailed reports that contained facts, classification and quantification of beer production. Foucault stated that the first of the great disciplined operations was the constitution of 'tableaux vivants' of facts, which transformed the disorganised and dangerous multitudes into ordered multiplicities of typologies. This necessitated that,

> "The drawing up of 'tables' was one of the great problems of the scientific, political and economic technology of the eighteenth century … and construct at the same time rational classifications of living beings… and thus build up an economic table" (Foucault1997: 148).

Brewing advances projected a promise of a more scientific approach than hitherto and it is tempting to over-emphasise its significance to what was widely held to be an art and the position remains ambiguous. Only Henry Thrale of the London brewers is recorded as embracing the new scientific measurement possibilities with any enthusiasm whereas Samuel Whitbread I rejected it by declaring that his successful trade had been achieved without its assistance (Mathias 1959: 72). Furthermore the tax authorities spurned the opportunity for

the exact manipulation of duty based on gravities by adhering to the simpler classification of strong, table and small beers that did not disappear until 1880 (see Appendices 5 and 6).

4.7 The Early Modern Brewing: Segments

The third Foucauldian discipline or segments is identified with pedagogical practices. The education and training of a master brewer was considered to be an art whose intricacies and mysteries were passed on to future generations of brewers via an oral tradition. Brewery apprenticeships especially in the larger breweries were only open to family members or those willing to pay a substantial fee,

"those who intend to set up in the Business have either been acquainted with it, by either being a Son or Relation to some man in the trade or take their chance by dependence on the skill and Honesty of the Clerks and Servants" (Pollard 1965: 123).

Thus for example the family of fourteen year old Samuel Whitbread I paid £300 in 1734 for seven year indentures to the Master of the Brewers Company, John Wightman, a relative at his brewery in Clerkenwell (Ritchie 1992: 11-12).

Brewing apprenticeships were expensive and the 1725 Register of Apprenticeship Bindings of the Brewers' Company regularly recorded a £200 figure, some pupils paying £300 and one as much as £500 (Reinarz 2001:38). As Haydon (2001: 113) has observed this effectively provided a barrier to entry to the brewing trade restricting it to the wealthy now that it had become a more

respectable and profitable enterprise. Whitbread's own education was limited to that imparted by his immediate family and two years tutoring provided by a Northamptonshire clergyman. First generation brewers and their immediate successor's entry into the Trade were usually of humble origin (Mathias 1959: 254). According to Mathias it would appear from the scant evidence available that the Common Brewers origins were from small 'Victualler Brewers' whose production sites expanded to warrant the classification of Common Brewers. In the provinces entry to the trade was less expensive and normally came from agriculture and trade in brewers raw materials, such as William Younger in Edinburgh in 1749 whose father was farmer (Ritchie 1999: 9), Francis Joule a maltster at Stone, Staffordshire (Rhodes and Ecclestone 1980), Benjamin Wilson at Burton originally a rope maker via marriage to the daughter of a victualler brewer (Owen 1978: 36) or unusually in the cases of William Bass originally a London haulier who established himself as a brewer at Burton through a providential lottery win.

Therefore, access to élite educational establishments was highly improbable for first generation brewers and the less wealthy provincial brewers. The availability of formal accounting tuition in this period was only provided by the small number of non-conformist colleges such as existed at Manchester and Warrington but this was invariably combined with other subjects such as surveying (Ashley-Smith 1954:160-170) and so far no direct link with brewers attending any of these establishments has been discovered. As such there existed no formal examination or syllabus structures for eventual qualification in brewing other than the master brewers' recommendation in London to the

Worshipful Company of Brewers (guild) which had been incorporated in 1437 (Ball 1977:32) and ostensibly controlled the formal apprenticeship system in the classical artisan plus guild model. The guild enjoyed the regulation of its trade in the City of London which had been previously laid down and enforced by the Aldermen. However, from the beginning of the seventeenth century the guild's power declined with a diminishing enthusiasm for its expensive membership because its previous wider social and political influence had declined. The guild's ability to control the trade though search and inspection was rendered ineffectual in the expanding London suburbs beyond the City limits. This was typical of the general decline of trade guilds in this period where it was becoming feasible to carry on a trade without obtaining membership of a guild or a Livery Company (Ball 1977:76). Thus this disciplinary professional framework in the brewing trade was a progressive illusion. Whitbread's experience exemplified this decline. Whitbread had been admitted to the Brewers Company in 1743 through 'service' but his partners at the Goat Brewhouse and the Brick Lane Brewhouse, Godfrey and Thomas Shewell had obtained membership through purchase having never qualified as brewers having come to brewing through a family inheritance (Ritchie 1992:14). In the wider London trade the Brewers Company had become increasingly irrelevant to the dominant 'beerage' dynasties whose economic strength permitted them to set their own personal agendas. The leading brewers of the period took little interest in the guild's affairs and avoided taking up guild positions and were content instead to pay minor fines in lieu of office,

"Henry Thrale, who inherited the Anchor Brewery in Southwark from his father in 1759, was fined for his non-attendance as Renter Warden in 1770, and even when he became Master in 1773 he repeatedly failed to attend when required. Samuel Whitbread, who had joined the Company as an apprentice in 1736… was an active member until his brewery began to expand and in 1757 he resigned his place on the (Brewers) Court due to increasing demands on his affairs" (Ball 1977: 86).

The guild's weakness was progressively exposed as it became increasingly reliant on the emerging and dominant porter brewers when in 1772 it had to seek the support of Samuel Whitbread, Henry Thrale and Robert Calvert to aid their discussions with Parliament. Power and influence had slipped from the guild to the porter beerage who no longer needed the support and protection of the Brewer's Company but rather the Company looked to them to promote the interests of is members in trade matters (Ball 1977:88).

As previously indicated scientific advances had offered the potential for a more technically educated management if they chose to take advantage of the increasing levels of publications. Brewery managers by necessity had to be both literate and numerate and this could also extend to the scientific. During this period of the Enlightenment a plethora of technical brewing texts were published, Lightbody's *Ever Man is Own Guager* (1695), Dr Shaw's *Chemical Lectures and Essays* (1755) and *Essay on Brewing* (1758), Reddington's *Practical Treatise on Brewing* (1760), *T he Genuine Theory of the Hydrometer* (1762), *Theory and Practice of Brewing* (1762), *Hydrostatical Observations and Experiments in the*

Brewery (1785), *Statistical Estimates with the Saccharrometer* and the anonymously authored journal *The London and Country Brewer* that was published between 1734-1759.

Reading them we can see an ancient tradition of brewing education existed that did not involve the grading, writing and examining practices that were apparent in the élites educational establishments of the eighteenth century. Brewers were not members of these educational élite although in some instances wealth as in the case of Samuel Whitbread II bought an education at Eton and Cambridge and a seat in the Commons as a Whig MP (Samuel Whitbread I had been a Tory MP) and he also undertook the management of the Drury Lane Theatre (Talbot: 2000a). However, Whitbread junior scorned his business inheritance for more aristocratic and political pursuits preferring to rely on the expertise of the businesses senior clerks. Consequently there appears to have been no major shift in brewery educational practices; learning continued to be by observation, practice and oral. This was inevitable given that,

"Brewing was not a business to be entered into lightly, particularly if production was to be on any scale and much capital was at stake, without good training or efficient partners or managers. All the technical responsibility for a large concern might be held by one or two persons which was potentially a great advantage but equally, as a great source of weakness where responsibility was not combined with technical ability" (Mathias 1959: 258).

4.8 The Early Modern Metropolitan Brewing: Co-ordination – Financial Accounting

The final discipline of co-ordination brings together and administers the previous three disciplines through micro-technologies, such as accounting. Although Foucault specifically does not expressly refer to accounting as the agent of co-ordination he does specifically identify the need for 'tactics' to achieve this end to ensure "the product of the various forces is increased by their calculated combinations" (Foucault 1991: 167). Within the workshop or factory accounting could be employed as a "mystical calculus of the infinitesimal and infinite (Foucault 1991: 144), and expenditure controlled" (Foucault 1991: 141) and "fiscal control over commodities" (Foucault 1991: 144) exercised. In this section I have chosen to split accounting into two distinct parts which firstly considers the use and application of financial accounting and then cost accounting.

The earliest London brewer's accounts that survive are Edmund Halsey's from 1691-1701 which are described a "running cash book, roughly kept, which does not show valuations of fixed capital or the number of barrels brewed" (Mathias 1959: 7). Undoubtedly the financial accounting systems of the porter breweries became more sophisticated and bureaucratic due to the necessity of recording the multiplicity of transactions between suppliers and debtors which has led to some extravagant claims for accountings role in the early industrialised brewing trade,

"This required the development of accounting techniques, bureaucracy and management hierarchies of a complexity that had hitherto only existed within the Admiralty. Unlike the Admiralty the brewers were commercially minded. Their

bureaucracies were not particularly labour intensive either. The focal points of management activity were the great bound ledgers... called rest books. The rest was the brief summer period when brewing ceased, when inventories taken, accounts drawn up and profits from the year's brewing were assessed. The new management accounting (sic) techniques enabled the brewers to calculate their net worth to the last halfpenny and provided the asset most useful to the capitalist – information. The information supplied by the rest books enabled investment decisions to be made, rates of return to be calculated, projections of capacity to be monitored, demand to be recorded, sales strategy to be planned and all other tasks and considerations that were, and are necessary for management then and now to be undertaken. These first generations of 'managers' put their information to excellent use" (Haydon 2001: 115).

This overstates the case without any detailed supporting evidence. The large porter breweries undeniably developed complex financial systems of financial stewardship that meticulously recorded sales, purchases, tracked stocks and satisfied the tax authorities so that they became the arbiter of transactions, which could then be referred to in successfully resolving disputes. The growing size of the breweries and the numerous transactions entered into necessitated systematic accounting, often for small amounts and where profit margins were low accurate financial accounting became prerequisite to minimise inefficient operations, wastage and bad debts; efficient bookkeeping lay at the root of all the brewers' safeguards. The great ledgers in the counting house maintained by assistant clerks contained four hundred tightly packed folios that would only last for one season and the complexity of transactions produced equally complex financial

accounting systems long before the days of national firms, such as Bass and Guinness (Mathias 1979: 26-28).

Unfortunately the earliest of Whitbread's 'Great Ledgers' which Mathias inspected when the company's archives were formerly held centrally in the Whitbread Museum were widely dispersed in 2000 when the company left the brewing sector and the whereabouts of the ledgers are currently unknown. The Archon Directory website of historical record deposits still indicates that the Guildhall Library, London holds Whitbread's ledgers 1746-1850 but this is inaccurate and enquiry has revealed that these records were transferred to the London Metropolitan Archives (LMA) at some time in the past. The accuracy of the Archon Directory data relating to the Whitbread LMA deposits is similarly misleading stating that it holds ledgers, brewer's books, staff books, estate records, property registers, purchase registers and journals 1742-1996, but the earliest accounting ledgers held are dated 1842 (LMA/4453/B/08) and the majority of these accounting records relate to the mid and latter part of the nineteenth century. At the time of writing in September 2005 the Whitbread archive was being catalogued and special permission had to be obtained to examine the records which are not yet generally available to the public. Nonetheless some late eighteenth and early nineteenth century Whitbread's financial archives were examined and amongst these were the 'Rest Books' dating from 1799 (LMA/4453/B/12/001). A leather bound ledger inscribed 'A Rest or Account of the Stock in Trade of Samuel Whitbread Esq. – Taken July 8 1799 (this is Samuel Whitbread II since the elder Whitbread had died in 1796) is the earliest of its type.

However the implication by Mathias (1959) and Haydon (2001) that this was an early form of balance sheet is misleading because the Whitbread Rest Book comprises lengthy lists of individual stock creditors balances referenced to the Great Ledger folios then totalled and followed by a 'General Account of Beer and Casks' analysed by type and value and totalled. The stock of beer was further analysed by type and be likely to satisfy tax purposes thus,

Figure 4.5

Whitbread Rest Book 8th July 1799- Beer Stock

	Barrels	Price	£ Value
Strong Beer (Folio 40)	124,034 2 Firkins 1 G(?)	27s 6d	170,547. 9s 6d
Small Beer (Folio 40)	2,970	4s	594.0s.0d
			£171,141.9s.6d

(LMA/4453/B/12/001)

Also included in the Rest Book are other stocks held i.e. malt, hops, property leases, stocks of rents (receivable), sundry articles and a stock of workmen amongst whom were included a carpenter, mason, smith and wheelwright who may have been bonded servants but this must remain conjectural. At the back of the Rest Book are included several pages devoted to bad debts, the largest balance being one McCulloch 1791 of the Armes Hays for £185 3s 3d. Overall these bad debts in 1791 totalled £1,076 6s 4d analysed between town trade (London) £945.5s.10d and country trade (outskirts of London) £131.4s.4d

The accounts were also innovative for being amongst the first manufacturers to impose a temporal division to the accounts by creating an artificial accounting year. This was not difficult since it naturally occurred after the harvest in the summer when the heat precluded brewing taking place, i.e. the Rest which remained the norm until scientific advances were made in the next century. The natural division of linking production cycles to an accounting year existed in farming (Mepham 1988) and as Pollard (1965:215) had observed, "that neat division into equal periods, and many had no regular date for closing or comparison at all. Also this regularity is unnatural to most economic activities, outside farming" and brewing was closely linked to farming.

Figure 4.6

Production Capital and Profits Whitbread, 1762-1794

Year to June	Barrels Brewed	£ Capital	£ Profits Including 5% Interest	% Profit	£ Withdrawn from Trade	Verified by LMA Visit
1762	55,000	116,000	21,800	15.75		
1763	67,300	104,200	13,710	13		
1764	67,300	104,200	13,710	13		
1765	78,200	106,700	17,835	16.75		
1766	78,200	106,700	17,835	16.75		
1767	80,400	127,000	16,350	13		
1768	80,600	138,000	16,500	12.75		
1769	90,000	137,000	26,850	19.5		
1770	86,900	161,000	38,050	24.5	24,,451#	
1771	100,600	169,000	35,551	21	8,000#	
1772	90,300	173,000	14,150	8.25	13,012#	
1773	90,400	176,000	16,300	9.25	20,800#	
1774	63,000	178,000	2,670	1.5	14,500#	
1775	106,600	159,659	26,632	14.75	13,719#	
1776	102,100	151,600	21,891	14.25	9,500#	
1777	110,100	159,452	27,792	17.5	13,400#	
1778	96,900	170,740	23,187	15.25	15,113#	
1779	96,400	176,760	18,556	10.5	13,300#	
1780	96,600	178,765	22,090	12.5	27,290#	√

1781	115,000	181,685	34,984	19.25	11,512#	√
1782	122,100	190,652	39,532	20.75	19,000#	√
1783	91,700	207,061	27,373	13.25	20,058#	√
1784	126,500	204,902	16,035	8	23,332	√
1785	137,800	192,699	32,920	17	18,600	√
1786	138,800	206,133	35,732	17.25	19,564	√
1787	146,300	220,931	39,791	18	26,620	√
1788	156,000	231,790	31,589	15..5	17,052	√
1789	171,000	264,159	49,207	18.75	14,779	√
1790	175,000	271,238	43,561	16	35,611	√
1791	176,000	275,722	47,786	17	42,703	√
1792	178,000	266,218	38,310	14.5	47,661	√
1793	184,000	281,992	33,099	11.75	13,000	√
1794	189,000	270,801	18,700	7	25,593	√

#Whitbread's private ledgers in these years state his withdrawals for the year from January until December. After 1783 they coincide to the normal brewing year June-June. The basis of the profit percentage calculation is not apparent but appears to have been calculated by Whitbread – the figures reflect the volatility of the profit streams caused by bad harvests and intermittent wars (Mathias 1959: 553)

(However as Figure 4.6 illustrates different financial years bases could operate within the same entity). The capital assessment is subject to variation from annual revaluation of stocks (Mathias 1959: 553), i.e. before stock movements, but stock levels would have been small at the date of the Rest comprising malt, hops and beer. However, this means there is no arithmetical balance between capital, profits and withdrawals (drawings).

The financial accounts were maintained by clerks in the Counting Houses though the private ledgers were maintained by the owner such as Whitbread. Samuel Whitbread I's Private Ledgers survive from 1790 to1796 (LMA/4453/B/11/001) although they contain entries dating back to 1780 complied by the elder

Whitbread since he signed some of the folios. This presented the opportunity to verify Mathias's figures for the withdrawals from trade or drawings between from 1780 to 1794 that proved accurate.

The Private Ledger was constructed in two sections: the first section is alphabetical folios of individual accounts and the second section contains these accounts. The majority of these accounts are numerous short and long term capital deposits of varying sizes made by a range of individuals and clubs and banks. The clubs were based on public houses and were the pooled capital of some of its customers.

Figure 4.7

Example of Club Loan Capital Account – Whitbread 1783-1784 (Folio 49)

Dr 1783 July 14	To cash for 6 years interest to 30th June 1783	£1.00	1782 By cash on note	Crd £50.00
1784	To ? for principle & interest in full	£52.00	Dec 30 1783 By ½ years interest	£1.00
			1784 By 1 years interest	£2.00
		£53.00		£53.00

(LMA/4453/B/11/001)

Other small amounts of loan capital were also provided by the Whitbread brewery servants comprising housekeepers (e.g. Joan Caxon £90), victuallers, a footman (i.e... John Edwards £120) and more substantial amounts provided by the brewery senior clerks whom the elder Whitbread had held in such high regard. These were of various amounts, i.e. Thomas Garratt £1,000 in 1787, Robert Sangster £3,000 in 1781, William Slater £4,000 in 1786, Jos Molyneaux £2,000 in 1781, Stephen Elnwick £10,750 in 1785 and £5,000 from Broughton Massey in 1783 (Figure 4.8).

Figure 4.8

Example of a Senior Clerk Loan Capital Account- Whitbread 1783-1784

(Folio 50)

Massey Broughton Clerk in the Brewhouse

Dr Dec 1783	To cash paid off on bond	£500	Crd Dec 23 1783	By cash on bond b/f	£5000
1784 23 March	To ½ years interest to mid 1784	£90	1784 June 24	By ½ years interest	£90
17 April	To ¼ years interest 1784	£45	Sept 29	By ¼years interest	£45
8 Sept	To ¼ years interest 1784	£45	Dec 25	By ¼years interest	£45
30 March	To ¼ years interest 1785	£45	1785 March 25	By ¼years interest	£45
14 July	To ¼ years interest 1785	£45	June 24	By ¼years interest	£45
			Sept 29	By ¼years interest	£45
		£815			
	To bal c/fwd to folio 52 on bond 25 December 1783 (Folio 52)	£4500			
		£5315			£5315

(LMA/4453/B/11/001)

Broughton's investment continued but had fallen to £4,000 by 1790. Whilst these sources provided multiple sources of capital the banking sector was also used when large amounts were needed immediately.

Figure 4.9

Example of Bank Capital – Whitbread 1786-1787 (Folio 76)

Messr's Child –Bankers at Temple Bar

Dr			Cr		
1786 Aug 7	To cash ½ years interest	£250	1786 Feb 7	By cash on bond & mortgage of City's lease of Brewhouse, premises & lease of Portman Square House	£10,000
1787 Feb 17	To cash ½ years interest	£250.00	Aug 7	By ½ years interest 1787	£250
			1787 Feb 7	By ½ years interest	£250
			Sept 29	By ? and 22 days interest	£321.15.10
		£10,321.15.10			£10,321.15.10

(LMA/4453/B/11/001)

The expansion of the breweries and their need for extra capital had extended ownership by creating partnerships throughout the latter part of the eighteenth century. The partnerships were not confined to the traditional brewing families or the senior clerks who invested their private capital but included bankers, and the aristocracy. It should be recalled that partnerships were the normal business structures in this era for the larger organisations since incorporation was proscribed in the aftermath of South Sea Bubble financial scandal and the subsequent passage of the Bubble Act 1720 (Balen, 2002). Therefore a financial imperative for a more accurate system of accountability between the partners was

created with the construction and presentation of detailed partnership accounts at annual meetings for appropriating profits and drawings. Each partner signed the accounts and could demand their own personal copy if required and the earliest examples survive from 1742 and such an arrangement was not unique to London (Mathias 1959: 30). In the case of the Meux-Griffin brewery the partnership accounts have been described by Mathias (1968: 5) as very large and comparable to that of a public company: minutes of the partners' annual meeting, audits by non-managing partners, a formal report of the chairman of the managing partners to those partners unconnected with management were also included.

Whitbread's partnership ledgers held at the LMA exist only from 1818 onwards until the business became incorporated in 1889 (LMA4453/B/10/001-003). Whitbread's business had originally commenced in 1742 as a partnership with the Shewell brothers who had both left the business by 1761 leaving Samuel Whitbread I as the sole owner. Following his death in 1796 the business became a partnership nominally headed by Samuel Whitbread II along with some of the senior clerks Sangster, Yallowly, and the banker Timothy Brown. The business merged in 1812 with the Martineau and Bland brewery which resulted in the closure of the Martineau brewing site. The ownership structure expanded to include the Martineau and Bland families and new members of the Whitbread family following the suicide of Samuel Whitbread II in 1815. The most notable partner recruited into the business not drawn from a brewing background was the banker Sir Benjamin Hobhouse in 1800 following the acrimonious departure of Timothy Brown.

The early partnership ledgers are classically constructed and maintained partnership capital accounts recording capital injections, drawings, interest and profit sharing ratios, e.g. William Henry Whitbread's capital £40,000, 18/178ths profit ratio and Samuel Charles Whitbread £10,000 capital and 4/178th's profit sharing ratio in 1818. Hobhouse had a more substantial investment as his partnership capital account reveals.

Figure 4.10

Sir Benjamin Hobhouse Partnership Capital Account: Whitbread 1818

Dr			Cr 1818	Balance 32/178ths of capital	£80,000
1818	To cash interest paid thereon	£4,000	1818 ? July	By ¼ years interest 1818	£1000
			Oct	By ¼ years interest 1818	£1000
			1819 Feb	By ¼ years interest 1818	£1000
			July	By¼ years interest 1818	£1000
		£84,000			£84,000

(LMA/4453/B/10/001)

Thus the Whitbread archive reveals that from the eighteenth century onwards a system of modern capitalist DEB, which was utilised in a similar manner to other businesses in normal financial accounting practice.

4.9. Early Modern Provincial Brewing: Co-ordination-Financial Accounting

Burton upon Trent in Staffordshire was the only source of competition to the metropolitan breweries but this competition was comparatively negligible since production levels at the largest Burton brewery of the period, Benjamin Wilson II''s[22] brewery realised an estimated maximum annual production level of 4000 barrels between 1791-1792 (Owen 1978: 203). Although brewing was becoming an important industry in Burton is overall size was insignificant in relation to that of the London trade. Only small and fragmentary accounting evidence survives from this early period. John and William Bass's (brothers) earliest records date from 1744-1805 and 1810-1836 (CVC M/3/12, M/3/12/48, M/13/12/49, M13/11, M/5/32, M5/31, M/3/12, M/3/12/48, M/13/12/49, M/13/11, M/5/32, and M/5/31). The earliest record is John and William Bass's 'Cydear Book' which is a daybook arranged by customer, and the business divided between carrier, 'cydear' and general disbursements but this relates to their carrier business rather than brewing. Bass's and John Ratcliff's surviving day book of 1806 is devoted to recording the brewery's business activities. The nature of this record may be reflective of the business having become a partnership (John Bass having not entered into the brewing business having left the carrier business in 1755 to concentrate on glazing and plumbing) as had occurred amongst the London breweries which had promoted a new capitalist form of accountability. The earliest partnership had been between John Michael Bass and James Wood Musgrave 1791c. Musgrave had inherited a Burton brewery in 1784 which could not be disposed of on the open market leading to the first partnership undertaking

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[22] The brewery was originally founded by Benjamin Wilson I in the 1740's which was inherited by his three sons one of whom Benjamin Wilson II acquired in its entirety by buying out his brothers. Samuel Allsopp the nephew of Benjamin Wilson II who never married and remained childless inherited the brewery in 1807 which became Samuel Allsopp and Sons Ltd the second largest brewery in Burton Upon Trent (Barber 2005:122)

which lasted until 1797. John Ratcliff had provided imprecise clerical services to this partnership from at least 1792 rising to become a partner in 1795 and remained so until his death in 1835 whereas John Gretton did not become a new partner until 1835 along with Samuel Ratcliff. The diverse nature of the early business activities is reflected in Figure 4.11.

Figure 4.11

Real and Estimated Receipts and Payments of Bass and Ratcliff 1806

Receipts	£
4374 bar of ale at 22d.per gall	14,434
18 doz. Sherry	48
110 doz. Red Port Wine	275
10,628 gals. Porter	886
36,531 gals, beer at 4d. per gal.	609
Timber Sales	260
Small quantities of coal, coke, coal, wine, hoops, barley & malt (E)	200
	£16,712
Payments	£
2,084 qtrs of Barley	4,038
392 qtrs of Malt	1,646
210 casks of Porter	538
38 bags and 66 pkts of hops	1,234
2 Pipes of Red Port	200

137 loads of coal	140
1,0384 qrs of coke	124
Wooden and iron hoops	73
Transport (E)	300
Postage (E)	50
Wages and salaries (E)	500
Excise on ales, beers & malt (E)	3,000
Timber and casks (E)	200
Insurance (E)	100
Business trips (E)	150
Rent and rates (E)	200
Equipment (E)	50
Depreciation and repairs (E)	100
Provender for horses (E)	50
Interest on loans (E)	100
Totals	£12,793

E = Estimated

Day Book of Bass & Ratcliff, 1805-1807

(Owen 1992: 201)

The figures have obviously been rounded by Owen and the basis of the 'estimated' figures remains unclear and no balance has been struck. However it is noteworthy that depreciation has been posted as an expense alongside repairs. The depreciation of assets and its basis is not explained but it was a practice to

revalue the stock of casks and it is probable that this forms the depreciation element. The calculation and recording depreciation may imply that balance sheets or 'Rests' to use the terminology were compiled especially as this was a partnership undertaking. Unfortunately no Rest Books have survived and Owen's incompletely referenced source is not evident on the former Bass Museum's (BM) catalogue. There is no day book recorded for the 1805-1807 period but there exists a 'General Account Book' of receipts and disbursements, 1791-1805 (M48). Regrettably this matter remains unresolved because of the closure of public access to the renamed museum the Coor's Visitor Centre.

Owen (1978: 218) has also provided early examples of Benjamin Wilson II's and John Walker Wilson's financial records. Benjamin Wilson II's recorded a 'Profit and Loss Account' for the 'financial year ended 30th April 1802'. The entries are the reverse of the normal DEB procedure of crediting profits and debiting losses, possibly because this account was an interim stage in preparing the final accounts (I present other evidence consistent with Wilson using DEB later).

Figure 4.12

'Profit and Loss Account' for Benjamin Wilson's Brewery

Year Ending 30th April 1802.

Burton April 1802	£	s	d	Profit &Loss to Sundries for Sundry Losses	£	s	d
By Brewing for this year's profit	2636	19	11½	To Ale under S Allsopp loss on 6½ casks ale	19	8	0
By Barley pr. peck a Profit being over insured	61	5	2	T Wm Burrow Loss on the Exchange	29	1	7
By Cheese Trade with T Cartwright a profit of	371	5	8½	To Barley pr. Schmidt for an insurance risk	200	0	0
By Interest Account for a Profit	1058	14	8	To Edw.Pheasant a bankrupt	61	8	0
By Smith Millner and Co for a Statement by ship the 'Humber' the balance of this acc..	41	9	8	To proper Expence for my Expenses	1332	9	0
By Wheat Account Profit thereon..	432	8	4	To Reimer Heirs write off	294	2	0
By Twist trade with F& T Dicken for one year's	2451	0	0	To Housekeeping for my Expenses in Housekp	294	2	0

profit to 30th June 1801							
By Underwriting Account with F W Plummer Profit	165	15	11	To Adventure in Wheat with F&T Dicken for my half share of loss	10	13	4
By Exchequer Bills for a Profit	88	12	11	To Speculation in Wheat for own Account - Loss	850	2	4
By E Eagle & Son for a statement			10	To Ale under G F Keist loss on 6½ casks ale	14	8	6
	7307	14	3¼[23]		2813	17	4

Journal of Benjamin Wilson 1802, Allied Breweries Records cited in Owen 1978: 218)

This divulges various balances posted from other accounts which have not survived although no overall net profit figure is calculated, which is not significant because profits and losses on different segments of the business are evident and arguably more informative than an aggregation of figures. In a similar fashion to many other early accounting records, it records a range of other non core business activities with joint ventures in cheese and twist (rope) sales, some banking and insurance activities typical of the early brewers producing interest along with losses arising from unsuccessful grain speculation which again may be symptomatic of the role of the accounts. The summary also includes non business expenses of the household and personal expenses which are also typical of the early modern accounting period. This again was not

[23] The profit side does no cast being overstated by a farthing and may be a misprint in the text..

unusual for a sole trader owner/manager where the focus was on a feudal rather than a collective accountability common in the partnerships of the metropolitan Trade. Owen also provides further financial evidence of Wilson's financial records, i.e. Baltic timber imports (for casks), tallow, and cotton imports prepared vertically and balanced by monthly totals (Owen 1978:214-216).

Owen similarly replicates vertical account recording shipments of ale to the Baltic prepared and broken down into the constituent expenses totalled as per customer pertaining to April 1795 and February 1799 (Owen 1978: 213). The surviving evidence indicates that profits were extracted on these various venues and ultimately posted to a summary though no early balance sheets have survived. Evidence consistent with Wilson's financial accounts being maintained on a DEB basis is that the annual brewing profits were posted to Wilson's 'Stock Account' since this was an early term applied to the stock of assets and liabilities held, i.e. a rudimentary balance sheet.

Figure 4.13

Summary of the Profits of Benjamin Wilson's (II) Brewery

1795-1802

Date Year Ending 30 April	Brewing Profits £ s d	Net Profit transferred Stock Account £ s d
1795	506 15 4	411 5 1½
1796	2762 3 0	3655 9 11½
1797	2944 7 1	3049 13 3½
1798	unavailable	unavailable
1799	3075 3 7¾	3135 4 8¼
1800	1439 1 0¼	2836 9 7¾
1801	3000 15 11¼	7602 18 2¾
1802	2636 19 11¾	3953 6 10

(Journal of Benjamin Wilson 1795-1802, Allied Breweries Records cited in Owen 1978: 217)

The Stock Account referred to is not the modern equivalent of inventory but is an archaic term for capital (Cannan, 1921). For example in the case of the Joint Stock Company, the East India Company its 1657 and 1661 charters provided for periodic revaluations of the company's stock whereby all the company's assets and liabilities were to be valued and allow any of the individual investors or adventurers, the mercantile capitalists to withdraw their capital (Winjum 1972: 228-229). The consequences of these decisions encouraged the company to

move to a more unifying system of accounts rather than separate individual venture accounts which led to the adoption of DEB from 1664 onwards (Winjum 1972: 220). Nonetheless the move to merge the early separate voyages or ventures of the joint stock had led to a change in terminology as early as 1614 whereby capital was preferred definition rather than stock (Bryer 2000a:347). Thus, Wilson was using an older accounting language to mean capital and thus the existence of capital indicating that he was using DEB.

Employment of DEB by the Wilson family is also evidenced through the accounts of the brewer John Walker Wilson the elder brother of Benjamin Wilson II and the eldest son of Benjamin Wilson I. Walker-Wilson had established a separate timber and brewing business in 1773 but sold out his share of the business in 1774 to his younger brothers. These records are less extensive and fragmentary but are more explicit in the use of the Italian bookkeeping terminology (see Figure 4.4 below). Although fragmentary the evidence suggests that DEB was being employed in Burton during the eighteenth century to calculate profit and supports the view that the provincial brewers had also embraced a capitalist mentality as reflected in Figure 4.4 using debit and credit columns. This is because the existence of the proprietor's capital account permitted the owner (the brewer) to calculate his capital and the increase or decrease arising from operations, which added a new dimension to record keeping – the concepts of income and capital (Winjum 1972:29), which in turn conceptualised capital[24] as financial rather than merely physical

[24] Capital derived from the Latin capitalis the substantive meaning of which was "head" or "chief", being the chief sum of money dealt with in a business (Cannan, 1921:469)

Figure 4.14

John Walker Wilson Brewer – Partial Ledger Account with J Broadley, Esq.

(Merchant of Hull) 1773-1774

Dr		£	s	d	Cr		£	s	d
1773					1773				
Dec 29	To a bill as pr. Bill Book	234	4	0	Dec. 15	Bt 10 Bales Petersburg Clean Hemp T. 193.0.19 at £24 .5s per ton.	234	4	4
1774					Dec. 20	By 6 Bales Cordelian Wt. 49.3.14 at 15/6	38	13	0
Jan.22	To Do	38	13	0					
		272	17	0			272	17	4
Feb.16	To 20 casks Ale: 675 gals at 16d.	45	0	0	1774 Jan 26	By Bill of Staves. 19.3..6 at 60s	59	8	0
	20 Casks at 10s ea.	10	0	0		Labourage		6	8
	Cartage		3	4	April 21	By Bill of Hd Crown Staves 9.1.12 at 46s	21	10	1
Mar. 30	To 10 casks ale: 340 gals at 16d	22	13	4		Labourage		3	0
	20 Casks at 10s e & cartage	5	1	8	April 25	By Bill of Brack pipes 5.0.0 at £3, Labourage 1s 8d	15	1	8
Dec 27	To Bls. Ale: 181 gals at 17d. 5Bls. 10s ea & cartage.	12	16	5		By ash pd. Jos.& A. Smith Freight of Do		8	4
		98	5	7			96	17	9
	To cash balancing this Acct.		12	2					
		98	17	9					

(Owen 1978: 222)

4.10. Early Modern: Co-ordination - Cost Accounting

By contrast little evidence exists of any cost or management accounting occurring either in the metropolitan or provincial breweries. The only indirect eighteenth century reference to malting and brewing lies in Robert Hamilton's *An Introduction to Merchandize* (1779), but only within the first five editions of this work (Mepham 1988:55). Hamilton's work is notable for extending beyond the techniques of DEB to consider various costing methodologies for manufacturers and farmers. Within this body of work he included a set of problems to test the skills of readers by asking them to consider designing suitable book-keeping systems for a bank, an insurance company, an insurance broker, a bleacher, a linen manufacturer and a brewer.

"A brewer purchases barley and convert into malt; he also occasionally purchases and sells malt; he carries on the different branches of strong ale, small beer and porter brewing; and desires a form of book-keeping that shall exhibit his expense and sales, his debts and credits, the quantities of malt obtained from barley, the quantities bought, fold or consumed, the quantities beer of different kinds obtained from malt, and compared with price of the barley, and a comparison of the different branches of his business" (Hamilton 1779: Part V, Chpt VII : 277).

The author unfortunately offered no solution to this accounting problem and his overall accounting legacy of ideas "seem to have had no influence on his contemporaries" (Mepham 1988: 68) and this view is supported from the examination of primary sources.

The brewers financial accounts provided data for ad-hoc and irregular post production computations on barrelage cost. Sir Benjamin Truman attempted such an exercise from these sources and the gyle (production) books in 1770, 1760 and 1775. These crude cost calculations allowed him to appreciate albeit imprecisely the benefits of economies of scale and the impacts of volatile raw material price fluctuations despite increased efficiency and outputs (Mathias 1959: 472), which allowed him to project gross profits (Mathias 1959: 39). However from the surviving evidence this appears exceptional and there is no brewing cost exercise comparable to Wedgwood's famous vase costing experiment (McKendrick, 1970). Whitbread's archive contains no surviving examples of even these ad-hoc attempts of product costing. Production books do exist, i.e. the Porter Brewing Book No1-22, July to August 1804 (LMA 4453/10/09), the Ale Brewing Book 1834 to 1837 (LMA453/10/001) and 1837 to 1838 (LMA453/10/002) and the Fermentation Book 1834 to 1837 (LMA453/10/008) but these are technical narratives without any attempts at financial cost calculation.

Mathias was also extravagant in considering the cost accounting implications from the introduction of steam power by concluding that its introduction permitted economies of scale to be computed after plant installation because these "economies were obvious and easily calculable by the clerks, the direct costs were less, and the chance of uninterrupted work was to be welcomed by the brewer" (Mathias 1959: 81). Again these calculations were permissible post production and Delafield, senior clerk at Whitbread in 1786 noted such savings

in animal horsepower but the manner of his disclosures indicates some agreeable surprise at the economies of scale achieved, which a reasonable interpretation implies that no detailed costing had been entered into prior to or after installation (Ritchie 1992: 28). Reddington's hydrometer and other scientific instruments allegedly offered the opportunity for costing production by raw material input and Richardson's tables first published in 1784. This, it is suggested, provided a means to measure raw material mixes to produce greater yields which in turn could produce benefits in costing quality when raw material prices were high and permit the evaluation of alternatives. Mathias suggests without any substantive evidence that the brewer could entertain such calculations prior to the results being reported in the counting house but evidence of this application are missing from his arguments. Consequently it appears there was not even any embryonic form of codified cost accounting within even the most advanced porter breweries and in the leading brewery of the era Whitbread's.

4.11 Conclusion

The phenomenon of industrial brewing and nascent industrial capitalism occurred in the brewing industry prior to the traditional era of the first Industrial Revolution, but it was a London phenomenon without parallel in provincial Great Britain with only minor competition arising from the then niche Burton Trade.

We have seen that the capital intensive production methods based on traditional processes created the successful metropolitan porter breweries which benefited from economies of scale and a concentrated urban market, which mitigated the problems of product distribution in the pre-railway era. The efficient production disciplines became potentially more scientific with the availability of scientific

texts and instruments despite resistance and an adherence to an earlier code that viewed brewing as a mysterious art form transmitted orally between generations.

The management process remained within a close knit family and extended family partnerships based on a practical apprenticeship that did not rely on a formal education process. However the growth and size of the porter breweries had resulted in problems of co-ordination and administration beyond the capabilities of the traditional owner manager so that a small cadre of professional management élite in the form of senior clerks developed who undertook functional responsibilities within the business. These managers or senior clerks became highly valued experts in their field and could as demonstrated at Whitbread and at Barclay-Perkins rise to partnership levels but their individual reputations was confined to the narrow London industry and usually within one firm.

The size of the porter breweries and the high volume of transactions and the tax regime required an expansion of the counting houses and employment of clerical labour overseen by a senior clerk. The evidence indicates but not conclusively that the dominant accounting function was financial accounting based on the Italian mercantile bookkeeping system. The emphasis was on stewardship and the brewery partnership frameworks increasingly needed to supply the large amounts of capital finance which was also emerging amongst the Burton concerns. Such accounting systems could be highly complex and sophisticated in London but were not employed in a deliberate manner as a management discipline. There is only cursory and ad-hoc evidence that crude attempts at

internalising accounting to calculate unit costs and project forward planning was attempted so this aspect of accounting is overwhelmingly absent. Therefore Pollard (1965: 248) is essentially correct in the context of the brewing industry by claiming that the practice of using management accounts as direct aids to management was not achieved.

Chapter 5 - The Modern 1830-1914

5.1 Introduction and Overview

The second era of research focuses on a period that witnessed the growth of provincial breweries which rivalled the primacy of the London industry. The major centre of rivalry was located in Staffordshire at Burton on Trent with the dominance of the large firms of Bass, Allsopp and Worthington. Therefore the research has focused geographically on this location and extended to include medium sized and smaller Staffordshire breweries. It is also an era that has benefited the research with the availability of considerably more data rich information contained in various archival sources.

The passage of the Beer Act in 1830 was an attempt to free the trade in beer by opening up the opportunities for brewing to any householder who paid annual rates of £20 and above and a £2 guineas excise licence (Gourvish and Wilson 1994:3). The legislation was designed to overcome the corrupt and arbitrary powers of local magistrates who had increasingly restricted licences to retail outlets that were progressively more under the control of brewers as a consequence of building up their tied estate mainly in London. The Act was reckoned to be "revolutionary in its immediate social consequences than any other of the reform age" (Mandler 1990: 83). The social imperatives of the Act were designed to suppress a buoyant spirits trades, reduce living costs in a period of widespread social unrest by reducing the price of beer despite the opposition of the London brewers. The brewers were placated by abolishing the beer duty of ten shillings a barrel and created a new type of public house. Initially the Act

appeared to be successful since by 1838 45,417 new licences had been granted. However the strategic consequences were that the Common Brewers were able to further realise their economies of scale by reducing the price of their product below that of the small scale brewer publicans who could not compete financially and chose instead to become retailers of the larger breweries by 1850 (Richmond and Turton 1989: 3). Thus, economic power became further concentrated amongst the Common Brewers.

The oligopoly of the large London brewers was also challenged with the rise of the provincial rivals, which benefited from the development of the railways which provided an efficient transport and distribution infrastructure. This is not to deny that Burton and to a lesser extent other provincial breweries had previously exported beer both abroad and to London. Burton had a lucrative Baltic Trade from 1740 until 1792 when widespread warfare in Europe denied the trade which revived after 1815 but was finally destroyed in 1822 by Russia closing access to the markets. It was also unique in its trading conditions since it was mainly based on barter: casked beer had been exported to the Baltic in spring from Hull at a comparatively cheap rate in merchant ships that would have otherwise been empty, which had then returned with Baltic timber, and unusually the casks were never returned and so were written off as the less expensive option. The demise of the Baltic Trade in turn stimulated the export of India Pale Ale to the sub-continent though the volume remained comparatively small in comparison to the expanding domestic market sales (See Figure 5.1).

Figure 5.1

Exports of Beer to India 1832-1850

Year	Bass (Burton) Barrels	Wm Hodgson (London) Barrels	Allsopp (Burton) Barrels	Total from All Sources Barrels
1832-1833	5,193	3363	1,404	12,013
1833-1834	2,.901	3075	2,514	11,064
1834-1835	3,518	1,604	2,861	9,614
1835-1836	3,264	450	2,136	6,779
1836-1837	6,407	2,058	3,598	15,885
1837-1838	7,323	1420	3,738	19,239
1838-1839	5680	1,343	3,375	14,469
1839-1840	6663	737	3,924	10,503
1840-1841	7961	1410	5,798	21,141
1841-1842	5,345	1,184	6,707	18,354
1842-1843	3,777	8	5,762	14,481
1843-1844	5,229		6582	16,638
1844-1845	6,408		8,412	26,768
1845-1846	7,440		7,235	27,050
1846-1847	6,485		3,806	11,184
1847-1848	6,305		6,309	13,347
1848-1849	6,647		7,674	16,587
1849-1850	5220		4,610	11,499

(Bushman[25] 1853 – Burton and its Bitter Beer cited in Staffs CC 1977a: 22)

The provincial London trade had been of limited value and volume since it was reliant mainly on slow and expensive canal or sea transport from Hull in the pre-railway era these additional costs had been passed on to the consumer making it more a expensive alternative to the local London products. This economic restriction was removed when Burton became linked by railway the capital in 1839.

[25] Bushman's account is the earliest and least well known about the Burton breweries. It arose as a result of the accusation in 1852 by the French chemist Payer that Burton bitter beer achieved its taste through the addition of strychnine. These charges were repeated in the British press. The Burton brewers through chemical analysis proved that the allegations were false. Bushman who had initially believed the stories was convinced otherwise by Allsopp who invited to him visit and inspect the Allsopp Burton brewery and this invitation extended to the other breweries. Bushman recorded his visit in his book that was published the following year.

"In 1839 the west branch of the Midland Railway, which connects Burton with Derby, Birmingham, and London was opened, and afforded such increased facilities of communication and caused so large a reduction in the expense of carriage, the attention of all concerned in the staple trade of Burton became directed to a further development of the system.... The Oxford Canal Company scorned all idea of a reduction in charges in the face of railway opposition of which they refused to recognise the practicability ... and preferred to carrying a small amount of goods at a high price to an increased amount at lower prices. The Burton brewers then paid sixty shillings per ton by canal which occupied a week in transit: they now pay fifteen shillings by rail and their produce reaches London or Liverpool, without risk of waste or robbery in twelve hours"

(Bushman 1853 – Burton and its Bitter Beer cited in Staffs CC 1977a: 37-38)

The period also marked a change in consumer tastes which particularly benefited the Burton brewers who manufactured a much lighter clear beer from local hard water supplies that rapidly replaced the demand for the darker and murky porter. The additional stimulus for the provincial brewers arose from the large population increases that created large industrial urban concentrations and boosted consumer demand.

Figure 5.2

Per Capita Consumption of Beer in Gallons for the United Kingdom and Wales
Annual Averages

Period	United Kingdom (including Ireland)	England and Wales
1880-1804		33.9
1805-1809		32.8
1810-1814		30.2
1815-1819		28.0
1820-1824		29.0
1825-1829		28.4
1830-1834	21.7	33.8
1835-1839	22.9	35.4
1840-1844	19.5	30.5
1845-1849	19.4	29.2
1850-1854	21.1	29.5
1855-1859	22.0	29.3
1860-1864	24.7	31.6
1865-1869	28.8	35.9
1870-1874	31.1	38.2
1875-1879	33.2	40.5
1880-1884	29.1	33.6
1885-1889	28.3	32.5
1890-1894	29.7	33.4
1895-1899	31.2	34.5
1900-1904	30.2	34.3
1905-1909	27.3	30.9
1910-1913	26.9	29.4

(Wilson, *Alcohol and Nation,* Mitchell and Deane, *Abstract of British Historical Statistics* cited in Gourvish and Wilson.1994: 30)

However, improvement of transport facilities in this second Industrial Revolution period effectively removed the prior constraints of the brewer being located directly near his market, which had previously benefited London with its large conurbation. Without the railways the provincial brewers would have been limited to their geographically immediate markets; thus as the economic historian

Rostow has identified the railways provided a powerful single initiator of economic take-off by reducing transport costs, absorbed new areas and products into the market and generated new export sectors (Rostow, 1956, and 1961) which although he did not specifically identify with the brewing industry the latter certainly benefited from.

5.2 The Modern Brewing Industry 1830-1914: Spatial

The large London breweries as already established were designed for efficiency of production that was based on an established design that increased in size to realise economies of scale. The provincial breweries similarly expanded in a catch up process with the metropolitan breweries that surpassed them, and in Burton it was noted that,

"The old breweries of forty or even twenty years ago, were comparatively speaking insignificant and inconvenient buildings … they are now generally, although some still retain all the older characteristics, independent erections: solid bold capacious buildings, neither deficient nor conspicuous in architectural detail, but well and studiously arranged, covering an enormous area of ground, and continuously and systematically by chains of railways[26] – the goods station with the malting offices, and these with breweries, the cooperage, the stores, and yards" (Bushman 1853 – Burton and its Bitter Beer cited in Staffs CC 1977b: 21)

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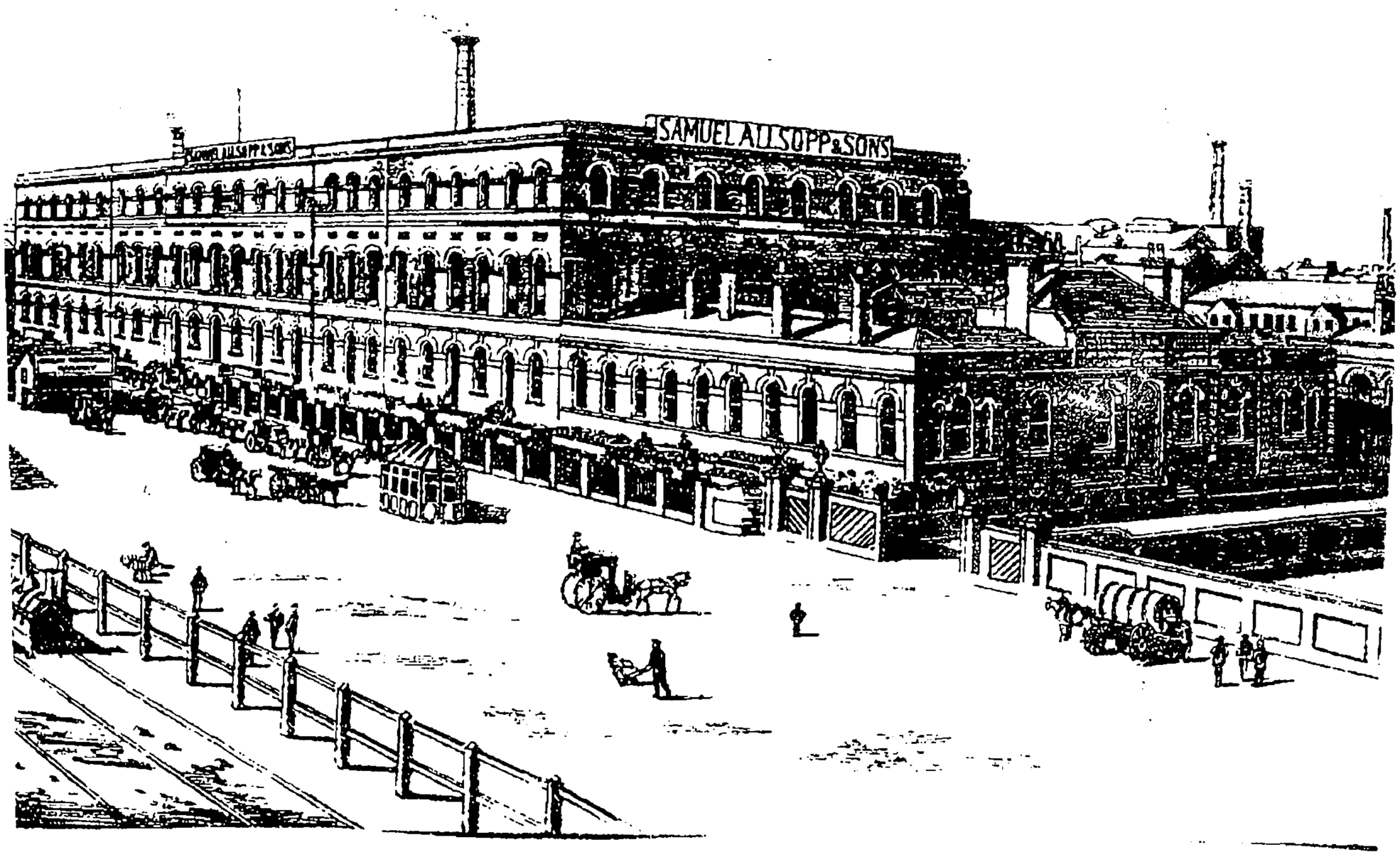
[26] The brewery transport infrastructure extended to include 32,945 yards (almost 19 miles) of private railway track that went directly into the brewery yards. The power to carry them across public streets was granted by a parliamentary act of 1860 which it was remarked provided considerable advantage and relieved the streets of seriously obstructive traffic (William Molyneux 1869 – Burton on Trent, cited in Staffs CC 1977b: 1)

Bass's site comprised three breweries, thirty-nine malt houses covered 145 acres and the widely produced prints of Bass's and Allsopp's breweries were icons of the new industrial age :they were the true images of Victorian growth rather than those symbols of the London brewing world, gigantic vats and dray horses. (Gourvish and Wilson 1994: 82).

Illustration 3 – Allsopp's New Brewery Burton Upon Trent 1889



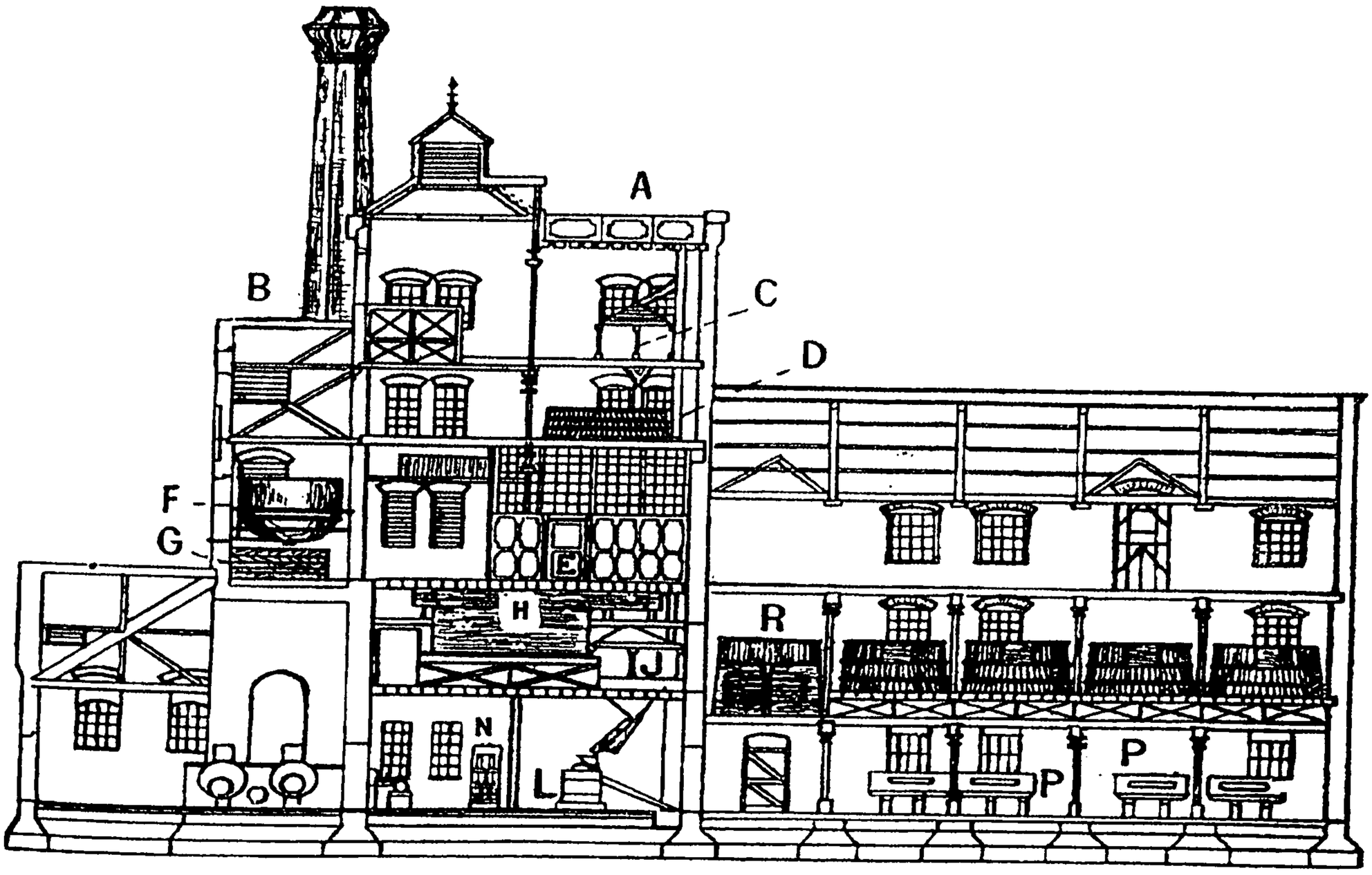
(Barnard, 1889)

This efficiency of functional site use extended to the newer smaller breweries such as the Lichfield Brewery and Montgomery's later Bent's 'New Brewery' at Stone, Staffordshire. The Lichfield brewery site was described as being "arranged on what appears a very economic and advantageous plan",

(Staffordshire Newsletter, 12th May 1877). Both breweries were constructed on the 'tower brewer principle' deliberately located near to the railway,

"The object of having so many floors is the application of the tower process of brewing, which is now rapidly coming in to favour both in this country and Germany. By this method of brewing a great economy of ground is possible, since, instead of a series of buildings only one or two stories high and spread over a large extent, the whole of the operations are performed in structure from the putting of the malt into the mill to the racking of the finished product in the barrel". (Staffordshire Advertiser 12th October 1899, William Salt Library [WSL])

Illustration 4 – A Tower Brewery 1905



(Baker 1905: 69)

Although the technological development side of the production processes advanced with the adoption of more effective plant and machinery the management of the industry has been traditionally categorised by a strong family orientation and a cosy amateur style reflected in a 'club atmosphere' in the boardroom that was characteristic of most if not all breweries in the second half the nineteenth century and first half of the twentieth century (Gourvish and Wilson 1994: 373). The identification of the development of recognisable modern management hierarchies in the trade has proved problematical and little direct evidence has been uncovered during the research. Even the incidence of widespread brewery incorporation and adoption of limited liability from 1886 onwards in order to finance expansion failed to make any substantive changes to a private partnership style of personal management. It has been stated that

"As to the management structure of private partnerships, the active partners tend to take responsibility for their own particular specialist departments, brewing, public house management, accounting, distribution. Generally, each department was organised by one or more partners together with a head of department (normally a specialist in the field) such as such as Head Brewer, Head Clerk, or Head of Malt and Maltings, etc. So, on top of the organisation we have the partners as a body. Second, the partners were individual controllers of departments. Third, specially recruited managers headed each department, and fourth there were the under managers for all departments" (Glamann 1981: 2).

The internal organisation was thus related to the significant indivisibility of factors relating to the head brewer and his immediate staff rather than any

structural or technological considerations reflected by a pronounced hierarchical structure where their repository of brewing expertise remained the most significant (Vaizey 1960: 91-92). The smaller brewers could adhere to such a traditional form of personal management with their small workforces but the exception it has been claimed was to be found at Burton, notably Bass and Worthington which had recruited sales managers and chemists thus creating embryonic managerial hierarchies although this was acknowledged as being true of some of the London brewers (Chandler 1990: 267). The 1868 muster role of the Burton on Trent Rifle Volunteers provides a rare and limited glimpse of some of these individual actors,

Figure 5.3

Muster Roll of the Staffordshire Rifle Volunteers No 8 Company (Burton on Trent) 1868

Name	Occupation	Employer
Capt. M.A. Bass Esq.	Merchant Brewer	Bass & Co
Lieut. J. Anderson	Manager	Bass & Co
Q/ Mast Mr. C. J. Goer	Manager Brewer	Bass & Co
Q/ Mast/ Sergt. Mr. G Robinson.	Brewers Clerk	Bass & Co
Sergt Hanson	Brewers Clerk	Bass & Co
Sergt W Boden	Brewers Clerk	Bass & Co
Sergt T Bates	Brewers Clerk	Bass & Co
Sergt T Adams	Cooper	Bass & Co
Corp S Cox	Brewers Clerk	Bass & Co
Corp A Dick	Brewers Clerk	Bass & Co
Lance/Corp F W Richbell	Brewers Clerk	Bass & Co
Pvt. H T Brown	Manager	Worthington's
Pvt E Wakelin	Brewers Clerk	Bass & Co
Pvt J Whadcoat	Brewers Clerk	Bass & Co
Pvt. M Harrison	Brewers Clerk	Bass & Co

(History of the North Staffordshire Regiment Vol. 2, Ref 173, Staffordshire Regiment Museum, [SRM]).

Although several writers claim that increased size in some cases presented problems of exercising direct control, such as Bass, Guinness and Allsopp, the partners became reliant on professional managers as secretaries, brewery managers etc... (Glamann 1981: 2) and the most prominent example of this type was Charles Howard Tripp (Appendix 9 - Biographies). However as yet no historian of the trade has argued that that the change in status of brewing partnerships substantially altered either their ownership or management as the old brewing dynasties retained their control for some time to come (Richmond and Turton 1989: 11).

Figure 5.4

The Family Ownership of Brewing Firms 1952

Company	Percentage of ordinary share capital owned by family
Bass	51.7
Arthur Guinness	31.7
Walker-Cain	24.0
Watney	15.4
Mitchell and Butler	14.4
Ind Coope and Allsopp	3.0

(Vaizey 1960: 61)

In the case of Joules and Sons Ltd a medium sized company who figures prominently in this research, the firm had been purchased by the Harding and Parrington families of Liverpool brewers in 1873 and later incorporated in 1898, which did not significantly alter the immediate and wider family ownership (Figure 5.5), "the Share Capital is all held by the former partners and members

of their families" (*Brewery Manual 1938-1939*)[27] and continued to be so until it was taken over by Bass Charrington in 1968.

Figure 5.5

The Family Ownership of John Joule and Sons (Stone) Ltd 1925

Ordinary Shareholder	Shareholding
Executors of John Harding	100
Mrs E W Parrington	100
Mr Noel Parrington	92
Mr E Taylor	10
Mrs B M Robinson and Mr K Poulson	40
Mrs E A Hardy and Mr D N Parrington	100
Mr H T Rogers	10
Mrs B M Robinson and two others	55
Mrs B M Robinson	1
Mrs M T Harding	11
Mrs E A Harding and Mr D Parrington	11
Mr John Noel Parrington	40
Mrs U M Parrington	20
Dr H A Robinson	10
Total	600

(Agendas and Reports, John Joule and Sons Ltd, D1502/2/3, SRO)

This retention of strong family involvement was not unusual and such families

"showed an astonishingly sustained ability to produce not only sons, but in each generation also one or two sons who were able businessmen and brewers. The names and the families of the major breweries operating in London were still there two hundred years later in the 1950's" (Glamann 1981: 1).

[27] Duncan's Manual of British and Foreign Brewery Companies were first published in 1889 and annually thereafter. In was renamed the Brewery Manual in 1902. It included information of interest to the brewery investor and contained all British and some foreign brewery companies. It originally provided balance sheets of such companies that issued them and furnished complete information on all new brewery issues. (see Illustration 5)

Even so it has proved impossible to identify any substantive evidence of the formal management hierarchies which Chandler accords as being evident of modern managerial capitalism in any of the companies investigated.

5.3 The Modern Brewing Industry 1830-1914: Activities

The substantive change that occurred in later part of nineteenth century brewing was the scientific revolution that captured the knowledge of explaining and understanding the biochemistry of fermentation. This introduced a new specialist professional activity into the brewing business, that of the chemist. The vector for a move towards scientific brewing had arisen out of the work of the French chemist Louis Pasteur's *Études sur la Biére* (1876) and his earlier research on wine which had demonstrated that yeast was a living organism that was responsible for fermentation and how this could be compromised by infection. Pasteur's research was complimented by that of the Dane, E.C. Hansen at the Carlsberg Brewery, Copenhagen whose work *Practical Studies in Fermentation* (1896), though first published in German in 1884 which emphasised the necessity for yeast analysis both for alcoholic qualities, and flavours (Vaizey 1961, and Wilson and Gourvish, 1998).

The economic implication for scientific brewers was that careful chemical analysis or zymotechnology could substantially increase yields through introducing rational methods of quality control for raw material input and the finished product. It was only the larger breweries such as Guinness and those at Burton that could afford to employ teams of chemists and equip chemistry

laboratories. Barnard's visit to Allsopp's laboratory is recorded in his *Noted Breweries of Great Britain and Ireland* (1889),

"Dr Greiss[28] is the chief analytical chemist and here he carries out his investigations assisted by Dr Harrow…The building is arranged in several departments.. the specimen room, second the philosophical apparatus room, third the experiment room. The doctor's duties are by no means light, and his position is a very responsible one. Samples of barley and more particularly malt are frequently tested to see if they have been properly manufactured. Yeast or barm is tested almost daily subjected to microscopical examination to ascertain its purity. Last but not least a sample of every brew is submitted to Dr Greiss for examination, and is more or less scientifically tested" (Staffs CC 1977b: 38).

However, it should be emphasised that 'scientific brewing' was the exception and that it was confined to the large scale industrial brewers. These advanced techniques remained absent from the numerous middle sized and smaller breweries which was readily recognised by contemporaries,

"A man is not taught the scientific part of the subject in breweries he is only taught the practical part. Out of 30,000 licensed common brewers in England and Wales, I think there are only a few where there are chemical laboratories… and there is scarcely a laboratory anywhere else in England except in Burton"

(Minutes of the Royal Commission on Scientific Instruction, Evidence of Professor Graham 1872 cited in Staffs CC 1977a: 42-43)

[28] The surnames of the early brewing scientists were mainly German. Anyone with the title "Dr" at this time in Britain who was not a medical doctor had almost certainly studied in Germany

The smaller breweries continued to rely on traditional and trusted techniques although they could avail themselves if required of consulting brewing chemists such as the famous founder of the Institute of Brewing, Dr E. R. Morwitz. Outside of the elite group of national brewers the evidence indicates that brewing was still considered to be an art as Nevile observed,

"Today (1950's) most breweries have their own well equipped laboratories as a matter of course: but at that time the scientists had not come into their own and many old stagers still relied on tradition and craftsmanship, and often produced uncommonly good beer" (Nevile 1959: 39).

5.4: The Modern Brewing Industry 1830-1914: Segments

The framework for training in brewery management appears to have changed little from Whitbread's day of expensive indenture to a master brewer and practical training to gain experience within the various functional areas of the business. Sir Sidney Nevile in his autobiography recounts that he was indentured in 1888 to E Robin and Son in Hove, a small brewery, for an annual premium of £100. Nevile's comments illuminate the nature of management training in this era,

"... it was agreed that I would be taught the 'mystery and art of brewing'...In those days a pupillage for two or three years, usually followed by a few month's work in a consulting chemist's laboratory, was considered a sufficient training to secure a post as an assistant brewer" (Nevile 1959:23).

Both Reinarz's (2001) recent work and Baker (1905) has confirmed this system of management apprenticeship prior to 1914 with the former's investigation of the training regime of Flower's and Sons, a medium sized provincial brewery located in Stratford on Avon. Flower's became renowned as a reputable training organisation for prospective brewers attracting not only new applicants but those seconded from other breweries (e.g. the son of Robert Courage in 1887, the son of Spencer-Charrington in 1891, Charles Tetley's son in 1899) who were willing to pay indentures ranging from £400 that gradually declined to £200-£100 by 1913 for a pupillage that lasted two years. Written indentures by this stage were unusual being settled rather by an oral agreement, which explains the scarcity of surviving evidence. Training for brewery management was not treated as an excuse for ritual servitude but as an opportunity to acquire practical skills in both the brewery and its offices. Charles Flower assured the parent of such a pupil that they would be instructed in, "Every branch of our business in all its details,, including brewing, malting, cooperage, sales and bookkeeping", (Reinarz's 2001: 42). Baker (1905: 140) stated that the brewer was to be a man of many parts, knowledgeable in engineering, chemistry and biology and most importantly of all as a judge and master of men but although there was an explicit assumption of calculation attached to the brewer's discipline this did not extend to include any accounting abilities. This basic knowledge acquired in training was to be supplemented post apprenticeship by entry into an educational establishment to obtain further knowledge about chemistry, engineering, biology and economical science but the latter subject is not elaborated upon. Reinarz (2001: 44) mentions the availability from 1880 onwards of the City and Guilds Institute of London as

a reputable qualification for those who chose to take it but both the uptake and pass rates were low and the syllabus did not include bookkeeping. Nevile though as a brewery management apprentice was instructed in bookkeeping though he recorded it as an unhappy experience, "I learned something of the working of each department, though I was not uniformly successful. In particular I loathed bookkeeping, for which I had no aptitude" (Nevile 1959: 25). This practice of multi-discipline managerial skills though was not unusual for the period and was of longstanding practice, Whitbread had engaged in bookkeeping and in the nineteenth century the silk and cotton owners had maintained their own accounts with complete and true accounts therein (Talbot 2000a: 36).

The scientific revolution in brewing and its impact on managerial training also remained ambiguous. Flower's had briefly made arrangements for scientific study in the 1870's which then fizzled out into merely recommending as many other brewers did that students should attend appropriate chemistry classes post apprenticeship such as those offered at the Sir John Cass Technical College established by the Institute of Brewers or the Finsbury Technical College. Nevile recounts that he took up such advice and regularly visited Heron's laboratory in the City learning about the new scientific methods of control (Nevile 1959: 39). The other access to instruction was available from those special classes offered by consulting chemists such as Morwitz, Gordon Salamon or Messrs Gillman and Spencer and these appear to have prospered so much so that Morwitz built a model brewery where his students could conduct experimental observations. Although these were located in London there were similar opportunities in the

provinces, in Birmingham with Frank Faulkener and R. D. Loveless who worked closely with the Midland brewers (Reinarz's 2001: 42-43)

The route to brewery management required no recognisably formal examinations but the brewers collectively pushed to create a more formal educational structure for their managerial aspirants. This became realised with the establishment of the School of Malting and Brewing at Birmingham University (1900) funded by the Birmingham Brewers Association and the creation of another establishment later at the Watt-Institution and School of Arts, Edinburgh (1903) whereby formal, written teachable and examinable knowledge was introduced in recognised institutions. These developments were not without criticism and the Institute of Brewing Midlands branch vice-president, C. H. Tripp author of *Brewery Management* (1892) resigned in protest claiming that it would flood the trade with brewers. Another avenue of training arose from the formation of the Laboratory Club which in 1890 was renamed the Institute of Brewing; responsible for brewing research and establishing professional standards but this did not result in any codified training structure and no formal examination syllabus was created until 1925 which excluded accounting (Bird 1955: pvii). However the anticipated expansion of scientifically trained managerial candidates was slow to be realised and unapparent in most Midland breweries as traditionalist hostility became manifest: Flower's head brewers opinion reflected a conservative hostility in that they did not believe brewers could be taught solely in the laboratory (Reinarz's 2001: 43-42).

This period is also notable for the publication of a unique text, *Brewery Management* (1892) by C. H. Tripp who was an experienced brewery manager. The text was designed to fulfil the practical needs and requirements. Tripp's wide ranging text describes the general duties of a manager, "In a comparatively small brewery the manager would find time to reply to correspondence and in the keeping of one or two books …in larger breweries a clerk who has mastered shorthand and the typewriter is of the greatest assistance" (Tripp 1892: 28). Tripp outlined the managerial duties as dealing with letters, keeping an eye on the office and counting room, interviewing prospective tenants, dealing with tenants and solicitors, keeping an eye on repairs and maintenance cost, selecting raw materials and looking out for additional business. He also advised to have at hand copies of "Stone's Justice Manual and Patterson's Licensing Laws and having a reliable deputy chief in the office or cashier", (Tripp 1892: 28-29).

The emphasis thus remained on a practical vocational education supplemented ideally by some scientific knowledge even following the widespread incorporations of the latter nineteenth century. This as Glamann claimed,

"Literature often describes the change-over from family ownership to corporate management as a development from slightly amateurish management methods to modern professionalism of salaried and well educated managers. This picture has absolutely no validity as regards the founders of the modern brewing industry. These people were not only trained empirically at various breweries but did often receive additional theoretical education, especially in the natural sciences. Some of them were in this respect self-educated people which, however, did not reduce their professional standard", (Glamann 1981: 3)

5.5: The Modern Brewing Industry 1830-1914: Co-ordination - Financial Accounting

The necessity for the maintenance of detailed records, particularly accounting records has already been alluded to since brewing operated within a tightly controlled tax regime. This had encouraged a highly bureaucratic administrative system to develop especially in the larger breweries. The bookkeeping discipline as demonstrated was part of the instruction that a brewery management apprentice would receive albeit in-house. Codified systems of brewery accounting instruction and specific brewery accounting texts are conspicuous by their absence,

"They considered accounting, profitability and management to be discrete and, private matters, taught during pupillage and learnt only by practice. Directives in this area would have been considered presumptuous". (Gourvish and Wilson 1994: 180)

Whilst this statement is substantively accurate it ignores and therefore excludes those few texts that were available. Most of the evidence of accounting practice therefore has had to be unearthed from surviving primary sources to illuminate how the accounts were constructed and applied in practice. This has proved challenging given the surviving fragmentary evidence, the use of imperial measurements in both currency and production quantities and because the brewery industry remained sensitive to disclosing any financial information, possibly as it exposed it to increasing and sustained criticisms from the powerful

and vociferous Temperance lobby, "The brewers certainly assumed that any outsider seeking to investigate their past was looking for ammunition. They kept their records to themselves, and well they might", (Mathias 1965: 4). This has consequently conditioned the construction of this section of the research agenda now presented here: accordingly the accounting content will be considered in the following order comprising brewery accounting texts and literature, financial accounting practice, cost accounting and the 'statistical accounting ' practice which was operated by Bass and finally the role of professional accountants in the Trade. A chapter will be also devoted to the agricultural arm of the Trade, malting, to debate the arguments of the transference of agricultural accounting techniques to the brewery.

Solomon (1968: 16) references the earliest specific text, *Amsdon's Guide to Brewers' Bookkeeping* (1881) by one Edward Amsdon described as a 'brewer's accountant' and there is also Messrs Hoskins and Son, described in their advertisement as 'Brewery Valuers, Accountants' who invited applications for copies of 'Hoskins Improved System of bookkeeping for brewers' (*Brewing Room Diary* 1892) both of which have so far proved untraceable. The only existing major text is Tripp's (1892) *Brewery Management,* which is not entirely devoted to bookkeeping matters, but nonetheless contains extensive coverage of financial accounting procedures. Indeed Tripp's describes a complex accounting framework consisting of numerous individual accounts, ledgers and sundry journals that exemplify the later claims of Sir Edgar Saunders, the first General Manager of the LCCB/SMS who referred to the highly bureaucratic nature of brewery accountancy (Section 7.4). The objectives and chief aims of any

efficient brewery bookkeeping system was held to comprise, simplicity and economy of labour, accuracy, the easy detection of mistakes or dishonesty and informative classification with the latter being designed to supply material for the purposes of comparison (De Peyer 1916: 20). There appears to have been a common set of accounting procedures which operated two main financial accounts, one that aggregated brewery manufacturing costs to derive gross profit and another that aggregated other expenses to derive a net profit. Within this common accounting framework some variation in the completion and use of the accounts was permissible which could facilitate the monitoring of non-financial output as Tripp recounted about the work of the Ledger Department,

"Now we obtain from the cellar books the name of the customer and the amount and quality of the beer which he has been supplied and this is summarised in the day book. There are many brewers who make their calculations or keep them as a record in barrels, whilst others there are others who work by the gallon and by having a tabulated day-book showing the quality and quantity of each kind of beer sold during the year, a register is kept of every existing detail… and as each month comes to an end it is as excellent ploy to add up the number of gallons (or barrels) of each quality sold and the prices at which they were invoiced, to ascertain the number of quarters of grain sold, their average price and the sum realised: to find also the number of dozens of bottled beer and stout delivered, as well as aerated waters an their value, also the amount realised for sundries, and to carry such totals month by month to the end of the day book where a level of record of the progress is made" (Tripp 1892: 33)

The main financial account described by Tripp was the annual 'Brewing Account' or manufacturing account.

Figure 5.6

Brewery Manufacturing Account for the Year Ending September 30, 1891

	qrs	qrs	£ s d	£ s d		Barrels	£ s d	£ s d
To Malt A/c					By Beer Sales	30330	62934.0.0	
Stock Oct 1, 1890	151		302.0.0		Stock Sept 30 1891 less 30% stock written off	3624	6162.0.0	
Malt delivered from brewery	5800		11600.0.0		Beer used for bottling	261 34215	560.0.0	69656.0.0
Malt Purchased	442	6393	968.0.0		Less			
			12870.0.0		Stock Sept 30 1890	3044	6010.0.0	
Less stock Sept 30 1891		120	240.0.0	12630.0.0	Returns	370	740.0.0	
		6273			Beer Purchased	Nil 3414		6750.0.0
	cwt				Beer 'make' for the year	30801.0.0		62906.0.0
To Sugar Used					Barrels racked as per production	30869.0.0		
Stock Oct 1 1890	94		67.0.0		Deficiency for the year	68		
Purchased	2448		1805.0.0					
Less Stock Sept 30 1891	59 2483	1241	40.0.0	1832.0.0	By Grains sold		803.0.0	803.0.0
		7514		14462.0.0	By Yeast sales		165.0.0	165.0.0
Total qrts used as per produce book		7518			By Sundry sales		103.0.0	103.0.0
Deficiency		4						
To Hop A/C	cwt							
Stock Oct 1 1890	250		1223.0.0					
Purchased	1190		5100.0.0					
Less stock	956		3560.0.0	2763.0.0				

Sept 30 1891	484							
NB-Used as per prod'n book	486							
Deficiency	2							
To Beer Duty				9200.0.0				
To Finings yeast etc..				320.0.0				
To discounts and allowances				6290.0.0				
				33035.0.0				
To Gross Profit				30942.0.0				
				£63977.0.0				£63977.0.0

Section Showing Gross Profit Per Cent	£
Total Sales, Beer and Grains	63,709 gross value
Materials and Duty	26,525 gross cost[29]
	£37,184 gross profit =58¼%

(Tripp 1892: 230)

This account has been reproduced in detail because it is illustrative of best practice and because such an account is to be widely found employed in the Trade. Gourvish and Wilson replicate such a brewing account[30] for Lacon and Sons in 1891 whereby one of the brewery partners calculated percentage on sales and a gross profit percentage and these figures were added later.

[29] There is an arithmetical error in Tripp's gross profit calculation: materials and duty amount to £24,425

[30] The original accounting content and research of Gourvish and Wilson's text was reviewed by the distinguished accounting historian Professor Christopher Napier of Southampton University.

Figure 5.7

Lacon and Sons[31] Manufacturing Account

Year ending 30th September 1891

Brewing Costs	Barrels	£	% on sales	Sales	Barrels	£
Stock at 30.0.1890	2,703	3,251	-	Freehouses		
Malt (29,432 qtrs)		50,286	31.8	Tied Houses	35,131	
Hops (2.146 cwt)		13,086	8.28	Table Beer		
Isinglass (45 cwt)	113,513	804	0.5	London	76,993	
Sugar (1.056cwt)		1,034	0.65		112,214	154,821
Sundries		780	0.49	Grains		3,007
London stout and porter	441	924	0.58	Yeast		107
Brewhouse wages		6,083	3.85	Stock at 30.09.1891	3,385	4,539
Brewhouse coals		2,005	1.26	Waste	1,149	
Excise Duties		38,165	24.16			
Waste, returns and allowances		2,172	1.37			
Gross Profit		43,164	27.61			
	116,658	£162,474	100.55		116,658	£162,474

(Gourvish and Wilson 1994: 181)

[31] The Falcon Church Plain brewery was founded in Great Yarmouth, Norfolk in 1640 and was acquired the Lacon's in 1760. It was incorporated in 1896 with 204 tied houses. A public company was formed in 1952 and was acquired by Whitbread in December 1965 with 354 public houses. The brewery was closed and demolished in 1968 (Barber 2005: 102).

This type of cost analysis was an annual practice at Lacon and Sons whereas it was performed monthly at the Tadcaster Tower Brewery[32] (Gourvish and Wilson 1994: 181) although no examples are offered.

Similar types of accounts are to be discovered at Bass and Worthington, The Walsall Highgate Brewery (Acc No 2/1-7) and T Hoskins Ltd, Leicester (Brewery History Society [BHS] Archive 6/4/H8) and continued to be employed well after the end of the Second World War. The beer manufacturing account was also covered by the chartered accountant De Peyer (1916) in his possibly unique paper *'Brewery Accountancy and Income Tax'*. (It has to be conceded that no such manufacturing account has been discovered amongst the Joules archive[33]). The preparation of the brewing manufacturing account demonstrates that the account could and was used for post production cost analysis and comparison with expected production standards and outputs by measuring though not financially quantifying deficiencies. The account also permitted the computation of gross profit percentages and Tripp and De Peyer are informative here in that it appears that common benchmarks had arisen in the industry to discipline production performance.

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[32] The Tadcaster Tower Brewery of north Yorkshire was founded in the early 18th century as Hotham and Co. The Hotham family sold out to a consortium of local aristocrats in 1875 ushering in a period of expansion. This led to the construction of a new tower brewery although the company offices remained in York throughout its existence. It was incorporated in 1894 and was acquired by Hammond's Bradford Brewery Co in 1946 with 247 tied houses. The brewery is still operating under Interbrew (Barber 2005: 162).

[33] The earliest surviving accounts of Joules are a recognisable half yearly partnership profit and loss account and balance sheet from December 1879 prepared by its auditors Welch and Parkinson of Liverpool.(Joules and Son 1502/8/21, SRO)

Tripp stated that the best and simplest method of calculating gross profits and expenses was by percentage and that it was universally understood that brewers needed to attain at least a 50% gross profit and that given the then prevalent competitive trading conditions a 60% margin was more desirable (Tripp 1892: 17-18). This level of a gross profit benchmarking was later repeated by De Peyer in 1915 at a meeting of the London Section of the Federated Institute of Brewing, which indicated that it was a longstanding benchmark but that war time conditions had probably made a 40% benchmark more realistic (De Peyer 1916: 22).

"From his manufacturing account a brewer obtained a notional gross profit figure by subtracting costs of production… from the firm's annual turnover. This gross profit figure, invariably cited in percentage terms, gave the brewer his first rough indication of profitability…. These percentages revealed any improvement or deterioration in the prime costs of malt and hops thus allowing comparisons to be made with previous years .The calculation of a gross profit figure seems to have been common practice amongst brewers; it was used as a basis, after the deduction of all retailing costs, for arriving at the potential net profitability of any pub or agency they acquired" (Gourvish and Wilson 1994: 180-181).

However, although a broad acceptance of a common financial accounting framework is evident there were differences in the detail of application. It is apparent that there existed no consensus of which items were to be posted to the beer manufacturing account and that different breweries accounted for

production in slightly different ways, so that individual breweries gross profits and benchmarks could vary considerably

"Some there are who hold that in addition to materials and duty, here should be included wages, finings, coals and etc… I dissent from this entirely, for if we include wages, why not salaries? and if finings why not preservatives ? and so on. No: let all such charges be kept distinct and out of the produce book for they are the most difficult of apportionment, varying in amount and are apt to be very misleading" (Tripp 1892: 17).

This uncertainty of what constituted legitimate production expenditure was repeated by De Peyer who indicated that widespread differences in accounting treatment rendered gross profit comparisons difficult so make inter-firm comparisons problematic and this would remain the case until at least the mid twentieth century (Vaizey 1960: 131).

Both Tripp's and De Peyer's narratives were composed when widespread brewery incorporation had or was occurring. The first major incorporation occurred with Guinness in 1886[34] with a £6 million oversubscribed issue that was swiftly followed by many other incorporations, 28 in 1886 with a combined capital of £9.5 million, and two hundred others within the following four years, most notably Ind Coope (1886), Allsopp (1887), Whitbread (1888), Courage (1888) and Bass (1888) that alone had a share capital of £2.7 million and Barclay Perkins (1897). However by 1900 out of the 270 breweries with limited liability

[34] A few breweries had chosen limited liability incorporation in the early 1880's, Lion, Bow, City of London and Burton Brewery Companies were notable neither for their reputation or financial success (Richmond and Turton 1989: 10) .

only seventy-one had made a partial issue of ordinary and preference shares (Richmond and Turton 1989: 11) but notwithstanding the market in brewery shares remained buoyant and attractive to investors in this initial period (Figure 5.8).

The accounting consequence was that brewery companies were obliged to comply with the Companies Act and supply financial information to the new brewery investing stakeholder class. This stimulated the production of a dedicated text *Duncan's Manual of British and Foreign Brewery Companies* from 1888 onwards where the annual accounts came in for criticism,

"In this connection I may be allowed to express a hope that the time will come when the various balance sheets and revenue accounts of the various Companies will be drawn up in a more uniform manner and give much more detailed information. Were that the course followed by the Board of Directors it would be possible to make the Manual much more useful for investors, by rendering it easy for them to make comparisons between one company and another" (Duncan's 1891: piv, CVC).

Illustration 5 - Duncan's Manual of British and Foreign Breweries 1891

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Illustration 6 Brewery Gazette 1877 – Brewery Share Prices

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THE

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Figure 5.8

Typical Brewery Company Share Performance 1896-1897

Company	Quotation March 1896	Quotation March 1897
Allsopp & Sons Ltd, Ordinary Shares	142-144	167-169
Ditto 6% Preference	154-156	157-160
Ditto 4½ Debenture Stock	119-121	116-118
Bristol Brewery(Georges) Ordinary	23-23½	40-42
Ditto 6% Preference	16-16½	17.5-18½
Ditto 5% Debenture Stock	121-123	117-122
Cheltenham Original Brewery Ordinary	7½-8	7¾-8¼
Ditto 6% Preference	7½-8	7½-8
Ditto 4½ Debenture Stock	107-109	106-108
City of London Brewery Co Ordinary	183-187	198-203
Ditto 5% Preference	146-151	142-146
Ditto 4½ Debenture Stock	116-119	114-117

(*Duncan's Manual* 1897: 19-20, CVC)

Although by 1894 the Manual was able to report that balance sheets are given a more elaborate form than hitherto it remains debatable whether this objective of informative clarity was achieved. Nonetheless Arnold's (1997) research on a sample of six brewery companies, Allsopp, Bentley's Yorkshire Breweries, Bristol Brewery, Chesters Brewery, Tennant Brothers and Threfall's has revealed that the internal and external versions of the annual published accounts were broadly similar and that information provided about fixed assets was generally consistent: this is also proved by the case for Bass where I have used my former audit training to verify the posting of the figures from the internal accounts to the published financial statements.

5.6 The Modern Brewing Industry 1830-1914: Co-ordination-Cost Accounting

It is notable that missing from all the technical accounting texts is any consideration of any recognisable cost accounting. However the persistence of domestic brewing although in substantial decline during this period some textual cost calculation is evident. In 1857 a text on domestic economy served to demonstrate that domestic brewing on even a small scale could yield a saving almost one third for the domestic household.

Figure 5.9

Cost of Brewing at Home 1857

15 gallons of ale and 36 gallon of small beer

3 bushels of malt	£1 5s 6d
4½ lbs of hops	4s 6d
Yeast, firing and labour paid for by the grains	
Total	£1 10s 0d

(John Walsh (1857), *Manual of Domestic Economy Suited for Families Spending from £100 to £1000 a Year* cited in Owen 1998: 258)

Walsh assumed that by-product sales of spent grains would offset some of the other prime costs and the derived unit cost is total malt and hop costs divided by production in gallons. Unlike the industrial brewer, Walsh is benefiting the domestic producer with multiple batch production runs arising from the same

raw material inputs. Thus ale was produced in the first batch and the small and hence weaker gravity small beer was produced from the subsequent batch and in greater quantities replicating medieval practices. Consequently the cost calculation is simple and spreads the costs equally over each type of beer.

In the commercial sphere existed gyle books that costed production quantities and these can be seen to have fed into the manufacturing account as detailed by Tripp (1892) albeit only in quantities not as financial metric. This technique was available in the Trade and its application was explained thus,

> "Thus, the excess weight, say 385lbs, of a standard barrel (36 gallons) of wort (pre fermented beer) above that of 360 lbs of water at 60°F with a specific gravity of 1000° was termed a 25lb wort that produced a 25lb beer. Therefore, the brewer recognised that a 1000° specific gravity equated to 360 lbs calculated production levels of specific gravity with precision that had been hitherto absent. Consequently a production batch of 100 barrels with a specific gravity of 55° equated to 19.8 brewers pounds (i.e. 55 x 0.36 = 19.8) The production level then multiplied by the poundage figures i.e. 100 barrels x 19.8, demonstrated that 1,980 lbs was required for that production batch or brew. The previous recording and knowledge of malt yield extracts per quarter was then applied to determine the raw material input of production. An average yield of 86lbs per quarter of malt in this instance would have required 23 quarters of 336 lbs each, i.e. 1980 lbs divided by 86 lbs" (Baker 1905: 130-133).

Such figures could be subject to manipulation by the introduction of malt substitutes and different sugar types as well as accommodating the normal levels of loss sustained during production, thus potentially permitting a rudimentary form of standard production costing to be exercised albeit with absence of accounting modern panopticism. The application of this calculative process necessitated the use of reliable and accurate scientific instruments, the sacchrometer and hydrometer and as noted previously these had been available since the mid eighteenth century onwards.

It is tempting to see this technique as being developed from this earlier period, as alleged by Mathias but no firm evidence supports this view. Even then, at the end of the nineteenth century some gyle books, commercially produced and widely available from commercial stationers, could contain the briefest of technical data often accompanied by additional notes about the prevailing weather conditions. Joules brewery used a commercially produced 'Brewing Register' published by H. Smart, Printer and Stationer and Account Book Manufacturer of Gloucester from 1885 that provided for the recording of date, raw materials, length of boiling, gravities, racking into numbers of square [35] and general comments on the racked beer, i.e. dull, fair bright or even brilliant (John Joule and Sons (Stone) Ltd, D1502/11/1, SRO). A similar record was kept by the Lichfield Brewing Company but both examples are basically similar to Whitbread's 'Brew Books' of the early nineteenth century i.e. the Porter Brewing Book No1-22, July to August 1804 (LMA 4453/10/09), the Ale Brewing Book 1834 to 1837

[35] The Stone Square system of brewing was used in the north of England, the stone square being a jacketed vessel where brewing was undertaken and were comparatively small vessels seldom exceeding a fifty barrel capacity (Baker 1905: 106-108).

(LMA453/10/001) and 1837 to 1838 (LMA453/10/002) and the Fermentation Book 1834 to 1837 (LMA453/10/008)

Figure 5.10

Lichfield Brewing Company Commercial Gyle Book 1889

Gyle No 93- Wednesday March 6th 1889

Began brewing at 7.50 a.m. Finished 7 p.m.

Malt	Hops	Growth	Heat of Liquor	Barrels of Liquor	Time of Mash	Tap Standing	Heat of Tap	Barrels of Wort in copper with hops
Own local 20	Burgundies 85	20	165	52	8.15			
Own Chilian 4	Thirkell 85	20	180	15	9.0	1.20	149	
24	Long Land 86	60	167	40			152	40
	Burgundies 88	50	170	30			155	at
	Temple 88	45					156	195
		195						
Time of Boiling	Barrels of Wort Turned Out	Gravity Pitching	Heat Pitching	Total Saccharine per gyle lbs	No of the square			
2.5	46½	21.7	59	2145	7 & 8			

(D13/4, LRO)

The absence of a financial metric in the gyle books has been noted elsewhere,

"Even thirty years later, it was possible for a book on brewer's book-keeping (*Amsdon's Guide to Brewers' Book-keeping,* 1881) to be written, complete with

an illustration of a Brewing Book, showing the quantity of materials used for each gyle and the barrels produced from them, but without any hint that it might be useful to the brewer to know the cost of each gyle, much less any directions as to how such information might be ascertained" (Solomon 1968: 16-17).

Nevertheless Solomon's dismissal of cost accounting practices being carried out ignores evidence uncovered during this research project albeit not occurring within the traditional arena of cost accounting history.

The first evidence emerges at Bass[36] with the construction of annual 'Accounting Statistics' from 1880 onwards until 1949 (A/129, A/128, A/138, A/143, A/144, A/145, A/149, A/ 139). Gourvish and Wilson (1994: 602-603) also identified some of these sources without exploring either the nature or potential application of this post-production data. Nonetheless Bass had initiated the intellectual leap of applying detailed financial information to units of production in a manner similar to the early Victorian Statistical Movement[37]. These annual statistics

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[36] These accounting statistics were originally incorrectly catalogued as belonging to Worthington & Co.

[37] Statistics in this context should not to be taken within its modern meaning but within its original eighteenth century connotation as "a word lately introduced to express a view or survey of any Kingdom, county or parish" (Mackenzie, 1981: 7). The word statistics became increasingly fluid in its application and was applied by accounting and management writers when referring to financial and non-financial unit costs and output. De Peyer (1916: 20) states that the informative classification of the financial accounts provided statistical value designed for the purposes of comparison. The General Manager of the state controlled brewery at Carlisle commented that one of the bookkeeping systems objectives was to "preserve all the information and statistics" (SMS 1917 TSMS 1/6/1). J C Todman, FWCA, presented his paper 'The Necessity for Scientific Costing' to the ICWA Costing Conference in 1922 where one of its aims it was stated was to provide statistical information for the guidance of management. G S Hamilton's *Brewery Accounting* (1939:133) in reference to overheads, states that "the oncost and overheads will be apportioned on the basis of the year's production of cask and bottled beer as shown by the statistical record and the expenses shown in the annual accounts".
By the beginning of the 20th century a recognisably modern discipline of statistics emerged and one of its leading exponents was William Sealey Gosset, better known under his author's pseudonym 'Student' who worked as a chemist for Guinness and was allowed to establish a bespoke statistics department.

comprised thirty separate line type expenditure and five line type income items which failed to distinguish between capital or revenue or between direct or indirect expenditure: the annual production or barrelage was entered at the head of the folio and against each line item an average figure has been calculated by dividing the line item amount by the barrelage. The final line item is labelled profit and thus a profit per barrel was calculated. This system was further refined during the period 1894-1901 and reflects an attempt at cost classification when line expenditure items were identified by the company as either uncontrollable or controllable costs. It is arguable whether some of these classifications were justifiable, but it does reflect some managerial awareness of cost behaviour and its inability to successfully intervene in the market place as evinced by Chandler's schemata of managerial capitalism.

Figure 5.11

Bass Accounting Statistics - Summarised Comparative Barrelage Statement

1896/1897

Uncontrollable Costs		
%	Item	£ Unit Cost
18.999	Costs of bought and own made malt	10s.6.647d
5.494	Hops	3s.0.619d
13.563	Excise Duty	7s.6.410d
17.991	Discounts and allowances	9s.11.928d
5.891	Carriage of ale to customers and agencies	3s.3.269d
61.938	Sub total	£1.14s.4.871d
Controllable Costs		
38.062		£1.1s.6.591d
	Total Cost Per 36 Gallon Barrel	£2.15s.6.591d

(A/149 Accounting Statistics 1894-1901, CVC)

It may be conjectured that because such a high proportion of these costs were perceived as uncontrollable that this inhibited the creation and adoption of any recognised accounting based costing system, which Chatfield (1997) has identified as a key driver in cost system development. By 1908 Bass were employing a more detailed annual analysis of controllable and uncontrollable.

Figure 5.12

Bass Ratcliff and Gretton Ltd Stationery Department – Accounting Statistics

year ended 30th June 1908

(Output 1,132,075 ¾. barrels)

Debit	£ Proceeds	£ Average Per Barrel	£ Uncontrollable	£ Controllable
Total proceeds (7 line items)	£3,308,432.9s.3d	£2.18s.5d		
Credit total	£ Cost			
Malt	£588,363.12s.0d		£0.10s.5d	
Hops	£182,115.11s.10d		£0.3s.2d	
Excise Duty	£482,026.11s.5d		£0.8s.5d	
Discounts Allowed	£614,067.11s.3d		£0.10s.10d	
Carriage Out	£191,544.16s.5d		£0.3s.5d	
Wages	£77,777.12s.0d			£0.1s.5d
Agency Expenses	£182,542.14s.5d			£0.3s.2d
Salaries	£51,667.8s.0d			£0.0s.10d
Others	£643,280.15s.10d			£0.11s.10d
TOTAL	£3,013,386.13s.2d	£2.13s.6d	£1.16s.3d	£0.17s.3d
Profit per barrel		£0.4s.9d		

(A/139, Accounting Statistics 1908-1913, CVC)

Bass's summarised annual statistics were prepared from these detailed records and. Figures 5.13/15 illustrates the manner of the information presented. It comprised thirty-three line expenditure items and seven income headings used to derive a profit per barrel figure.

Figure 5.13

Bass Ratcliff and Gretton –Summarised Annual Statistics 1901-1906

Year	1901	1902	1903	1904	1905	1906
Production in barrels	1,440627	1428334	1392044	1308254	1249477	1182092
	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d
Income per barrel	2 .17. 0	2 .17. 0	2 .17. 4	2 .17. 6	2 .17. 7	2 .17 .11
Expenses per barrel	2. 9. 10	2. 9 .7	2 .10. 4	2. 10 .11	2. 13. 0	2. 10. 10
Profit per barrel	0. 7 .2	0. 7 .5	0 .7 .0	0. 6 .7	0. 4 .7	0.7.1

(A/143, Accounting Statistics, 1901-1907, CVC)

It is not apparent from the surviving company records why the company went to such lengths to produce this information or indeed how it how it was utilised internally. However, another indirect and unlikely source provides an explanation of how such post production data was used in management decision-making and this data leads back to the British Army, albeit not the professional Regular Army but amongst the volunteer reserve infantry force of the Victorian and early Edwardian era prior to the formation of the Territorial Force (later the Territorial Army) in 1908 when the Rifle Volunteers and Yeomanry cavalry were

combined and placed under stricter control by the War Office. An imagined French invasion threat which had emanated in 1860 had fomented patriotic fervour for the creation of many Rifle Volunteer units designed for local area defence. Many of these units were raised by businesses and Bass was one such example. What was socially striking about this new type of military formation was that it recruited from the non-traditional social classes that made up the Regular Army, Yeomanry and Militia officer corps and rank and file membership so that business managers provided the Rifle Volunteer officer corps and skilled artisans formed the rank and file (Cunningham 1975: 1). The parsimonious funding by central government had meant that the majority of units became largely self-financing which had led to widespread economic difficulties amongst units including the Bass Rifle Volunteers. The internal records of the unit demonstrate that from 1879 (the date is significant because it ties in with the production for the first time by Bass of their annual commercial 'Accounting Statistics') applied the accounting statistical techniques detailed above to successfully redress the battalion's adverse financial position. This data was used for monitoring, comparing and benchmarking financial and non-financial performance (i.e. capita ration consumption) of the unit as a whole and later extended to calculating the performance of each individual infantry company comprising the battalion (Talbot 1998, 2000b).

Figure 5.14

Cost per Ration and Cost per Man Expenses 1883-1885

North Staffordshire Rifle Volunteers

Cost Per Ration on the Ration A/C

(Calculated on the numbers of rations issued)

1883	1884	1885	1886	1887	1888
2s.0.03d	1s.9.32d	1s.6.59d	1s.5.76d	1s.5s.1d	1s.5d

Cost per Man for Camp Expenses

(Calculated on the numbers of troops)

1883	1884	1885	1886	1887	1888
2s.11d	2s.10d	2s.8d	2s.6d	2s.2d	2s.2d

(1st Battalion Staffordshire Rifle Volunteers, Ref 141, SRM)

Overall the result was that the unit's financial efficiency improved, wastage was reduced and cost savings made through the financially informed decisions of the regiment's finance committee comprised of the Bass commercial managers as attested by the units signed annual published accounts and internal minutes. What is remarkable about this financial regime was that no equivalent existed in the regular forces so that it suggests this demonstrated a technological knowledge transfer of commercial practice which survived until the creation of the

Territorial Army in 1908 and the imposition of formal government accounting structures[38].

The other evidence of brewery cost accounting prior to the Great War and beyond is offered through the ' batch costing' techniques of John Joule and Sons (Stone) Ltd who used commercially produced 'Cost Price Books'[39] from 1903 until 1921. In the Cost Price Book the input of raw materials by quantity and value, the excise levied was entered and totalled and the cost, gross profit and percentage loss per barrel was consequently calculated. This was completed for each production batch and evidences a more informative and regular calculative process in advance on the annual accounting statistics techniques of Bass.

[38] Bass's technique of calculating a cost and consumption per capita unit was not original as members of the Statistical Movement had collected eclectic data and presented these in voluminous tables (Cullen, 1975). In particular Bass's army statistical costing by introducing a financial metric is redolent of that undertaken by the President of the Statistical Society, Colonel W H Sykes, MP (Appendix 9) , 'Comparison of the Organisation and Cost in Detail of the English and French Armies' in 1864 (Talbot, 2005b). The Bass calculations would have been prepared by the Quartermaster whose name remains unknown so an attempt to trace his potential membership of the Statistical Society or one of its pre-formative regional bodies has proved impossible.

[39] The Review Press of London, printers, stationers and account book manufacturers produced the Cost Price Book. Obviously this type of commercial stationery was produced for widespread dissemination within the brewing industry.

Figure 5.15

John Joule and Sons (Stone) Ltd Cost Price Book

Batch 43, 16th November 1903 Export Ale

INPUT	QUANTITY	£	£
Malt	29 qtrs	62.7s.0d	
Sugar	12 cwt	8s.8s.0d	
Hops	S11	29.4s.5d	
Duty		50.12s.7d	
		150.12s.0d	
Spent Grains		(4.5s.0d)	
Total Cost			146.7s.0d
Barrels Brewed	90		
Barrels Racked	84		
Loss		6.7%	
Cost Per Barrel		£1.14s.10d	
Selling Price Per Barrel		£3.6s.0d	
Gross Profit		47.3%	

(John Joule and Sons (Stone) Ltd, D1502/11/21, SRO).

It is apparent that only prime raw material costs and the excise charge is entered and other direct costs, labour and power are omitted and production overheads are ignored. This reflects Tripp's earlier statement of the difficulties of attributing these and other costs. The format of the batch cost calculation codified in a commercially produced ledger further indicates the widespread adoption of this cost technique in the trade. This system was retained until 1921 by Joule's and then in a monthly summarised format until at least 1946 though not in a commercially produced journal format, (John Joules and Son (Stone) Ltd D1502/11/19, SRO). It is not apparent how this costing information was used

since there was no integrated financial and cost accounting system present. However, it may be conjectured that it could have been used to monitor the gross profit levels as a benchmark of performance as outlined by Tripp in 1892 and De Peyer in 1915 through an examination of the gross margins achieved per batch before the outbreak of the Great War in August 1914 reveals a range from 46.9% in 1903 to 69.3% being achieved in 1905 though the usual margin achieved lay nearer to 60% although this was always susceptible to the volatility of raw material prices) but this must remain as only a hypothesis (Talbot, 1999). However, it is more likely that this system was mainly employed to meet the requirements of the tax regime and if this is the case it can be accurately dated to 1880 (see Appendix 6- Beer Tax Regimes) when that structure changed to imposing tax on barrelage when Gladstone was Chancellor,

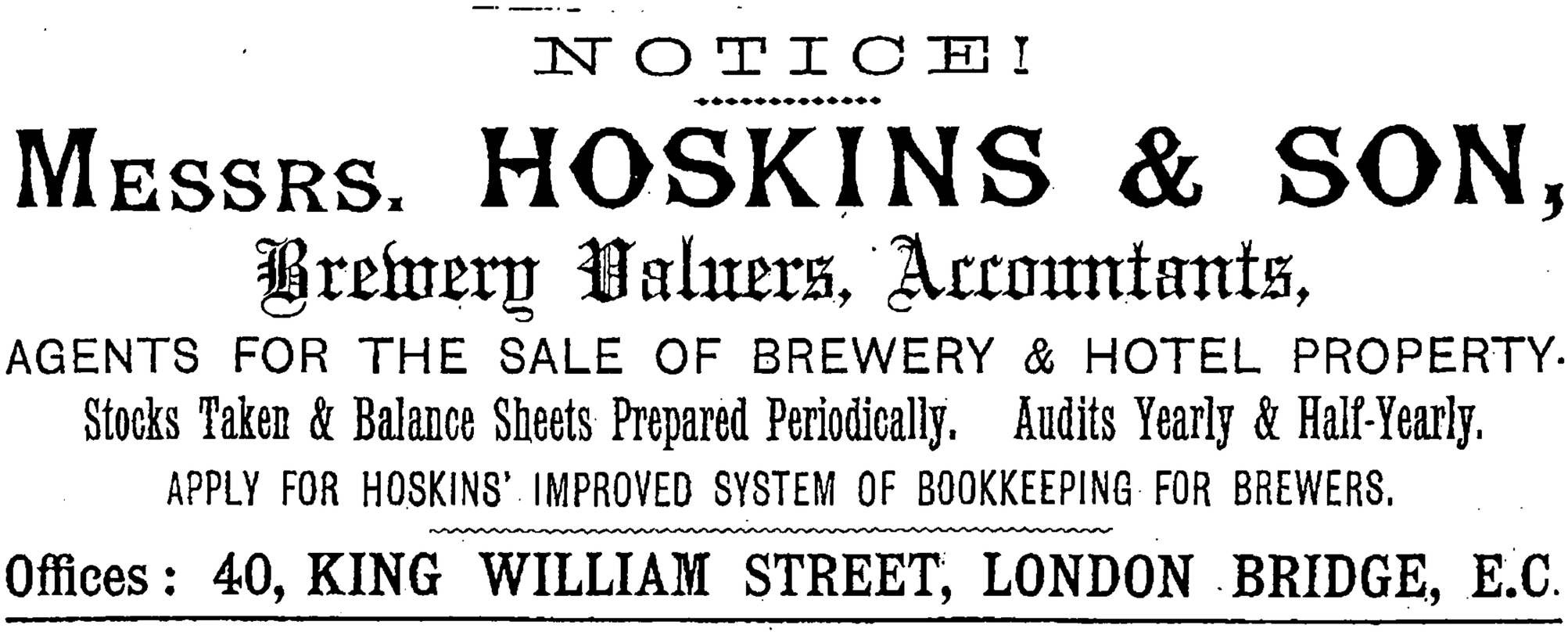
> "In their stead a licence duty of £1 was imposed on all brewers for sale and a duty of 6s 3d for every barrel of beer of a specific gravity of 1057° with an allowance for 6% waste. The change was mainly the result of long years of agitation by the agricultural interest, which disliked the malt tax. The Brewing Trade opposed the change" (Manual of British and Foreign Brewery Companies 1938-1939: 26, CVC).

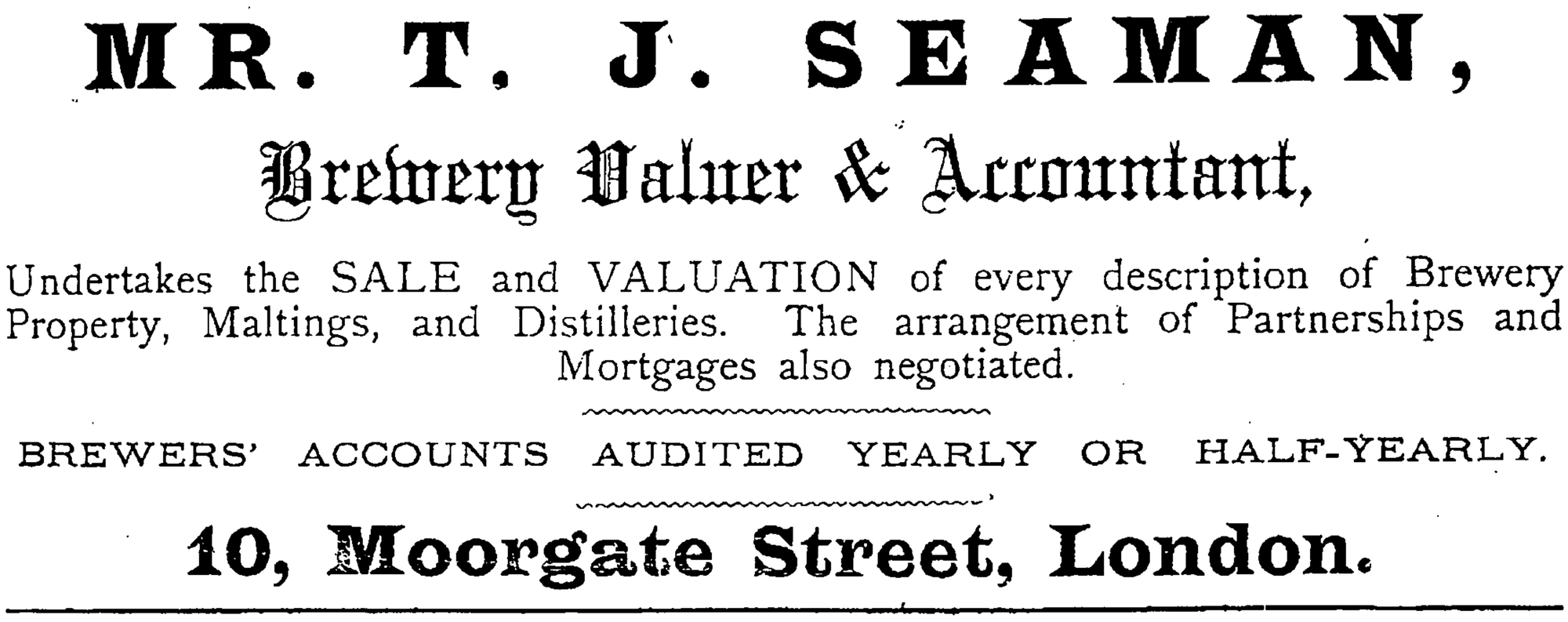
Thus, such records may have had no costing significance at all but were utilised only to meet the strictures of the prevailing tax system rather than as part of an integrated and co-ordinated management system arguably reflecting earlier brewery accounts.

5.7 The Modern Brewing Industry 1830-1914: The Role of Professional Accountants

It has been difficult if not impossible to identify any in house accountancy expertise in this period and as previously explained bookkeeping appears to have been performed in house. Richmond and Turton (1989: 5) allege that the relative decline of the London breweries arose because they were slow to adopt the new brewery science and because they failed to appoint accountants, although the evidence below indicates that this was not the case. The implication is that the leading breweries at Burton employed such men but this has been difficult to discover and may be a misapplied term for the large numbers of bookkeeping clerks employed by Bass in order to operate "their highly sophisticated accounting system, probably the summit of Victorian practice" (Gourvish and Wilson 1994:182). Guinness, an Irish brewery and hence not part of this research, had a separate bookkeeping department that became overhauled in 1879 to form an accountants department (Vaizey 1960: 237) but again this appears mainly to have remained as a bookkeeping discipline underpinning accountancy. Guinness was even more productive and successful than the foremost British breweries and its eight departmental administrative structures from this date cannot be identified as having anything similar at Burton, the most likely location for such innovations. The accounting expertise thus appears to have been externally located and contracted in. Certainly it is evident that external 'accountants' were providing such a service as demonstrated by advertisements in the brewery press.

Illustration 7 - Brewery Accountants Adverts (1892)– Brewery Room Diary





De Peyer implies in his paper such an arrangement was commonplace and recognised by many brewers as a useful adjunct. H. E. Field the chairman at De Peyer's meeting stated that every brewery at this date had an accountant but it is not immediately apparent if he meant in-house or externally. However it became evident that he was referring to an external accounting expertise because he reflected that the accountant's role was not confined to the audit and shareholder reassurance. Field's additional comments are illuminating because they reveal

the added financial advice that the professional accountant could impart but it is also apparent that the accountant was not a member of the regular brewery management hierarchy,

"The great advantage and importance of an accountant, therefore, was beyond, being able to see that the accounts were kept correctly, that he should be able to give advice and say, this is wrong; we are in the habit of examining a great number of brewery accounts, and we know within a little what this ought to be; it seems to us that is a point you ought to look into." Naturally an accountant should not tell us how to manage our business, but be able and no doubt willing, to give an idea where money was slipping away. In that way he felt sure that a brewery accountant who had knowledge of the business generally would be of inestimable value (De Peyer 1916: 33).

This type of value added service is revealed through the activities of the accountant, Nelson G Harries, a chartered accountant appointed to audit and prepare the final financial statements of the Highgate Walsall Brewery for the year ended 31st December 1899. These consisted of the internal trading account or beer manufacturing account is similar to that described by Tripp and De Peyer and a recognisable horizontal balance sheet. It is the accountant's covering letter which, reveals a financial ratio analysis of post production performance. This ratio analysis is confined to the trading account where various items, sales levels, dead charges, raw material costs, brewery wages and expenses, for example,

"The weak spot of this account, in my opinion, is comparatively small amount of sales which affect the whole the account, but principally the percentage of dead charges which at the rate of 17.35% when they should only be 10%" (Walsall Highgate Brewery Acc No 2/1-7,Walsall Local History Centre [WLHC]).

Once more it becomes apparent that normative and common benchmarks of performance were being applied within an unwritten codified form based on practice. Both De Peyer and Harries were professional chartered accountants who fail to mention any attempts at cost accounting in their texts. This again is unsurprising as Loft has demonstrated that even amongst the professional accounting class pre Great War cost accounting was largely unknown and not widely practiced in that "some chartered accountants may have become involved with costing, through working in companies, as secretaries or accountants: but this type of employment was probably quite unusual at this time" (Loft 1990: 11). Therefore a brewing industry which was demonstrably reliant on external financial expertise which was largely ignorant of cost accounting could not have been expected to become involved in these accounting developments because its principal business identity remained firmly entrenched in production and the reputation of its individual products.

5.8 Conclusion

In this era it has been demonstrated that more efficient production processes within newly constructed brewery factories were adopted abetted by the scientific revolution of the latter part of the nineteenth century. In the larger breweries separate scientific departments were established staffed by

professional chemists that formed a new technical elite that aided and improved production in a manner that was unavailable to the medium and smaller breweries albeit consultant chemists were available if required.

Brewery management education remained grounded in a practical apprenticeship though at a substantial price without any formal examination structure. It is true though that more formal educational processes were available via the Institute of Brewing and the London Guild but these were considered to be a useful though inessential adjunct to management where brewing remained widely regarded as an art rather than a science. The general management texts available in this era consistently ignored brewing and Tripp's text is the only example of its type which became derided following the collapse of Ind Coope when under his management. Brewery management though had adopted an unwritten but common framework of practice and training in an increasingly competitive vocational field but nonetheless management as a discipline remained focused on production and the preservation of brand reputation.

Accountancy or rather bookkeeping formed part of the management process whereas accounting was left to external professionals who provided added value services of financial analysis. Financial accounting remained dominant with complex systems being operated focused on stewardship and accountability even more so following the widespread incorporations from the 1880's onwards. Cost accounting is conspicuous by its total absence although alternative calculative options were available and applied. The few technical texts devoted to the industry fail to even mention any aspect of cost accounting. The financial

expertise appears to have been deliberately delegated to external professional accountants so that the 'Costing Renaissance' of the late nineteenth century identified by Solomon (1952) from the available evidence appears to have by-passed the Trade because as it will be argued later that it was unnecessary for effective brewery management.

Chapter 6 - Malting and the Brewing Industry, 1600-1939.

6.1 Introduction

The brewing industry is directly linked with the agricultural sector since the latter is the supplier of the basic raw materials of production in the form of cereal grain crops with barley remaining the dominant grain used in the manufacture of beer. This has led to the leading brewers being described as being both agriculturalist and industrialist adapting to the demographic and industrial changes (Gourvish and Wilson 1994:179). This therefore presents an opportunity to examine the impact of the Agrarian Revolution and the rise of capitalist farming and the potential knowledge transfer of agricultural micro-disciplines in both management and accounting techniques to the industrial brewing sector so that,

"Subjects which can be usefully investigated through farm accounts… a word might also be said about changes in accounting methods which may be significant in that they often reflect a new capitalistic spirit" (Collins 1966: 145).

ration 8 - The Close Relationship between Agriculture and Beer

This engraving by Thomas Tegg 1800c depicts Sir John Barleycorn, Miss Hop and their only child Master Porter (Ritchie 1992: 39)

Some commentators have identified the appearance of the new capitalist mentality in this earlier period (Overton 1996, Porter 2000) rather than the later period of the Industrial Revolution. Therefore, the hypothesis arises that any innovation in capitalist agricultural accounting, in this case malt offered the potential for similar innovation in the beer industry because of the close working relationship between both sectors.

Accounting for malt also presented calculative difficulties with technical valuation as this involved a conversion process that created normal losses and

gains arising from manufacture and income from the sale of by-products and how this was treated to derive an overall manufacturing cost. Malting was also carried out within the larger brewery concerns from the latter part of the nineteenth century, such as Allsopp's and Bass which in turn offered the possibility of nascent transfer pricing within a multi-unit business organisational structure.

The agricultural arm of the Trade is evaluated within this single chapter organised into discrete sections by date and between maltster and brewing maltsters within a Foucauldian disciplinary construction. This, as before, is employed to identify the discontinuities of malting practices and especially accounting methods arising from malt valuation techniques. As a consequence some overlaps with prior and succeeding chapters arise, but avoids any substantial replication.

The geographical focus of the research relied on primary sources located in Staffordshire, and at Carlisle in respect of the LCCB/SMS and use was also made of the extensive technical literature held in the BM/CVC in Burton on Trent. A most useful secondary source proved to be Clark's (1998) *The British Malting Industry Since 1830,* which complimented Mathias (1959) and Gourvish and Wilson's (1994) although these latter two texts concentrate on East Anglia. The county of Staffordshire was selected for ease of access and because it was one of the main areas devoted to barley production and malting albeit it was less prominent than the English eastern counties,

"The best of the English barley-growing districts are the Chalk and the 'wash' lands of Norfolk and Suffolk, especially about Bury St. Edmunds; but Lincolnshire and Bedfordshire supply excellent examples, and the light valley-lands of the Midland Counties, including Staffordshire contribute to supply"

(Staffs Education 1977:15-16)

Surviving documentary evidence revealed that malting was carried out in Staffordshire from at least the seventeenth century onwards (D(W) 1721/1/4, D4598/2/1-24, SRO) and though these were looked at these early sources did not contain any financial records.

6.2 The Agrarian Revolution: New Disciplines

In order to contextualise the malt accounting framework it is necessary to examine and locate the wider agrarian discourses by establishing the Foucauldian archaeology or the mentality of the age within which it operated and thereby isolate the genealogy or break with prior practices. The identification of an 'Agricultural Revolution' is itself not universally accepted and has been classified by some writers as a progressive continuation and improvement on earlier practices (Campbell and Overton 1991, Clark 1999, Jones 1974). Nonetheless the substantive increase in both crops and animal products by British farmers during the eighteenth by a decreasing agrarian workforce has led most historians to broadly label the era as the 'agrarian revolution' (Belchin 1987:96). Improved output in turn has led to claims that farmers had become 'businessmen' with a new capitalist mentality which is itself self-fulfilling tautology that has ignored the accounting input to the creation of this new mentality.

The school of Foucauldian accounting history writers have ignored the agricultural revolution preferring to concentrate on the industrial revolution for evidential sources of the genesis of accounting innovation. This becomes understandable if it is accepted that the absence of detailed agricultural labour standards fails to support and operate a modern disciplinary gaze. However this has been challenged by Bryer (2000b) who through a Marxist interpretation has identified the appearance of accounting innovation for management purposes as being indicative of this new capitalist mentality rather than through a process of general agrarian improvement. This view has been conditioned by the appearance of a specific technical literature such as Arthur Young's various works that it is claimed use modern management accounts. Arthur Young[40] was a farmer and editor of the *Annals of Agriculture* exemplified the advance of the

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[40] Arthur Young (1741-1820) was a prolific writer on agrarian affairs. He was the son of a Suffolk clergyman who was initially apprenticed to a merchant and later contemplated a career in the army before he entered into agriculture in 1769 without any prior knowledge of the subject. Young's enthusiasm and rapacious quest for knowledge led to him to write in 1770 a two volume text, *A Course of Experimental Agriculture*, containing an exact Register of the Business transacted during five years on near 300 acres of various Soils. He proved to be successful as an author that bestowed on him large wealth but less so with his Hertfordshire farm complaining that "I hardly wonder at a losing account, after fate had fixed me on land calculated to swallow, without return, all that folly or imprudence could bestow upon it... I worked like a coal-heaver, though without his reward". In 1784, he commenced a periodical the *Annals of Agriculture*, which he edited until 1803 when he became blind. The journal attracted many different contributors including King George III, 'Farmer George' who published under the pseudonym 'Ralph Robinson of Windsor.' Young also travelled extensively throughout Great Britain and Europe during the second part of the eighteenth century and published his observations which also extended to covering agricultural matters. In 1793 Young had become the secretary to the newly formed Board of Agriculture but his fame was greater abroad where his works were translated into French and Russian and he also attracted pupils for instruction from all over Europe.

Young also travelled extensively throughout Great Britain and Europe during the second part of the eighteenth century and published his observations which also extended to covering agricultural matters.

(Juchau, 2002)

new agrarian capitalist mentality as breaking the circle of agricultural poverty when he wrote,

"Agriculture is beyond all doubt the foundation of every other art, business or profession… Make two blades of grass grow where one grew before… to cultivate that crop whatever it be, which produces the greatest profit valued in money" (Porter 2000: 308).

The agrarian revolution was characterised by several key factors, enclosure of the land to make larger more efficient estates, a four crop rotation comprised of turnips, barley and clover to produce improved arable yields that is normally attributed to Viscount Townshend, better known as 'Turnip Townsend' although this technique had been practiced in Norfolk since the seventeenth century (Williams 1992: 106) and improved animal husbandry. The older inefficient agricultural methods and perceived waste of common pasture were replaced by a new spatial division of the land through an increase of private ownership. This was a movement away from a 'moral economy' of feudal surpluses to a 'political economy' of capitalist profits ensuring a gain for all and as Porter notes it does not require a devout Foucauldian to catch the tenor of the attempts to confine Nature (Porter 2000: 311) and the discontinuity of agrarian practices that were now based on an innovative rational and disciplined approach. This innovation was accompanied by a plethora of other technical texts[41] that made England the most efficient European agricultural producer.

[41] The most prominent agrarian texts of the Enlightenment were Houghton's (1692-1703) periodical (1692-1703) *A Collection for the Improvement of Husbandry and Trade,* Nourse's (1700) *A Discourse of he Benefits and Improvements of Husbandry,* Lord Kames (1776- 1798) *The Gentleman Farmer; Being an Attempt to Improve Agriculture by Subjecting it to the Test of*

Amongst these texts appeared Roger North's [42] *The Gentleman Accomptant,* (1714, 1715 and 1721) which was an atypical technical accounting text based on DEB. There existed many DEB texts but North's book was distinguished by accounting for landed estates which extended to 'managery' (Parker 1997). This text is held to be reflective of the new rationalist capitalist mentality whereby the larger farms were now divided into different divisions or profit centres permitting the calculation of yields and returns on capital,

"...what every Tenant owes; what Discomtps are upon his Farms, and the net Payments of Rent; how interest goes; whether he receives or pays more; and what is due either way; how his Steward's or Bailiff's Accompt stands; what his managery of Corn, Grazing, Dairy and Sheep yields him: and in general, at one, two, or three, &c. Years end, whether his Estate advances, or is Retrograde, and how by much" (Parker R 1997: 37)

North's schemata with its intricate sub-division of farm accounts or cost centres included a section devoted to 'Tabular Arithmetick' employed for the estimation, measurement and derivation of labour performance, "The knowledge that such

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Rational Principles. This was reinforced by scientific texts, Fordyce's (1765) *Agriculture and Vegetation,* Hunter's (1770-1772) four volume *Georgical Essays*, a collection of agricultural essays by the York Agricultural Society (Porter 2000: 306-308).

[42] Roger North (1653-1734) was a son of Baron North who became a lawyer and writer. In 1684 he became the Solicitor-General but the Glorious Revolution (1688) led him to become a non-juror by refusing allegiance to King William III and Queen Mary. He hen retired to his estate of Rougham in Norfolk and occupied himself in writing. He wrote *Discourse on Fish and Fish Ponds* (1683), Arguments *and Materials for a Register of Estates* (1698). Some works were published posthumously, *Examen* (1740) and in three volumes (1742-1744) *The Lives of the North's.*

(Matthew C and Harrison B: 2004)

an Accompt as this kept is sufficient to keep Men to true Reckoning, lest they lose their Credit and their work" (Solomons 1952: 13)

Similarly Robert Hamilton's, (1788), *Introduction to Merchandise*, contained a chapter on farm accounts that offered examples of accounts capable of being used for labour control and the measurement of crop yields. This permitted yearly comparison being entertained and this has been adjudged to have provided "a growing appreciation of the value of accounting records in directly productive activities" (Solomons 1952: 13). Other evidence demonstrates the direct application of accounting data in farm management practiced by Robert Loder of Berkshire (Freear, 1994) and Henry Best of Yorkshire (Maclean, 2001) both of whom farmed in the seventeenth century.

Arthur Young also contributed to the agricultural literature and in the earliest text *The Farmer's Guide in Hiring and Stocking Farms* (1770) he demonstrated through detailed calculations the amount of capital required by tenant farmers in order to acquire working assets for a farm of given acreage. These tabulations and costings, it has been claimed offered an early indication of the need to maintain detailed accounting of farm investment and operations (Juchau 2002: 374). These observations were reinforced in *The Farmers Calendar* (1771) where the benefits of calculating the expenses and returns for each field were explained to permit the identification of which crops produced the greatest yield. The continuance of domestic brewing on farms and the landed estates combined with the emergence of the agricultural capitalist mentality would imply that a favourable environment existed for the application and extension of innovative

agricultural accounting techniques to the manufacture of beer that could have been transferred to the common or commercial brewers. Indeed domestic brewing within an agricultural context persisted well into the late nineteenth century and beyond especially in the brewhouses of the great country houses such as Shugborough, Staffordshire at the home of the Earl of Lichfield and at Trentham, Staffordshire the home of the Duke of Sutherland (Sambrook, 1996).

It must be conceded that these aforementioned agricultural accounting authors did not specifically discuss malting and therefore malting has been absent from the historical agricultural accounting debates. Therefore it may be argued that malting is located in an intermediate sector, neither totally agrarian nor totally industrial because the grain product has to undergo a conversion process of the harvested raw material. However in the primary research undertaken it is a farmer, John Brown of Yoxall, Staffordshire (*Harrod's* 1851: 614, *History Gazetteer* 1870: 1151) who is listed as farmer, maltster, brewer and corn merchant. Francis Joule the founder of Joules Brewery which forms a major source of the primary research undertaken was also described as a maltster when he came into possession of the brewhouse in Stone, Staffordshire in 1758 (Rhodes and Ecclestone.1981: 2), and his son John Joules was listed as a brewer, seed crusher and corn miller (*Staffordshire Directory 1818*) so that farming, malting, and brewing become inextricably linked. However although Brown's malting records have survived Joules have not.

6.3 Valuation of the Malting Process

Prior to engaging with the detailed archival materials it is necessary to understand the malting process which did not change substantially until after

1945. The malting process, although simple, presents problems of according financial values to the finished products. The manufacture of malt remained until recently a seasonal process commencing at the end of September or early October which continued until the end of April although it could be extended into May or even June with substantial risk because of the difficulties of controlling temperature in the malt house (Baker 1905: 29).[43]

The malting process is the controlled germination of grain and the artificial termination of this process through the application of heat. Initially the barley grain was taken to the upper floor of the malt house where it was stored and screened in order to clean it prior to the first conversion stage. "Malt, there made of no other Grain, but Barley. Whereof there are two kinds; one, which hath four Rows of Grains on the Ear; the other two Rows. The first is the more commonly used; but the other makes the best Malt" (Sir Robert Moray [1667] cited in Clarke [1998])

The first conversion stage involved steeping, the soaking of the grain in water for three to four days to initiate the germination process. This involved two or three soakings to cleanse the grain and remove the 'swimmings' and trash. Originally the germinating grain was placed in large wooden framed enclosures known as couches so that the grain would generate internal heat and expansion. The couching conversion stage also played a financial role also because the grain at this stage had to be measured for calculating and levying the malt tax which was

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[43] Julian L Baker was the chief chemist to Watney, Combe, Reid and Co Ltd when he wrote *The Brewing Industry*. He proceeded to become an influential figure in the technical circles of the industry during his forty six years with the company (Anderson 2005: 18).

introduced in 1697 and was not abolished until 1880. This consequently led to couches being dispensed with (Appendix 7 – Malt Tax Regimes).

The next stage was to lay the germinating grain on large and long growing floors of the malt house where it was laid down up to a depth of up to twelve inches for a duration of up to a fortnight depending on weather conditions. The grain was manually turned by wooden shovels on a regular basis and the humidity and temperature on the growing floors was controlled by simply opening or closing louvered or shuttered widows.

The penultimate processing stage involved the drying of the 'green malt' normally in a heated kiln to arrest the germination which usually took three days until it was considered cured. This required great skill to convert the starch into the desired sugar content and attain the desired flavour and colour required of the malt. This was important because different malts were needed to produce specific types of beer, e.g. the popular porter beer of the eighteenth century required deep dark brown malt.

The last process involved the screening and polishing of the finished malt which was packed into sacks and stored in the malt cellar awaiting distribution to the brewer.

The overall manufacture of the cured malt via its distinct stages presented a problem of accounting for the yield of each malt quarter from the steeped barley. This in itself is not as seemingly straightforward as it first appeared since the standard malt quarter was 336lbs and the standard barley quarter was 448lbs.

This was influenced by the two crucial factors inherent to the conversion process, the loss or 'gain' arising during overall malting. These were dependent on a combination of factors, the quality and variety of the barley and its moisture content which became reduced during steeping.

The accounting process is further complicated by the existence of two distinct types of malting, namely malting-for-sale and commission malting. A sales maltster purchased his own barley and manufactured his own malt for selling normally via an intermediary malt factor to customers. A sales maltster usually realised his income some three to four months after delivery but this method of business organisation had declined after 1830 in favour of the commission maltster.

Engaging commission maltsters after 1830 was the preferred method of the commercial brewers via forward contracts negotiated annually although exceptionally Allsopp's at Burton on Trent negotiated contracts of five and seven years duration. Such contracts imposed quality conditions and the growing power of the brewers over the malt suppliers allowed them to dominate the supply chain. The financial arrangements relating to the commission maltster relied on the provision by brewers of capital to purchase the barley and meeting various other costs though these detailed contractual arrangements varied considerably. Thus a commission maltster's overheads became substantially lower than those of the sales maltster.

6.4 Co-ordination: Maltster Accounting

Maltster accounting as a disciplinary micro-technology can be neatly divided into two parts since there existed both discrete malting businesses and those of larger breweries which undertook some though not all of their own malting in house. The identification of distinct malting business accounting processes presents particular problems because there were few public malting companies and little of their early private malting records have survived, "No glimpse by the outside public of this essentially private trade" (Brewers Gazette, 1907).

The earliest surviving private accounting records of a Staffordshire maltster and farmer is that of one John Brown of Yoxall (catalogued simply as a 'Maltsters Business') with accounting records surviving from 1845 until 1900 (D653/1, D653/3, D653/4, D653/5, D901/1, D901/2, D1125/1, D1125/2, D1125/3, D1125/4, SRO). These disclose no accounting innovation and consist of detailed but simple financial accounting entries in waste books, cash books and accounts ledgers recording sales of 'flakes' of malt[44] and there is no surviving evidence of any balance sheets having been constructed. Thus barley is recorded in a simple barley account without any attempt to calculate a malt conversion cost. The malt sales are recorded amongst numerous local customers, the nearby Crown Inn for example, another major customer being James Beresford who on investigation was found to be described in the Staffordshire Gazetteer as a butcher and beerhouse proprietor (Harrod's1851:614). The accounting records also reveal a

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[44] The use of the metric of flakes is itself confusing. Different cereals other than barley were used for brewing where the object was to reduce the starch to a condition where it could be dissolved by the sugar of the malt during mashing. These types of products were known as brewing flakes or flaked malts. This latter description is not strictly accurate since the term malt implies a germinated grain that has not fully undergone the modifying process which is characteristic of the germination of a living seed (Baker 1905:46-47). In this instance the use of the description by Brown in his ledgers may indicate that he did not carry out the full malting process.

mixture of other diverse transactions that included livestock, ale, hops, barley hay, meat and livestock, e.g. "24th February 1858 To Thos Gray 2 fat heifers £38.0.s.0d" (D1125/1) and the existence of a stock book for miscellaneous ironmonger's and chemist items sales.

An attempt to account for malt conversion cost first appeared in the early twentieth century in Lancaster's (1908) *Practical Floor Malting*, which uniquely went beyond the normal technical malt manufacturing procedures and included financial matters. Lancaster provided two examples (Figure 6.1 and 6.2) of how maltsters calculated the cost of manufacturing a quarter of malt and overcome the inherent production valuation problems identified previously. The prior absence of accurate malt valuation was explained away by Baker (1905: 39-40) as being too difficult to engage with remaining as it was dependant upon local considerations and varying local costs. This echoes similar arguments advanced by Tripp (1892) in beer manufacture who argued against accounting innovation on a similar basis.

Figure 6.1

Lancaster's First Example (1908) – Damp English Barley Requiring Sweating

		Shillings and pence
1. Sweating		
	100 quarters of barley at 28s	2800s.0d
	Cost of sweating at 6d a quarter	50s.0d
	Loss of 10 quarters	-
	90 quarters of dried barley	2850s.0d
	Cost per quarter of dried barley	31s 8d
2. Screening		
	90 quarters at 31s 8d	2850s.0d
	1 quarter broken sold at	-20s.0d
	1 quarter thin sold at 15s	-15s.0d
	½ quarter dust	-

	87½ quarters screened barley	2815s.0d
	Cost per quarter screened and dried	32s 2d
3.Malting		
	87½ quarters barley 2815s	
	92 quarters malt a 6s a quarter	552s.0d
		3367s.0d
	Cost per quarter malt	36s 7d

(Clarke 1998: 118)

It is apparent that the cost construction of some sub-processes, such as sweating, are not explained and that any incidental income, i.e. the sale of broken quarters, is netted off against production cost to derive a cost per screened and dried barley quarter. The derivation of the 92 quarters malt production volume is opaque.

Given that a standard barley quarter was 448 lbs and that the malt quarter was 336 lbs then it would be reasonable to have expected the following output (author's calculation),

$$87\tfrac{1}{2} \text{ barley quarters} \times \frac{448\text{lbs}}{336\text{lbs}} = 116.67 \text{ malt quarters}$$

The difference of 24.67 quarters represents slightly more than a 21% adverse variance which can only represent a loss in production. This fits in with Clarke's (1998: 118) statement that British barley with its heavy moisture content of possibly 15% or more was much more susceptible to weight loss through sweating and malting.

Figure 6.2

Lancaster's Second Example (1908) – Dirty Foreign Barley such as Syrian Tripoli

		Shillings and pence
1. Sweating		nil
2. Screening		
	100 quarters barley at 25s	2500s.0d
	1 quarter broken sold at 15s	
	5 quarters thin sold at 10s	-65s.0d
	2 quarters stones and dirt	
	92 quarters screened barley	2435s.0d
	Cost per quarter screened nearly	26s.6d
3.Malting		
	92 quarters barley	2435s.0d
	100 quarters malt at 6s quarters	600s.0d
		3035s.0d
	Cost per quarter malt	30s 4d

(Clarke 1998: 118)

The production of foreign imported barley did not require sweating as this did not contain such high moisture content as British barley and therefore would have incurred less wastage during the conversion process. Thus in Lancaster's second example given all the previous caveats the production should have realised (author's calculation),

$$92 \text{ barley quarters} \times \frac{448\text{lbs}}{336\text{lbs}} = 122.7 \text{ malt quarters}$$

336lbs

The difference of 22.7 quarters or 23% represents an unexpectedly large loss in malting and does not fit in with Clarke's (1998: 118) assertions.

Clarke offers more detailed costing calculations that emphasise the variation in costs which occurs dependent upon the type of barley used

Figure 6.3

Henry Page's Formulae for Making Pale Malt and Brown Malt – October 1905

Cost per quarter	Pale malt s. d	Brown Malt s. d
Labour	1s. 2d	1s .8d
Coal	1s. 0d	-
Faggots	-	3s. 0d
Delivery	1d	3s. 0d
Cartage	5d	9d
Charges and Oddments	6d	3d
Screening	1d	-
Making and delivering	4s. 2d	6s. 11d
Screened barley #	31s. 6d	31s 6d
Total Cost Per Quarter	35s. 8d	38s. 5d

calculated on the basis of unscreened barley at 30shillings a quarter and a screening loss of 10 quarters for every 110 quarters purchased. Screenings were sold for 15 shillings per quarter.

(Henry Page & Sons miscellaneous papers, Hertfordshire Record Office cited in Clarke1998: 121).

The cost of making and delivering the two types of malt at 4s 2d and 6s 11d respectively indicate that these comprised the various six shilling production costs allocated in Lancaster's formulae. Lancaster in 1908 had written that malt production costs should be in the ratio of 80% for raw materials and 20% for production costs (Clarke 1998: 120) which again is in line with his costing formulae. Lancaster provided a detailed explanation of the composition of the six shillings, breaking it down into fixed and variable costs. Fixed costs, he stated, should amount to 3s 6d per quarter of malt and were to include 5% of capital cost, depreciation at 2% for buildings and between 7%-10% for machinery, plus rates and taxes. Variable costs were calculated at between 3s and 4s per quarter of malt. These included interest on working capital reckoned at 1s per quarter of malt, 9d to 1s 3d per quarter for wages and fuel, 1d to 3d for power for machinery and general expenses of around 2d. Against this the sales income from by-products of 6d per quarter were netted off leaving a net total manufacturing cost of between 6s and 7s per quarter (Clarke 1998:120)

It is evident that there were similar costing approaches were being applied by Lancaster and Page although a wide breadth of unit costs were presented ranging from 30s 4d to 38s 4d. As Clarke noted it remains unclear which was the more accurate of the two methods, but given the number of variables involved regarding the different variety and quality of raw materials normal production loss and varying unknown economies of scale both methods provided a reasonably consistent figure. Lancaster's method also reflected the emergence as in brewing of common financial benchmarks (see Tripp, 1892 and De Peyer, 1915) which although approximate could be used as a rudimentary control.

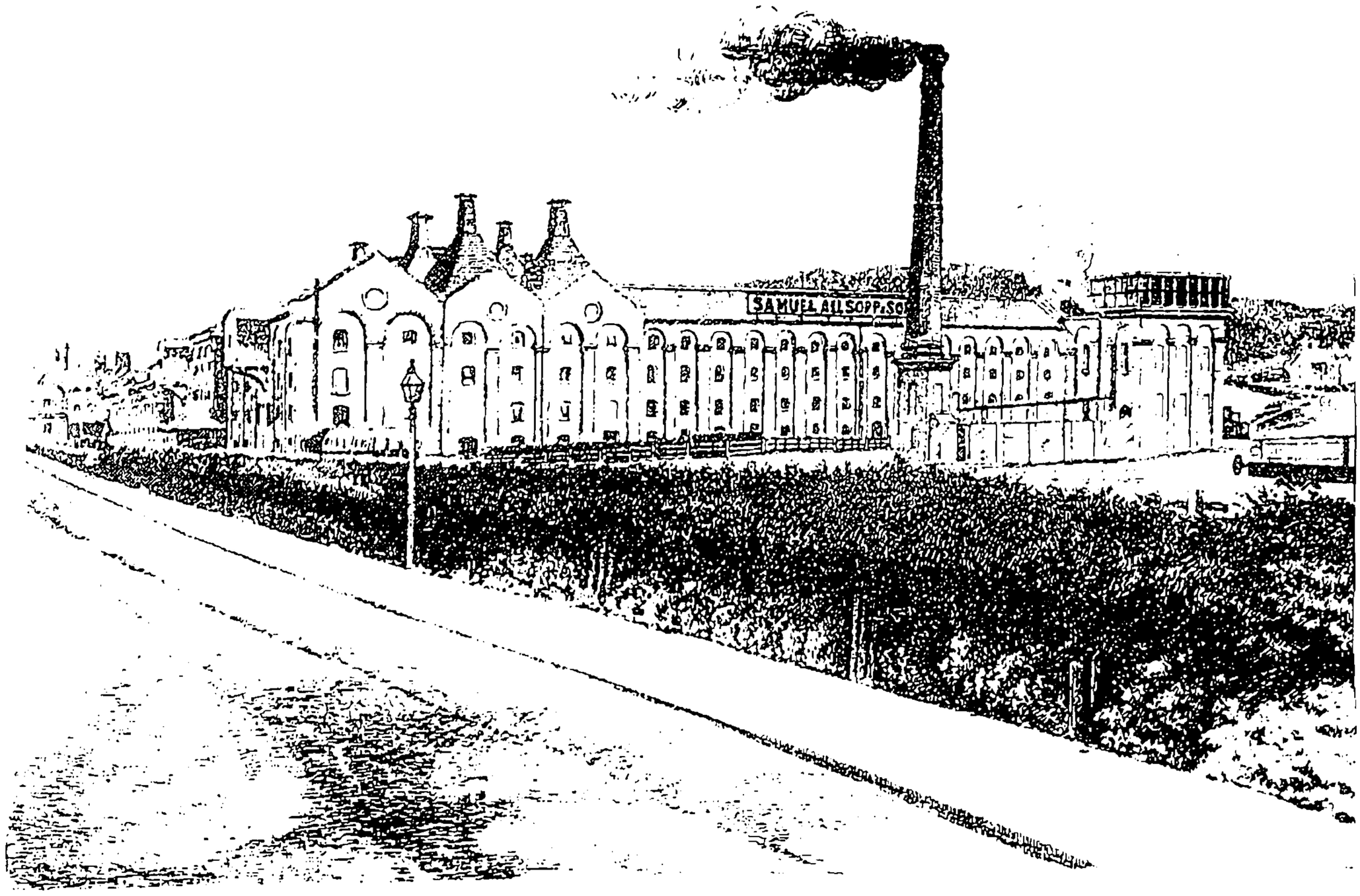
6.5 Co-ordination: Brewer Maltster Accounting

It has been asserted that at the beginning of the nineteenth century, "There is enough scattered evidence that the separate identity of the maltster and brewer …was still almost universal" (Mathias 1959: 467). Nonetheless the vertical integration of the brewing industry from the early nineteenth century onwards saw the evolvement of both the commission maltster and the brewer maltsters such as Bass and Allsopp at Burton on Trent, Staffordshire building their own substantial maltings. Alfred Barnard's (1889) *Noted Breweries of Great Britain and Ireland* included a detailed description of the Allsopp maltings at Burton on Trent, Staffordshire, (at that time were described as the largest and most scientific of their type) which although operated independently of each other were connected by galleries to the main railway. Barnard's text reveals the larger scale of industrialised malting carried out by Allsopp,

"The maltings consist of four blocks of handsome elevation, constructed brick, and all communicating with each other. Each double block is spanned by a spacious barley floor, forming a covered avenue to a street 40 feet wide between each house, at the western end. combines well house. Engine house, a water house, containing a tank holding 40,000 gallons…In one of the barley rooms which spreads itself over the divided broadway. It is a spacious and lofty apartment, and some idea of this floor may be conceived, when we state, that after leaving a gangway of ten feet clear all round, it holds 8,000 quarters of barley. The malt stores are not all the same size, two of them hold together 8,000

quarters ad two 14,000 quarters of malt" (Barnard [1889] cited in Staffs Education 1977a: 27-29)

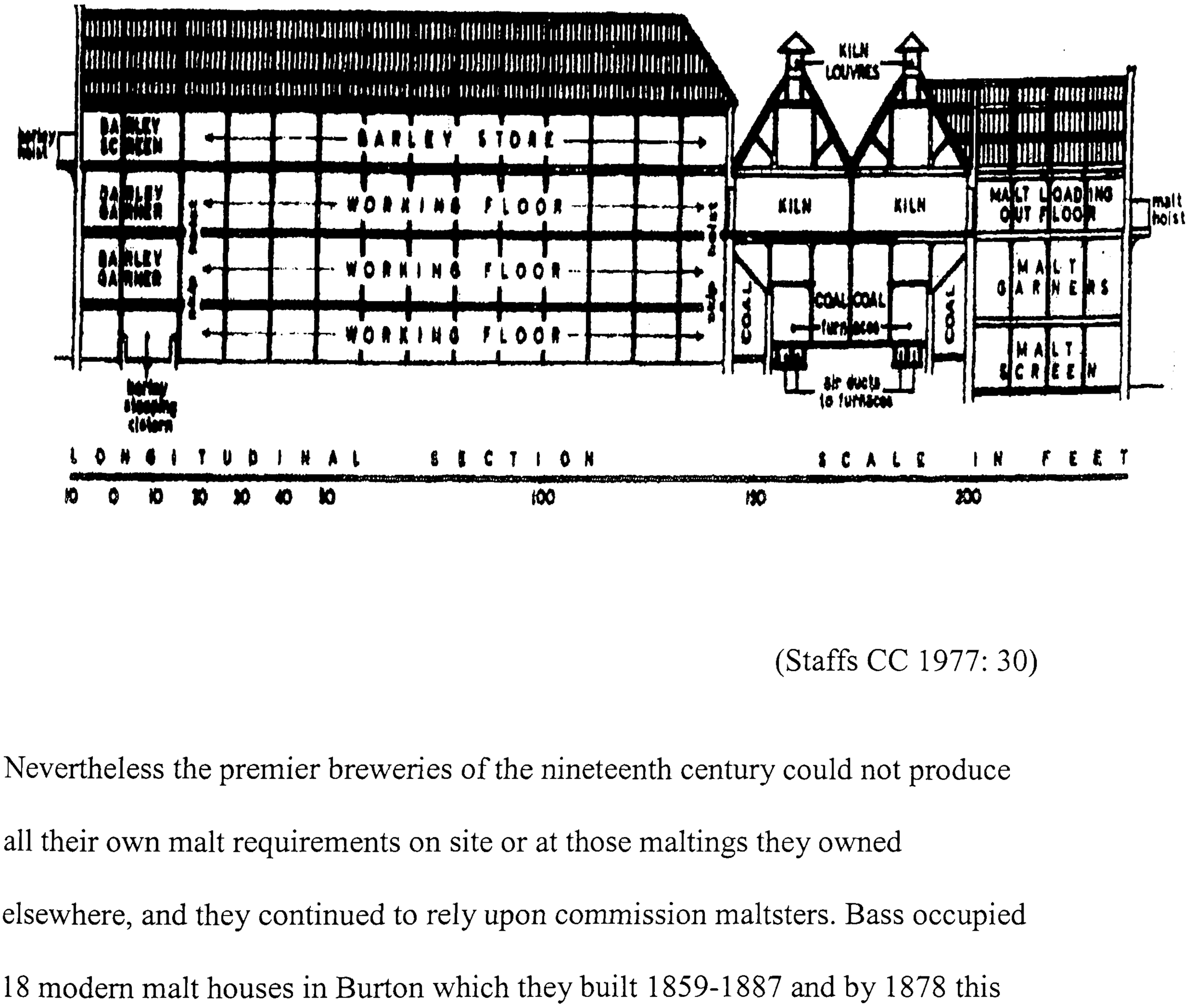
Illustration 9– 19th Century Allsopp Maltings Burton upon Trent



(Barnard, 1889)

The Bass maltings at Burton were equally substantial and Barnard (1889) visited these as well and noted that the firm's old malting (numbered 16 to 21) covered five acres and the newer maltings (numbered 18-21) each held 3,500 quarters of barley (Staffs Education 1977b: 28-29).

Illustration 10–Bass Maltings 1887 Burton upon Trent



(Staffs CC 1977: 30)

Nevertheless the premier breweries of the nineteenth century could not produce all their own malt requirements on site or at those maltings they owned elsewhere, and they continued to rely upon commission maltsters. Bass occupied 18 modern malt houses in Burton which they built 1859-1887 and by 1878 this had increased to 28 malt houses with a further 10 in Lincoln and Retford in East Anglia. During the period 1901 to 1905 the Bass company built a further 8 large malt houses at Sleaford at a cost of £340,000 (Gourvish and Wilson 1994: 190-191) in order to reduce the reliance on external suppliers and form an integrated business operation (Figure 6.4).

Figure 6.4

Bass Ratcliffe and Gretton Ltd – Comparative Malting Statements 1889-1914

Year ending 30th June	Burton Manufactured Malt Quarters (a)	Retford and Lincoln Manufactured Malt Quarters (b)	Externally Purchased Malt Quarters (c)	Total Quarters (d)	Burton % (e)	Retford & Lincoln % (f)	External Purchase % (g)
1889	186834	47552	15702	250088	74.7	19.0	6.3
1890	212193	51829	35109	299131	70.9	17.3	11.7
1891	208671	48518	62556	319745	65.3	15.2	19.5
1892	209156	47177	43948	300281	69.6	15.7	14.6
1893	218895	43441	53775	316111	69.3	13.7	17.0
1894	199958	39681	44164	283803	70.5	13.9	15.6
1895	216803	40024	37674	294501	73.6	13.6	12.8
1896	236581	45364	26655	308600	76.7	14.7	8.6
1897	242283	46290	37494	326067	74.3	14.2	11.5
1898	243630	47364	49200	340194	71.6	13.9	14.5
1899	231873	46689	86773	365335	63.5	12.8	23.7
1900	219664	44580	94616	358860	61.2	12.4	26.4
1901	227751	47664	111510	386925	58.9	12.3	28.8
1902	233790	48275	100019	382084	61.2	12.6	26.2
1903	238895	48036	85735	372666	64.1	12.9	23.0
1904	237033	47621	79064	363718	65.2	13.9	21.7
1905	239721	45570	38050	323341	74,1	14.1	11.8
1906	210639	38804	33804	283247	74.4	13.7	11.9
1907	208665	49791	40876	299332	69.7	16.6	13.7
1908	207556	61563	32752	301871	68.8	20.4	10.8
1909	203998	58636	25778	288412	70.7	20.3	9.0
1910	177446	51658	13200	242304	73.2	21.3	5.5
1911	187839	54609	2414	244862	76.7	22.3	1.0
1912	202328	60404	9720	272452	74.3	22.2	3.5
1913	202179	58241	7234	267654	75.5	21.8	2.7
1914	197978	58324	38969	295271	67.0	19.8	13.2

(Bass Accounting Statistics, A144, A145, A149, A139, A129, CVC)

Columns d-g was constructed by the author.

Bass's annual malt production was 'costed' in quarters in the same manner as the brewing annual statistics which were described in chapter five. In this instance the 'cost unit' is as before an annual post production measurement.

Figure 6.5

Bass Ratcliff and Gretton

Proportionate Cost of Malt made at Burton per Quarter 1888-1889 to 1910-1911

	1888-1889 d	1895-1896 d	1903-1904 d	1910-1911 d
Barley	487.59	373.4	365.87	382.96
Wages and Allowances	25.16	25.41	29.33	37.33
Salaries	10.76	7.43	9.33	10.29
Rent	11.53	11.85	12.59	15.63
Coal and Coke	9.46	10.72	15.64	19.17
Cartage	1.05	1.18	2.46	2.75
Trade Accounts	2.26	1.01	11.27	10.42
Engineers and Stores	15.47	8.11		
Other Items	0.46	0.66	0.88	0.64
Malting on Commission		3.42	3.83	
TOTALS	£2 6s 11.7d	£1 16s 11.26d	£1 17s 7.2.20d	£1 19s 11.9d

(Owen 1992: 236)

The total value of the malt summary figures were posted to another summary within the overall brewing accounting statistics ledgers, producing a 'Barrelage Statement' whereby the cost of malt per standard (36 gallons) barrel was calculated, as a partial representative example from 1879-1880 illustrates

Figure 6.6

Bass Ratcliffe and Gretton Ltd Comparative Barrelage Statement 1879-1880

(barrelage 813,138)

	£.s.d. Cost	£.s.d Average Cost per barrel		£.s.d. Proceeds	£.s.d. Average per barrel
Costs of bought and own made malt	£904,949.7s.6d	£1.2s.3.095d	Proceeds of ale & Beer	£2,290,517.0s.9d	£2.16s.4.052d
Hops	£283,469.19s.3d	6s.11.666d	do Grains	£3,7233.10s.9d	10.989d
Returned Ale	£7,629.9s.10d	2.251d	do Barrel Hops	£5,588.5s.0d	1.649d
Coals	£14,590.3s.2d	4.306d	Excise duty drawbacks	£9,001.2s.9d	2.656d
Plus 26 other line item costs			Rent Rates & Taxes	£4,348.13s.11d	1.283d
Profit	160,000.0s.0d[45]	3s.11.224d			
Totals	£2,346,688.13s.2d	£2.17s.8.615d		£2,346,688.13s2d	£2.17s.8.615d

(Bass A144/1, CVC)

It is apparent that no differentiation is made between the manufacture of the company's own malt and externally purchased malt. Apart from the period 1899-1904 (this is the period when Bass built new maltings) outside malt purchases were insubstantial so this may have coloured the decision not to distinguish between both types.

[45] The profit figure at first appears suspicious being a conveniently rounded figure but the figures do cast and from a sample check undertaken the line items values were correctly posted. Possibly some of the individual line items had been" fixed" to give this round number (e.g. depreciation could have been used in this way rather than being a straight line percentage or cost or book value).

It is evident therefore that such larger breweries exhibit the conditions described by Chandler (1977: 8-12) of a modern multi unit business which required new methods of administration and co-ordination that could be aided and abetted by developments in accounting practice. Thus once the barley had been manufactured in house into malt it would be transferred to the brewing process, an early example of 'divisional' product transfer and presenting an opportunity to engage in transfer pricing. Unfortunately the records held at the CVC of Bass Ratcliffe and Gretton Ltd and Worthington and Co both of whom were amongst the premier brewing companies discloses no surviving (if these existed) subsidiary malting cost records . A further examination of some of Bass's later accounting statistical summaries from 1896 indicates why Bass may not have had any modern malt cost records. The company from this date classified its expenditure into uncontrollable and controllable costs and this included bought in malt and malt manufactured in house

Figure 6.7

Bass Ratcliffe and Gretton Ltd Comparative Barrelage Statement (part)

Uncontrollable Costs 1896-1897

%	Uncontrollable Costs	s.d.
18.999	Costs of bought & own made malt	10s.6.647d
5.494	Hops	3s.0.619d
13.563	Excise duty	7s.6.410d
17.991	Discounts & Allowances	9s.11.928d
5.891	Carriage of ale to customers and agencies	3s.3.269d

(Bass A/149, CVC)

It is significant that Bass chose to classify its own in-house manufactured malt as an 'uncontrollable cost' in the same manner as its external malt supplies. This

perception may be understood in that the company was still committed to purchasing most of its barley on the open market before processing it into malt and was thus left to the vagaries of the market and the harvest in establishing the raw material cost.

An examination of the records of the Lichfield Malting Co and the Lichfield Brewery is similarly underdeveloped and not recognisably modern. The malt accounts are contained in very large ledgers arranged mainly by individual customer accounts with annual 'Outcast Accounts', albeit without a financial metric that were not completely accurate, as the outcast figures fail to balance.

Figure 6.8

Lichfield Malting Co and Lichfield Brewery Barley and Malt Outcast Account for Year Ending 30th Sept 1867

1st Oct 1866			Bushels	31st Mar 1867		Bushels
	To barley in stock		572		Malt sold during ½ year	20750
	To malt in stock		852	30th Sept 1867	Malt sold during ½ year	19794½
31 Mar 1867	Barley purchase and delivered		36396		Malt in stock	3791
			37280			
	Deduct barley sold during the year		-232			
			37588			
1st Aug 1867	Barley Purchased	4300				
	Deduct	-348	3952			

	barley sold					
			41540			
30th Sept 1867	Barley Purchased	1150				
	Deduct sales	-673	477			
			42017			
	Outcast for year		2318½			
			44335½			44335½

Outcast Account of Malt for Year Ending 30th Sept 1867

Sept 30th 1867	Bushels charged with for year end	41200	Sept 30th 1867	By malt sold and in stock	44335½
	Add malt in stock 30th Sept 1866	852			
	Outcast for the year	2238½			
		44335½			44335½

(D13/3, LRO)

An unexplained discrepancy arose between the two outcast accounts of 35 bushels (some 3.45%) and the latter account has alongside it the clerk's pencilled unsuccessful attempts at reconciling the error which may be attributable either to natural wastage in conversion or clerical error.

The only so far identifiable specific brewing text of the nineteenth century that devotes some small accounting consideration towards malt manufacture is Tripp's (1892) *Brewery Management* that provides an illustrative malting account.

Figure 6.9

Tripp's Malting Account for the Year Ending September 30th, 1891

1891	Qtrs	Price	£.s.d	£.s.d	1891	Qtrs	Price	£.s.d.	£.s.d.
To Malt in Stock Oct 1 1890	800	40/		1720.0.0	To Malt delivered to brewery	5800	40/		11600.0.0
Barley	60	30/		90.0.0	Barley sold for seed	100	36/		180.0.0
Barley Purchased	6200	31/		9610.0.0	Malt sold	60	40/		120.0.0
Rent of kilns			375.0.0		Culms[46] account sold			134.14.8	
Wages, coke etc			545.0.0		Culms account stock Sept 30th 1891			32.0.0	
ncrease	250			920.0.0				162.14.8	
ross Profit				2502.14.8	Less stock Sep 30th 1890			40.0.0	
									122.14.8
					Malt stock Sept 30th1890	1410	40/		2820.0.0
	7370			14842.14.8		7370			14842.14.8

(Tripp 1892: 12)

It is immediately striking from Tripp's illustrative malting account that a gross profit arising from manufacture has been posted to overall brewing profit and loss account due to an increase or gain on the finished product. This prima facie seems bizarre and illogical since the manufacturing process previously described always realises a loss or natural wastage through manufacture. However it must

[46] The culm is the stem of a plant especially of grasses and in malting refers to dried rootlets of the screened malt. It was collected and stored for a month. The malt culms are a by-product of manufacture were sold as cattle cake. The selling price varied according to the quality of the culms and the season of the year but could realise between £3 and £5 per ton, fetching a higher price in winter. Such sales of culm could also be made by individual maltsters (Baker 1905: 29 - 39).

be recalled that the posting of quantities in this account of quarters of barley and malt are not of equal sizes as the malt quarter was smaller than a barley quarter. This was explained thus,

"From consideration of what has been written about the malting process, it will be apparent that 100lbs will produce less than 100 lbs of malt. This loss in dry weight is accounted for by certain soluble constituents being removed.

It is however usual to speak of the malting increase, and for this reason: The loss in weight from screened barley to malt does not amount to so much as the difference between weight of a bushel of barley and malt, a bushel of barley weighing 56lbs., and of malt 42lbs. This apparent increase varies according to the class of barley malted: the average is about 3 to 3½ per cent. With dry foreign barleys this is greater, being sometimes as much as 10 to 15 per cent. When however, barley is harvested under bad conditions there is frequently no apparent increase at all". (Baker 1905: 39)

To put it plainly the difference between barley and malt bushels created an artificial quantity increase[47] when the malt quantification was applied. This was recorded as a simple balancing figure in the accounts that treated it as a production gain in quantity which became a 'profit' on manufacture.

De Peyer's paper delivered to the London Section of the Federation of Brewing in 1915 stated that,

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[47] The increase is similar to a favourable abnormal wastage variance – a normal loss of 25% is anticipated, which is reflected in the different weights associated with a quarter of barley (448lb) and mal (336 lb), but the actual loss is only about 22%, giving a favourable variance of approximately 3% but his technical language was not used by Baker.

"Where maltings are attached to a brewery and no accounts are kept of their separate working, I think an addition of 4s per quarter to the cost of the barley (which would otherwise go to the maltster in addition to his profit) a sufficiently near estimate of the cost of conversion, but this again varies in different circumstances and localities". (De Peyer 1916 : 22).

The limited evidence of the application of a modern cost accounting system to malt production is to be found within the operations of the LCCB / SMS, the state controlled brewery at Carlisle and district which operated under government control from 1916 until 1974 (Talbot, 2005a) and where some malting was undertaken. A detailed description of the brewery's accounting has survived revealing the maintenance of stock and bin cards for the various grain materials to ascertain available balances and to detect pilfering. The state brewery was notable for introducing recognisably modern cost accounting techniques which though primarily devoted to beer production gives a fleeting reference to malt cost accounting, (Figure 6.10).Unfortunately none of the early malt or brewing cost sheets has survived and the malt summaries have so far not been located but the brewery summaries are extant from 1933 onwards recording postings of malt to the beer production summaries.

A complete and detailed explanation of modern malt cost accounting is provided by G.S Hamilton's (1939) *Brewery Accounting.* Hamilton provides a similar pro-forma of a Malting Account which is less detailed than Tripp's earlier example from 1892.

Figure 6.10

G. S Hamilton's Malting Account 1938-1939

	1938 £.s.d	1939 £.s.d		1938 £.s.d	1939 £.s.d
Barley purchased			Malt for brewing…Stock as at 30th June 1939		
Coal					
Wages and State Insurance			Less Stock at 30th June 1938		
Sundry expenses					
Rates			Malt dust, &c, Sold		
Profit					

(Hamilton G 1939: 12)

Hamilton explained that the brewery's own manufactured malt could be posted to the beer trading account at either cost or at higher value (less than a market price) and a profit taken. He does not engage in any discussion concerning the different sizes of the barley and malt quarters resulting in the creation of the artificial profit. A simple calculation of the malt posted to the trading account divided by the quarters produced could be then compared to market prices he advised to assist in make or buy decisions by the management,

"it need scarcely be stressed that the malt house should be closed if does not show a profit after charging the malt made at the same price as it could be purchased outside. A loss on this account may be caused by insufficient use, that

is to say, when only a small quantity of malt is made and the expenses are practically unchanged" (Hamilton G 1939: 46).

However somewhat surprisingly Hamilton neglected to expand on what constituted malt at 'cost' and the subject fails to appear within his final brief chapter devoted to cost accounting other than as an item making up the prime costs of production.

6.6 Malting Conclusion

The claims that a new agrarian capitalist mentality appearing in the eighteenth century somehow diffused into industry in the case of malting and brewing is unsustainable on the assembled evidence presented in this chapter. The surviving primary and secondary sources indicates that there was no such transfer of the new agricultural calculative technology to either the malting or brewing maltster businesses arising out of the Agrarian Revolution and that the distinct identities between maltsters and brewers was maintained. Indeed, the evidence indicates that the identifiable malt cost accounting advances as a managerial discipline did not appear until the early and later twentieth centuries, reinforcing the lack of any earlier incidence of accounting advances towards modern practices in this part of the agrarian sector. In the industrialist brewing sector accounting innovation in malt accounting was even less evident and acknowledged by prominent industry insiders (Baker 1905) as a particular problem.

I will now offer reasoned explanations why this occurred by considering the maltsters first and secondly the brewing maltsters. There is no evidence of any

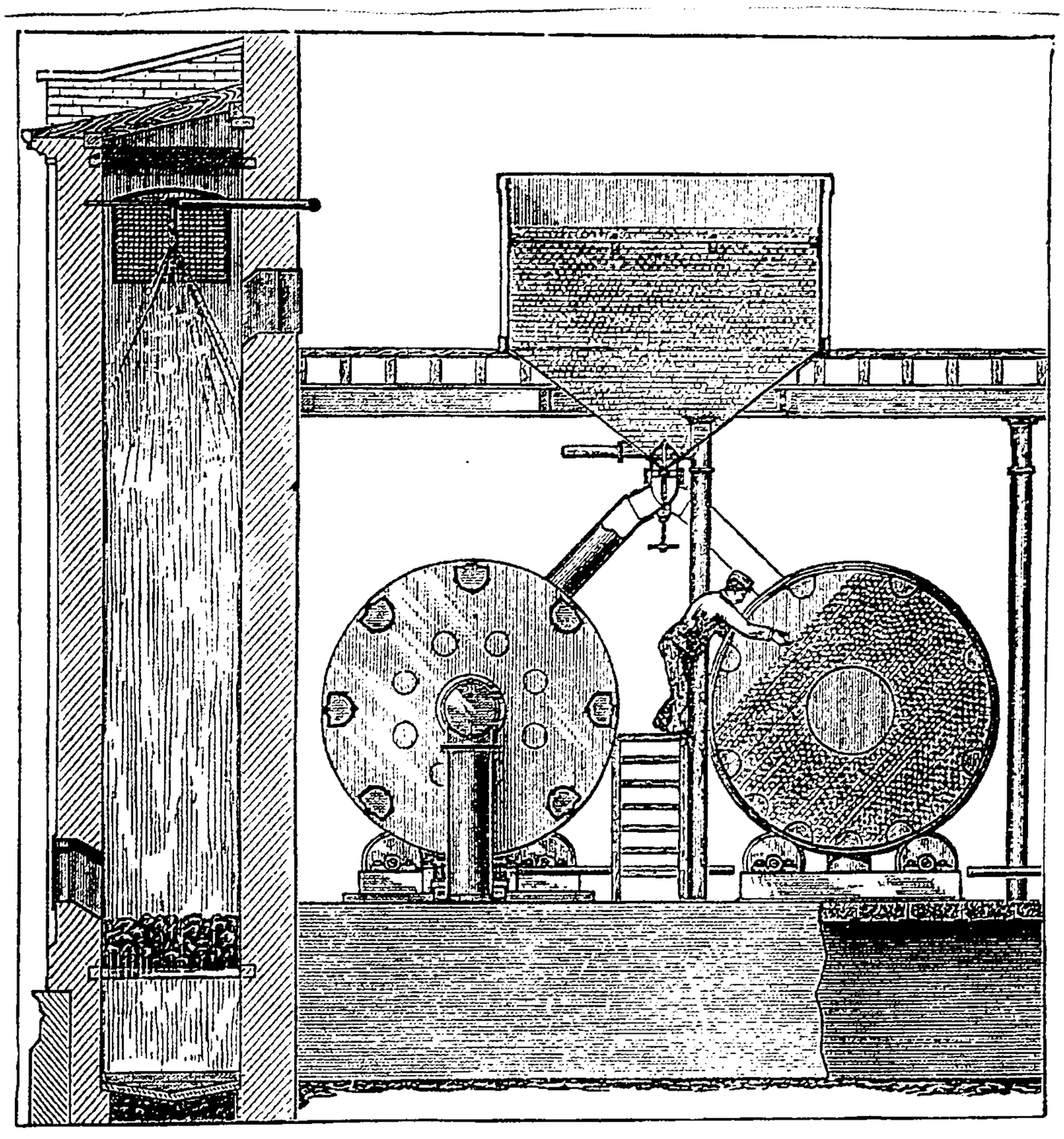
attempts at cost accounting by maltsters prior to the turn of the twentieth century. I suggest several economic rationalist causes for this. Domestic malt sales had been largely consistent and prices were stable in an expanding brewing market sector, unskilled labour was both plentiful and inexpensive and so there was no economic or social imperative for any accounting innovation as a control discipline. It was towards the end of the nineteenth century that this longstanding market organisation began to decay. A contraction in beer consumption coupled with improved transport infrastructures meant that the major consumers, the brewers could import cheaper foreign malt and barley which drove down prime costs. Thus Bass during 1897-1898 imported 23% of its Smyrna barley grains from Turkey, 16% from North Africa and 10% from California which by 1910-1911 had risen to 42% from Turkey and 30% from California (Owen 1992:110). The emergence of widespread foreign competition in turn necessitated that the maltsters' profit margins were squeezed since it had become no "longer liberally remunerated and did not face the severe competition at present" (Baker 1905: 29) providing the imperative for detailed understanding of cost structures as evidenced by Lancaster's and Page's costing attempts. As Baker observes this explanation coincides with attempts to develop accurate barley and malt valuation systems but intriguingly not within a recognisable accounting discipline,

> "Many attempts have been made by chemists connected with the malting and brewing industries to overcome the rule-of-thumb valuation, but as yet without success, although the large amount of work being done in this direction will undoubtedly in the near future have a successful issue" (Baker 1905:17).

Therefore when previously faced with a complicated manufacturing process of losses in manufacture, mitigated by potential by-product sales to account for the maltster was content to apply an ad valorem process of adding anything from three to four shillings per quarter (Baker 1905: 41) which appeared to work adequately without requiring the development and maintenance of expensive and bureaucratic cost accounting systems.

The maltster brewers cannot be accorded such a straightforward explanation. The malt manufacturing process itself underwent no dramatic changes even though 'pneumatic malting' or mechanised malting techniques were available from the early late nineteenth and early twentieth century and was widely practiced by continental brewers and in the United States which curiously Chandler (1977) does not mention.

Illustration 11 - Pneumatic Malting



(Baker 1905: 33)

Malting mechanization prima facie offered several substantial benefits comprising the need for much smaller production buildings than the traditional large and expensive malthouses, the ability to undertake continuous production throughout the year without a summer respite and reduced direct labour costs. The new machinery could have been easily fitted into existing malthouses but the availability of this new technology was largely but not entirely rejected by the malting and brewing trade. The explanation for this failure to mechanise and adhere to inexpensive and traditional labour intensive methods was not attributable to managerial conservatism but was a rational economic response. The pneumatic system was trialled in Britain by both commission and brewing maltsters but produced no substantially improved finished product. Amongst

those who experimented with the new mechanisation were Bass who converted their Burton Plough maltings in 1899 to take 28 quarter germinating drums which were the precursors of a system that replaced floor malting sixty years later (Owen 1992: 111). The pneumatic system had been designed for German malts which it was alleged were substantially different from British malts but overall the system proved largely unsatisfactory,

"German malt is everything that is bad from the point of view of an English brewer ... the results were so unsatisfactory that the pneumatic system got a bad name, which has not yet been wholly removed...the pneumatic system needs to be adapted to the requirements of the English brewer. There is evidence that this now being done, and in some cases satisfactory material is being turned out. When the method of working is brought to perfection in this country, it is highly probable that the present system of floor malting will gradually fall into desuetude", (Baker 1905: 31).

The extensive maltings of all the major brewers with the transfer of manufactured raw materials for further processing offers the prospect of a divisional structure evinced by Chandler as formative of managerial capitalism and accounting development and yet the evidence appears superficially negative. Only the SMS offers a reference to such a process. It appears that like the maltsters the brewers opted for a less expensive and simpler system as described by De Peyer previously alluded and which needs repeating, i.e.

"Where maltings are attached to a brewery and no accounts are kept of their separate working…., in addition of 4s per quarter to the cost of the barley (which would otherwise go to the maltster in addition to his profit) a sufficiently near estimate of the cost of conversion" (De Peyer 1916: 22).

It will be noted that this cost addition for conversion ties in with Baker's prior comments. This system seems to have endured given Hamilton's (1939) text given that no mention of malt costing systems were provided despite devoting a more detailed description of beer production costing being provided. This narrative suggests an inferior valuation process but as will be demonstrated in the Concluding Chapter this is illusory and in fact evidenced effective target cost accounting as consistent with a capitalist mentality.

Chapter 7 - The State

7.1 The LCCB /SMS (1916-1974): Introduction and Overview

The public ownership and successful operation of a large brewing enterprise is not readily obvious and the state's ownership of this unique business is now mostly forgotten. The state's brewing enterprise is justified in having a separate chapter devoted to it not only because of its distinctive place in the history of the Trade, but because it was the source of innovation in management and accountancy practice. It is also geographically distinct from the prior research because its activities and archives resided in Cumbria and southern Scotland and its ethos is to be discovered in Temperance and because it was a social and financial success. Unlike previous chapters, this body of the research is located in two eras in both the Great War (1914-1918) and the inter-war period with some mention of its aftermath.

The outbreak of the Great War in 1914 had far reaching impacts on the business sector as a whole. This would ultimately result in the State intervention in the brewing sector which at its most extreme witnessed the partial nationalisation of the Trade from 1916 until its ultimate abolition in 1974. The rationale for this agenda was combined with the pursuance of wartime objectives and political expediency that became intertwined within a project of social engineering to improve sobriety, alter the existing drinking culture of the industrial working class and reform public house provision within a framework of a new form of management, labelled 'Disinterested Management'. The lack of military success on the Western Front coupled with a shortage of ammunition, the 'Shells

Scandal' (Carver 1998: 68) led the government to blame widespread drunkenness amongst munitions workers. The government was thus able to divert criticism towards the brewers who were perceived as war profiteers arising from the significant increase of retail prices due to more expensive raw materials and the imposition of increased beer duty (Vaizey 1960: 20). This led to Lloyd George, the Minister of Munitions, later prime minister and a strong Temperance supporter to claim, "Drink is doing us more damage than all the German submarines put together…We are fighting Germany, Austria and Drink, and the greatest of all these deadly foes is drink." (Haydon 2001: 258).

At this period the Carlisle area was the largest ammunition manufacturing centre in the British Empire which became the reason it was selected for government control. The political objectives of this radical agenda needed not only to present it as a social success but as a financial one as well in order to justify the continuance of the scheme post war and refute the criticisms originating from the commercial brewing lobby.

The Foucauldian spatial and activity disciplines within this section are not considered separately since these remained as previously described since the nationalised brewery was created from the take over and rationalisation of five existing commercial breweries in and around Carlisle and thus in these respects employed existing arrangements.

Figure 7.1

The Cumbrian Breweries Taken Over by the State 1916

Brewery	Details
New Brewery (Carlisle) Ltd	Originally registered in 1879 as the New Brewery, (Carlisle) Ltd and re-registered in 1899. It was closed by the State in 1916 and later used as maltings before being sold to the Border Dairy Co Ltd.
Carlisle Old Brewery (Sir Richard Hodgson and Co Ltd)	Founded in 1756 and used as the State Management Brewery until 1973 when it was sold to Theakstons.
F P Dixon (Jos Iredales Trustees) High Brewery	Closed by the State in 1916
Graham and Sons – Queen's Brewery	Founded 1860, closed by the State in 1916.
David Hall and Sons	Established 1895, closed by the State in 1916.

(Barber 2005: 17)

This compulsory takeover by the State cost £900,000 and extended geographically beyond Carlisle that included Gretna and Annan, Invergordon-Cromarty Firth naval base and Enfield Lock in London. The purchase included 235 licensed properties in Carlisle and forty-four properties elsewhere. The minor retailing operations undertaken at Enfield Lock were returned to the private sector in 1923. The substantive business changes rather occurred both with the type of management and the use made of the accounting framework to support management decision making which distinguished it from prior commercial practice. Therefore, following this brief explanation of the structure and circumstances of this unique organisation, the segmental discipline of management and the co-ordination discipline of accounting will be explored in detail because they significantly contributed to the debates of the period and the

inter-war period surrounding the brewery industry and the subsequent development of brewery accounting practice.

7.2 The Loft Great War Cost Accounting Hypothesis

The work of Loft (1986, 1990 and 1994) constructed within a Foucauldian schema on the Great War munitions factories offers certain parallels with the creation and operations of the LCCB/SMS and the accounting legacies arising from government control. Loft's hypothesis's is that the State intervention and ensuing war-time experiences in the ammunition manufacturing sector was a seminal turning point in the development and acceptance post bellum of cost accounting within the wider sphere of British industry. In Loft's phrase it heralded as 'the coming in to the light' of cost accounting.

The State intervention in the munitions sector occurred in 1915 as part of the need to successfully wage the first industrial war. Loft explicitly dismisses the existence of any widespread costing practices pre 1914 and states that any early British leadership in costing evidenced by texts and articles had been lost to the USA by the late nineteenth and early twentieth century. The American impetus for domination in the cost accounting arena it is alleged arose in the USA through widely embracing 'scientific management', and standardised shop conditions which introduced new management practices (Loft 1990: 8-9). The perceived backwardness of British cost accounting became apparent, Loft claims, when the British government attempted to negotiate ammunition contracts with commercial suppliers and discovered,

"For some time I have been getting very anxious about the Financial Arrangements: about the nature of some contracts and so on. The astounding thing is that nobody seems to be able to tell us what things cost to make" (Addison, Undersecretary Ministry of Munitions, 12th August 1915, cited in Loft 1990: 13).

The State responded by the establishment of National Factories for some of the manufacturing whilst the commercial factories remained in private ownership but were subject to state control. The objective of the control besides improving production efficiency was also to determine a 'fair market price' where none existed and to this ends Samuel Lever, FCA with a wide and long established practice of cost accounting in the USA was brought in by the Ministry of Munitions to be in charge of "arrangements for cost accounting, for the control of the cost of new munitions", (Loft 1994 121). Since there was no means of establishing a market price for many munitions this necessitated calculating a cost of production and a rate of profit earned before the war. This led to the developments of three types of costing methodology, technical costing where engineers calculated what the product should cost based on an analysis of production, secondly accountancy costing which relied on the contractors' accountancy ledgers to determine actual cost and thirdly by comparison of commercial costs with those incurred in the National Factories. Although the effectiveness of these cost initiatives remained contentious at the time it did serve to reduce perceived 'profiteering' and was heralded as a success, the "real triumph of Mr Lever in his being able to show them, by means of a proper accounting system, how economies could be effected and production costs

reduced" reported *The Times* newspaper in 1917 (Loft 1992: 122). The post war bequest Loft claims, was instrumental in promoting the identity and importance of costing within industry and its significance in 'Scientific Business Management' exemplified by the formation of the Institute of Cost and Works Accountants (ICWA now CIMA) in 1919, the conference on Scientific Costing of the ephemeral Costing Association in the same year and the ICWA Costing Conference of 1922 whereby the National Factories experience was enthusiastically diffused and embraced throughout British industry,

"Manufacturers had costing forcibly brought to their attention through government measures and as a result the instillation of cost accounting systems in manufacturing seems to have proceeded quickly" (Loft 1986: 14)

Moreover Loft directly attributes the professed spread of cost accounting as fulfilling the Foucauldian micro-discipline of exerting an all-seeing panoptic gaze as an instrument of control (Loft 1986: 140-141).

Thus the similarities with the LCCB/SMS become apparent with the imposition of direct state management control of production and this chapter examines the accounting changes heralded by this new regime, particularly the cost accounting framework and its transmission to the commercial sphere, but also (unlike Loft) the contribution the State made to financial reporting and accountability.

7.3 The LCCB/SMS: Disinterested Management

The LCCB/SMS was ultimately responsible to the Home Secretary and instead of a board of directors adopted a committee structure for the overall management

of its businesses activities. The composition of this management structure was conspicuous for containing only two senior commercial brewery figures, so that it was both culturally and socially removed from the normative commercial brewery structure, which maintained the 'beerage' tradition of strong family links as identified by Glamman (1981).

Figure 7.2

The Composition of the LCCB 1916

Board Member	Details
Edgar Vincent, Lord D'Abernon	Chairman. Former financial adviser to the Egyptian government, governor of the Imperial Ottoman Bank and later British Ambassador to the Weimar Republic
Waldorf Astor	Chairman of the Observer Newspaper and Conservative M.P.
E R Cross	Associate of Lloyd George and prominent in the pre-war 'Land Campaign'.
Colonel J Denny	Head of a Dumbarton Engineering firm
John Hodge	Labour M.P and later Minister of Labour.
Sir William Lever	Industrialist soap magnate
Philip Snowdon	Labour Party M.P and post war Chancellor of the Exchequer
Neville Chamberlain	Conservative M.P, director of Nation Service, (and later Prime Minister).
W. Towle	Midland Railways Company Hotels director
Sir George Newman	Principal medical officer of the Board of Education
John Pedder	Home Office
R Russell Scott	Admiralty
William Waters-Butler	Chairman, Mitchell and Butlers, brewery Birmingham
Reverend Henry Carter	Wesleyan Temperance Society
R S Meiklejohn	Treasury
Sidney O Nevile	Director Whitbread brewery, London

(Talbot 2005b: 59)

The strategy of the business was to achieve several social objectives comprising,

1. To prevent such drinking as renders workers less fit for the National Service.
2. To provide cheap and good food, so as to discourage the drinking of alcohol apart from with meals.
3. To make the public house a less unhealthy and more easily supervised and controlled place for rest and refreshment; and for social intercourse and recreation.

(Hunt 1971:19)

The Carlisle operations were placed in the charge of a General Manager, Edgar (later Sir Edgar) Sanders who had been Clerk to the Justices of Liverpool, an expert in licensing matters; chairman of the Magistrates' Clerks Association and who was later to become chairman of the Brewers' Society and a managing director of Lever brothers (Nevile 1959: 102, 222).

These aims of the 'Experiment' were to be achieved by restrictive methods, i.e. a reduction of trading hours, reduced licences, Sunday closing, restriction of credit, the prohibition of spirit sales at specified places and times, and the prevention of retail abuses such as the 'long pull' by landlords who gave generous measures to attract custom. This was complimented by innovative constructive methods which involved the appointment of fixed salaried public house managers with commissions being offered on non-alcoholic and food sales, the reconstruction of premises and the provision of recreational activities (Hunt 1971: 19). By contrast

commercial practice remained devoted to sales maximisation since the core business activity was the production and selling of beer. The objectives and their pursuit of the LCCB were achieved through a policy of 'Disinterested Management' that had its origins in the Temperance Movement. Disinterested Management is now a largely forgotten concept whose origins can be traced back to the nineteenth century 'Gothenburg System'[48], but its meaning remained imprecise. However, the Southborough Report of 1932 defined it as having two components, management and ownership. In the case of management it was,

> "The conduct of a public house by a manager with a fixed salary and having no commission on the sale of liquor, but sometimes taking commission on the sale of food and non-intoxicants. They (the Committee) took as types of disinterested management, Public Housetrusts and Associations[49], and State Management" (Report of the Royal Commission on Licensing, (England and Wales) 1929 - 1931, Cmnd 3988, S63 [a]).

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[48] The Gothenburg system was a type of coffee public houses originating in Sweden in the 1870's. They were recognition that alternative non alcoholic refreshment could be offered and that food could be provided (Haydon 2001: 224).

[49] The Restaurant Public House Association aimed at providing public houses as a family rendezvous by selling meals, refreshments and soft drinks (Nevile 1959:181-182). The Trust movement originated from within the moderate Temperance opinion. Its main proponents viewed 'profit' as the main obstacle to temperance and regarded public house ownership by the brewers as fundamentally opposed to social reform and so refused to co-operate with brewers or lease houses from them. The movement advocated disinterested management and the movement became established on the basis that dividends for the providers of capital should be limited to 5%. They provided food and soft beverages in their houses. The earliest example of its type was the People's Refreshment Association founded in 1896. The Public House Trust movement was organised through county associations which were to acquire houses and operate on a non-profit basis apart from the return on capital. Most notably the Hertfordshire Trust House movement broke away in 1919 to become Trust House Ltd that became Trust House Forte the hotel chain. As late as 1959 it operated 159 houses nationally (Nevile 1959: 67-69). Research has shown Staffordshire did not have such a county movement.

In the case of ownership it was taken to be, "The interest of the owner in the profits on the sale of intoxicants is, in theory or practice or in both, limited. This is popularly known as 'disinterested management" (Report of the Royal Commission on Licensing, [England and Wales] 1929-1931, Cmnd 3988, S63 [b]).

7.4 The LCCB/SMS: Co-ordination – Financial Accounting

Since the 'Experiment' was a radical departure from the dominant ideology of laissez-faire it was tolerated by the Trade in the spirit of wartime consensus with the belief that State intervention was only a temporary phenomenon. Nevertheless the 'Experiment' would last until 1974 when the SMS was privatised. The reasons for the State retaining post war control was never made explicit, but it remained heavily influenced by the strong Temperance lobby and the extension of the SMS would be advocated again in 1947 to include the new towns that went as far as establishing a formative administrative framework. The post Great War animosity by the commercial brewers towards the SMS extended to include vociferous criticisms at its trading performance which focused debate on the accounting systems of the 'Experiment'.

The financial accounting system of the LCCB initially presented problems of the consolidation of the five separate breweries acquired which was established by creating a codified 'Accounting System'. This was formally recorded in documentary form in the first annual Managers Report of 1916 which is notable because my research has not uncovered any commercial equivalent. The report is informative in that it takes the opportunity to both explain and justify the system whilst making some comparisons with existing commercial practice. The

accounting system contained twenty separate categories contained over five pages. The financial accounting structure developed by the LCCB/SMS was bureaucratically and administratively efficient, as it needed to be with the wartime scarcity of suitably skilled labour. An innovative retail branches ledger was introduced enabling comparisons to be made between branches (General Managers Annual Report 1916: TSMS 1/6/1, Cumbria County Record Office, [Carlilse], CCRO). This indicated that local management control was being exercised via the financial accounts through the monitoring of individual branch (i.e. public house) financial performance. The distinction of this system contrasted with the complex commercial financial accounting systems (Tripp 1892, Donnachie 1979), was that,

> "Normally the bookkeeping system in general use in breweries is very elaborate and absorbs a large amount of clerical labour. By departing from the usual systems and introducing a number of labour saving devices it was possible to effect a considerable reduction in the amount of clerical services required as well as in the number of books used, and at the same time to preserve all the information and statistics" (General Managers Report 1917; TSMS 1/6/1, CCRO)

The chief accountant for the Carlisle operations was J. Baird FCA about whom little is known and the assistant accountant was Joseph Henderson who had been the accountant for one of the breweries and was recalled from active service in the Balkans in 1915 to fulfil this role.

The Scheme's first published financial statements covered period 18th January 1916 to 31st March 1918. These financial reports were prepared for each of the separate areas involved, i.e. Carlisle, Gretna, Enfield Locke etc without consolidation. I have concentrated on Carlisle in this part of the research because it remained the dominant centre of activities. The Carlisle financial reports were published and retained in the annual General Managers Report in Carlisle, and the minutes of the Carlisle board reveal that they were invariably accepted without comment. The Carlisle accounts were subjected to an annual audit by the Glasgow firm of Mann, Judd, Gordon and Co who retained the audit until at least 1966-1967 when their last certification appears on the financial statements. The longevity of audit tenure was not unusual during this period and had numerous precedents in the commercial and brewing sector.[50] The accounts for all the areas operating within the Scheme were then submitted to the Comptroller and Auditor General for further audit before being presented to the House of Commons for debate. This level of audit coverage thus appears excessive when by comparison commercial balance sheets required only one external audit and certification during the period 1900-1948 (Myddelton 2004: 46).

The Scheme produced and published a succinct profit and loss account that disclosed trading profits after various provisions, Excess Profit Duty (EPD) and depreciation. The debit side contained equally brief entries disclosing the main

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[50] The Mann Judd Gordon and Co archive is held by the Glasgow University Archives Services. Enquiries have revealed that no related LCCB/SMS archive survives. A typical example is Joules and Sons Ltd, Staffordshire who were audited by Welch and Parkinson of Liverpool who held office from brewery incorporation in 1898 until 1959. It was the auditors who resigned from their office despite the company's request to retain the appointment (John Joule and Sons (Stone) Ltd, Annual Reports and Statements of Account, 1915-1965, SRO).

charge of interest on Exchequer Advances (the capital financing of the scheme), separate disclosure for the depreciation of leasehold premises, preliminary establishment expenses and accrued capital replacement costs accrued to the Exchequer. The Scheme's level of profit disclosure from the outset was distinctive because it was not until the passage of the Companies Act 1929 that a similar publication was imposed on companies (Myddelton 2004: 50).

Figure 7.3
SMS Profit and Loss Account for the year ended 31st March, 1930

DR	Carlisle	Gretna	Cromarty Firth	Totals
	£.s.d	£.s.d	£.s.d	£.s.d
Interest on claims (est)	38.0.0.			
Depreciation of fixed & loose plant, furnishings loose plant	5877.0.8.	930.16.2	1050.18.6.	7858.15.4.
Depreciation leasehold properties	55.19.0.			55.19.0
Alterations & improvements proportion w/o & addition to reserve	9978.12.7.	1885.4.4	2605.3.6.	14469.0.5
HQ Admin Exps	5197.2.1.	503.14.5.	769.10.10	6470.7.4
Insurance	1279.16.7	117.0.5	110.15.4	1507.12.4
Reserve for contingencies	2000.0.0			2000.0.0
Bal profit for year c/d	66689.7.9	4239.4.9	6412.13.5	77341.5.11
	91115.18.8	7676.0.1	10949.1.7	109741.0.4
Cash transmitted to Exchequer	64396.15.0	3877.12.1	4665.18.9	72940.5.10
Balance to statement of assets and liabilities	320234.1.7	25950.6.10	49831.5.2	396015.13.7
	384630.16.7	29827.18.11	54497.3.11	468955.19.5

CR	Carlisle	Gretna	Cromarty Firth	Totals
	£.s.d	£.s.d	£.s.d	£.s.d
Trading a/c's*	79211.13.3	6930.3.2	9971.7.2	96113.3.7
Balance from Property A/C	11904.5.5	745.16.11	977.14.5	13627.16.9
	91115.18.8	7676.0.1	10949.1.7	109741.0.4
Profit for year b/d	66689.7.9	4239.4.9	6412.13.5	77341.5.11
Amount b/f as at 31.03.1921	317941.8.10	25588.14.2	48084.10.6	391614.13.6
	384630.16.7	29827.18.11	54497.3.11	468955.19.5

* after provisions for rent, repairs & renewals, licence & other duties, taxes, (other than income tax Schedule D, rates, managerial & architectural staff

Signed J C G SYKES
Accounting Officer

(*Brewers Journal* 1930: 506-507, CVC)

The Scheme's balance sheet provided the most obvious difference to commercial balance sheets due to the nature of the capital financing adopted. Exchequer Funding provided the capital, effectively a long-term government loan, which was repayable with interest that lasted until 1928 rather than equity and debt funding.

Figure 7.4

SMS Statement of Assets and Liabilities
as at 31st March 1930

Assets	Carlisle	Gretna	Cromarty Firth	Totals
	£.s.d	£.s.d	£.s.d	£.s.d
Land, breweries, maltings, spirit stores, licensed & other properties *	642906.18.2	56129.18.3	115625.18.3	814662.14.8
Additions & improvements less amounts w/o	174092.18.0	15081.10.1	11478.7.2	200652.16.0
Loose plant, furnishings & utensils less dep'n	26005.14.0	3387.4.9	4960.11.6	34403.10.3
Stock at cost or under	103832.15.1	5414.15.4	16607.5.10	125854.16.3
Sundry debtors	4974.17.2	2.6.6	6.16.2	4983.19.10
Cash at banks & in hand	2831.5.3	236.1.9	264.14.8	3332.1.8
	954694.8.5	80251.16.8	148943.13.7	1183889.18.8

Liabilities	Carlisle	Gretna	Cromarty Firth	Totals
	£.s.d	£.s.d	£.s.d	£.s.d
Capital A/C	593300.0.0	49200.0.0	89500.0.0	732000.0.0
Reserves from profits for repairs, improvements, & contingencies	17734.0.10		3000.0.0	20734.0.10
Sundry creditors & accrued charges	23426.6.0	5101.9.10	6612.8.5	35140.4.3
Profit and Loss A/C	320234.1.7	25950.6.10	49831.5.2	396015.13.7
	954694.8.5	80251.16.8	148943.13.7	1183889.18.8

(*Brewers Journal* 1930: 506-507, CVC)

The Scheme's balance sheet disclosed the usual fixed and current assets and liabilities in line with commercial practice. It was the capital structure of the LCCB/SMS that was to provide a major focus of the financial debate. The Scheme did not provide dividends since it had no shareholders. Rather it was required to repay the principal amount advanced by the Exchequer used to finance the state purchase alongside interest payments thereon. Consequently, the principal and interest amounts involved reduced with each passing year as this profitable enterprise continued to trade successfully and pay off its government loan. Thus, by 1928 the outstanding principal of Exchequer Advances had been completely redeemed so that the equivalent of the capital account was about to disappear.

The accounting techniques and accountability of the Scheme generated widespread criticism and the commercial brewers' interests vehemently disputed the reported government figures. The Scheme had realised increased efficiencies and financial savings through the rationalisation operations and resultant economies of scale (General Managers Report 1920, TSMS 1, CCRO). Moreover in the SMS areas the State was in the position of a virtual monopolist. The brewers' parliamentary lobbyists implied that the accounts were being manipulated to report favourably on the success of the SMS, as Major Kelly MP stated,

> "I complained that Control officials had misled rather than had informed the public and I felt very doubtful about the large profit claimed for this business return of the State. Those responsible for this venture in which a

good deal of public money has been sunk have claimed many achievements, chief among which is a high rate of profit... a recent White Paper stated 40% has been made on capital employed... further enquires revealed that it in fact averaged 16% during the three years ended March last year (1921) Here again it is misleading because the return as the Geddes Committee points out has been calculated without deducting interest or Exchequer Advances, without taking account of income tax[51] or EPD (Excess Profits Duty), all of which would have been paid had the undertaking been in private hands. Therefore the truer return would have been 16%, 11.2% after the deduction for income tax and approximately 7% after EPD" (*The Brewers Journal* 1920: 14).

The criticisms of government accounting continued throughout the 1920's and both government supporters and Temperance advocates were selective in the application of accounting information to support their respective arguments,

> "Indeed in that days issue of the Financial Times (25th April, 1929) a letter appeared signed by D. C. Dering, pointing out in glowing colours the wonderful results that had been achieved under State ownership and control. But the writer, in his enthusiasm omitted to make reference to the fact that during this period of State management no portion of the profits accruing to the State had been assessed for the purposes of excess profits duty, corporation profit tax, or income tax. There lay the catch.
>
> According to the Morning Advertiser, of the previous day, HM Treasury,

[51] This would have also excluded excise.

under pressure had admitted that if the undertaking had been run by private persons in the period under review, no less a sum than £600,000 would have been paid to them for the taxes referred to. On top of that the Government had also lost the interest which would have accrued to them by that payment, representing a very large amount, so that according to the newspaper referred to, the implication is that if the Carlisle undertaking had paid the taxes a private undertaking would have had to pay it would have up to the present have made no net profit at all" (W. G. Holland, General Manager and Secretary, Showells Brewery Co Ltd, and President, Oldbury and District Tradesmen Association cited in *The Brewers Journal* 1929: 185, CVC)

The intensity of the brewers' criticisms of the Scheme's accounts during this period came amidst attacks being launched on the brewers themselves. The Temperance and nationalisation lobby was still active and there was the example of American prohibition, but more damaging was the persisting and widely held impression that the brewers were engaging in deliberately making excessive profits. This had prompted the 1922 public campaign to 'boycott beer' despite assurances from the President of the Board of Trade, Stanley Baldwin that there was no evidence of profiteering in beer, and that "the taxation of beer was so high at present that the price of the materials had become negligible quantity in fixing the retail price" (*The Brewers Journal* 1922: 98). The brewers complained that their margins were so slight that any reduction in price would lead to net losses being incurred. The case of one brewery, Greene, King and Sons Ltd, is held to be typical in that,

> "The Managing Director of Greene, King and Sons Ltd has shown in the East Anglian Times for the year ended May 31st 1921 that his Company have made a loss of £48,345, and for the half-year June 1st to November 30th, 1921, a loss of £23,230 had they reduced beer price by the least Practicable reduction - namely, 1/2d per half pint" (*The Brewers Journal* 1922: 98)

Therefore the commercial brewers' criticism of the Scheme permitted them to deflect this criticism towards the government and at the same time accuse the State of unfair trading practices.

By the end of the 1920's the government's accounting and financial reporting had been widely derided by the brewing sector. The 1928-1929 editions of the Manual of British and Foreign Companies in its review of the brewing industry stated,

> "The last report of the Home Secretary and Secretary of State for Scotland presented accounts as usual so obscure and incomplete that their disentanglement from the Cromarty Firth figures was impossible. Success is claimed for Carlisle throughout 1928-1929: but it seems to be a success of declining rather than advancing profits. Considering that Carlisle is a State monopoly, largely exempted from taxation with unlimited credit and extraordinarily favourable borrowing powers, its actual business achievement throughout the past year is nil. Certainly it has accomplished

little toward the cause of general sobriety" (*The Manual of British and Foreign Brewery Companies* 1929: 11-12)

These continual criticisms encouraged the government to alter its mechanism for accounting and financial reporting of the SMS commencing with the financial year 1928-1929. The government abandoned its previous financial reporting framework and adopted an analysed trading fund system of accounting, which it would adhere to with minor changes until the demise of the SMS in 1974, e.g. from 1944 onwards previous years figures were provided for comparison, from 1952 the profit and loss account and balance sheet were presented on separate pages. At the same time the balance sheet replaced what had previously been called the Statement of Assets and Liabilities and by 1969 notes to the accounts were included.

The SMS annual report of 1928-29 went to great pains to justify the adoption of the new government trading fund formats. This eliminated the controversial Exchequer Funding that had rendered comparisons with commercial entities difficult and so angered the commercial brewers. The original Exchequer grant and interest thereon had been repaid in its entirety during the financial year 1927-28. The Public Accounts Committee consequently had the SMS accounts recast and a figure approximating to the original investment in the undertaking was calculated albeit an arbitrary amount. Eventually, the Home Office agreed in consultation with the Treasury on a sum of £732,000. This sum was calculated as being an approximation of the maximum amount, £661,665, of Exchequer advances outstanding at the end of any financial year together with the

compensation liability outstanding, £138,782, at the same date, 31st March 1919, less the sum of £68,130 resulting from the sale of capital assets in the Carlisle district in subsequent years. (The Brewers Journal 1929:67-536) The capital account sum was apportioned to the three SMS districts according to the net assets of each. These amounts were thereafter included in the SMS balance sheet from 31st March 1930 onwards.

The transparency of the financial reporting was apparent in that all three separate districts were separately identified within the total overall operation. The trading accounts posted charges for depreciation and taxation, albeit without income tax and permitted the calculation of ROCE's for each district and overall, although this is not provided and was apparently not asked for. The SMS columnar profit and loss account was consolidated into one financial statement and commenced with a trading account balance after provisions and is comparable to contemporary commercial equivalents. The SMS's debit side of the profit and loss account divulged eight separate line items whereas the commercial disclosures were restricted to directors' fees, interest and dividends. The SMS Balance Sheet or 'Statement of Assets and Liabilities' was analysed by columns for each area and by total. The SMS effectively reported as a 'group structure' divulged in the profit and loss account the performance of each 'subsidiary' and the 'group' in total. This contrasted with commercial practice where investment in subsidiaries was disclosed in one balance sheet figure.

It is possible to detect a system of double standards being exercised by the commercial brewers in their criticisms of the Scheme's accounts when

commercially suspect accounting practices were widely employed at this time. The most notorious example of this period was the Royal Mail Steamship case of 1931 that involved the deliberate manipulation of secret taxation reserves to convert losses into profits. Both the chairman, Lord Kyslant and the auditor were subsequently acquitted of wilfully deceiving the shareholders mainly because evidence was presented to imply that such accounting techniques were widespread (Stewart 1991: 41-43). This coincided with the commercial idea that the provision of too much information via the accounts provided an advantage to competitors, which coupled with contemporary trading difficulties, could have precipitated company collapses. (Arnold 1991: 41) Yet even so the brewers had lobbied for greater transparency and accountability by the SMS that they were not prepared to divulge themselves. In this respect the brewery companies continued to be as deliberately opaque as possible in their financial reporting even after the passage of the Companies Act 1947,

> "A number of companies, reluctant to reveal their true profit position, used depreciation and other devices to reduce sums prior to publishing a profit figure. For example H&G Simonds of Reading was negotiating to buy the Newport business of Phillips and Sons (a limited company since 1892), in 1949, the latter's auditor's admitted that for some considerable time the addition to P&L Balance per the printed Report was purposely kept down to a small figure, and was arrived at after substantial sums had been tucked away....the avowed policy of Phillips & Sons Board being to make the published figures as uninformative as possible!" (Gourvish and Wilson 1994: 343)

Indeed, the chief accountant of Simonds observed that the accounts were uninformative in no small degree, perhaps even more so than the old accounts of the great firm of Bass (Gourvish and Wilson 1994:343). However the new framework of financial reporting by the Scheme remained untainted by such creative accounting techniques and the transparency of the new accounting framework was sufficient for the controversy to disappear from the political agenda allowing continuing annual profits to be posted (Appendix 8).

7.5. The LCCB /SMS: Co-ordination – Cost Accounting

The major advances in brewery costing practices in a modern recognisable form can be identified, as being initiated during the Great War and the State was instrumental in this development. The State purchase of six separate breweries presented initial management and accounting problems that were dealt with through rationalisation and the implementation of effective financial systems. Surviving records have preserved a comprehensive set of data rich records. Included amongst these is a formalised set of accounting regulations that was detailed in Appendix C of the General Managers annual report of 1916. The accounting regulations consists of twenty separate items of which items fourteen to fifteen specifically relate to costing,

These textual entries are noteworthy because for the first time cost accounting is acknowledged within a brewery accounting context and emanates from the unlikely source of nationalised business rather than in the expected forum of traditional private sector business underpinned by commercial imperatives.

Figure 7.5

LCCB General Managers Report – December 1916 Appendix C Accounting System – Cost Accounting Regulations

Item 14	Brewing Cost Sheets	A cost account is prepared for each Brew, showing the quantities and values of materials used, the wages and other charges, and the loss in the various processes, and in racking, and the cost per barrel racked. It also contains the technical information relating to extracts and gravities, &etc, necessary to enable judgement to be passed on the efficiency of the Brewery Staffs, and the outcome of the materials used. The results arrived at are carried to a Brewing Cost Summary in which the cost of delivery and Management charges are added, and the total cost per Barrel delivered to the Branch or customer is shown. These Cost Sheets and Summaries have already proved very useful in enabling wastage of materials, and losses of the finished product through carelessness to be traced and investigated.
Item 15	Malting Cost Sheets and Summaries	These are similar to the above, and show the cost per quarter of malt produced.

(TMS 2, CCRO)

A detailed examination of these Cost Sheets reveal these are similar to those of Joules and Sons (Stone) Ltd but significantly it adds wages and 'other' charges to cost of production. It is not immediately apparent what is included or meant by 'other' charges but detailed examination of the records indicates this refers to production overheads. Moreover the production overhead absorption rates were regularly recalculated so that an accurate total cost of production was made. Again this represents a leap in knowledge advancement as a Foucauldian discontinuity with the past since overhead costs are explicitly recognised as now being a cost of production. Moreover it was a technical accounting advancement because overhead absorption rates were now capable of calculation which had

previously been perceived as impossible because both the willingness and ability to do so had been absent as both Tripp and De Peyer had previously described. Significantly the cost accounts produced were explicitly recognised by the management of the operations as being a means of management control over production, and wastage etc.

The earliest surviving Brewing Cost Summary referred to in the general manager's report is Volume 3 dating from September 1933 – September 1942. The last summary, Volume 6 is dated October 1959 - March 1973 demonstrating a continuity of cost accounting practice that lasted until the end of the 'Experiment'. The missing volumes have not been located despite further extensive searches at the Cumbria County Records Office and at the Public Record Office in London. It may be reasonably conjectured that this cost system was implemented from the inception of State involvement given the reference to it in the general manager's report of 1916 and its success and usefulness to management ensured its perpetuation. The Brewing Cost Summary ledgers were like Joules Cost Books, commercially produced large leather bound volumes[52] that were entered with each production batch. An example from 6th September 1933 demonstrates the construction of such an entry,

[52] The Cost Summary Ledgers are substantial records. Charles Thurnam and Sons, Manufacturing Stationers and Account Book Makers at the County Printing Works, Carlisle, printed all the surviving ledgers locally.

Figure 7,6
SMS Brewing Cost Summary 6th September 1933

Number 151, quality X	£. s d.
Malt 16.5 quarters	40.15.11
Maize	-
Sugar 4cwts 50lbs	5-0-8
Hops 121lbs	10.13.9
Salts	1-10-10
Preservatives	0.8.9
Yeast	-
Priming	5.10.8
Duty	233.19.1
Oncost (12s/4.67d)[53]	94.10.10
Total	392.10.6
Credit Grains 16.5 quarters	(0.13.4)
Net total	391.17.2
Gravity	1031°
Excise Qty	146 brls 20 gals
Brewed	155 brls 20 gals
Blended	
Racked	152 brls 22 gals
Loss	2 brls 34 gals
Cost per barrel racked	51s .4d

(Brewing Cost Summaries, TSMS 2, CCRO)

The potential dissemination of this costing knowledge within the industry was available for those who chose to adopt it there was no deliberate secrecy as preferred by the general private sector. The General Manager referred to the continual visits by various representatives of the Trade, the Temperance movement and local and national government officials who were informed of all aspects of the operations of the Scheme. Moreover, the 'Quango' appointed by the Home Secretary to oversee the operations of the nationalised brewery

[53] The "oncost" rate was applied to the number of barrels brewed. It is notable that he brewing cost summary does not have a "standard" basis of comparison but could have been used for comparison with other brews as implied earlier.

included representatives from the commercial brewing trade from its earliest days, such as Sir Sidney Nevile of Whitbread's and Sir William Waters-Butler from Mitchell and Butlers based in Birmingham. Thus the General Manager was able to report, "An accounting system of the most modern principles has been devised and it is doubtful whether there are any many brewing firms in the kingdom, which can show a more concise and useful analysis of trading results" (General Managers Report 1919: TSMS 1, CCRO). In the following year the quality of the financial information being produced led the General Manager to state,

> "Representatives of brewing firms who have visited Carlisle have not hesitated to ask for particulars with a view to incorporating something of our system in their own business and it certainly cannot be contended that the work at Carlisle is not conducted upon business lines!" (General Managers Report 1920: TSMS 1, CCRO)

7.6 The LLCB/SMS: Co-ordination – Measuring Performance

The Companies Act 1900 required balance sheets to provide a true and correct view and it was only with the passage of the Companies Act 1948 that this was changed to the now familiar true and fair view. In 1922 prior to the Scheme's accounting reforms the Home Secretary was asked in the House to comment on the financial success of the SMS measured by the return on capital employed, which had become an accepted yardstick of measuring commercial profitability based on the published accounts. (Figures 7.7 - 7.8)

The figure in Column 2 is the mean of the Capital employed at the beginning and at the end of each period. The figure in Column 3 is made up of the interest (shown separately in brackets) charged on the Net Exchequer advances and on other outstanding liabilities, together with the further sum accumulated out of profits and accruing to the Exchequer towards replacement of capital cost. The Home Secretary commented without explanation that he thought that a bare statement of the percentage return to capital employed would not, speaking generally, afford a very sure foundation for an opinion as to the success of an ordinary commercial undertaking, or for a comparison of it with similar concerns. (*The Brewers Journal* 1922:143) Indeed these ROCE's (return on capital employed) appear to be suspiciously overstated given that Mitchell & Butlers were achieving a ROCE of approximately 6% in 1921, which was similar to those ROCE's quoted by Major Kelly, MP in the Brewers Journal of 1920. However, whilst recognising the caveats of comparing the SMS with commercial performance, an attempt to evaluate the SMS financial performance of 1930 following the introduction of the new more transparent financial statements has been made, benchmarked against a representative sample of commercial breweries.[54] Thus, the ROCE, the return on capital employed, ([net profit before interest and tax/capital employed] x 100) has been calculated. The following calculations have been performed on the published accounts 1930 of the SMS, Bass and Worthington's records held at the Coors Visitor Centre, and Joules held at the SRO.

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[54] While the commercial breweries carried unamortized goodwill in the 1890s which, if maintained, would put them at a disadvantage in any comparison with SMS, by the 1920s and 1930s the commercial brewers had generally written off their goodwill accounts.

Figure 7.7

SMS ROCE All Areas 1919-1921

Year Ended	£ Capital Employed	£ Return to Capital Employed	% ROCE
31ST March 1919	1,087839	153,491 (43,999)	14.11
31ST March 1920	1,185,509	196819 (35,709)	16.6
31ST March 1921	1,251,605	138,819 (32,320)	11.09

Figure 7.8

SMS ROCE Carlisle Area 1919-1921

Year Ended	£ Capital Employed	£ Return to Capital Employed	% ROCE
31ST March 1919	834132	130782 (34263)	15.68
31ST March 1920	88488	163727 (24464)	18.59
31ST March 1921	929696	130071 (216950)	13.99

(*Brewers Journal* 1922:22).

Figure 7.9

Commercial Brewery ROCE'S 1930

(Authors calculations)

Company	Bass-Ratcliff and Gretton Ltd	Worthington and Co Ltd	John Joules(Stone) Ltd
ROCE	7.40%	9.40%	5.40%

Figure 7.10

SMS ROCE'S 1930

(Authors calculations)

District	Carlisle	Gretna	Cromarty	Total
ROCE	7.20%	5.60%	4.50%	6.70%

This reveals the overall SMS performance is inferior to the two larger and major breweries of Bass and Worthington, but it is superior to the small regional brewery of Joules. Overall, the Carlisle district outperformed the other two districts within the SMS, but Carlisle remained the most significant centre of operations, achieving a performance nearer to the two major commercial breweries. It is notable though that the SMS ROCE's of 1930 are significantly inferior to those that were reported during 1919-1921, but this was achieved in less buoyant economic conditions during the Great Depression.

By 1930, the government had abandoned any serious attempts to nationalise the brewing industry despite earlier advocates of Temperance and the radical political left such as Arthur Greenwood MP (Appendix 9) proposing an extension of the 'Scheme' because of the more immediate problems of the economic depression. An unfulfilled second attempt in the form of the New Towns Act 1946 and the Licensing Act 1949 was made to extend the Scheme[55].

Although an initial administrative structure was created to replicate the Carlisle

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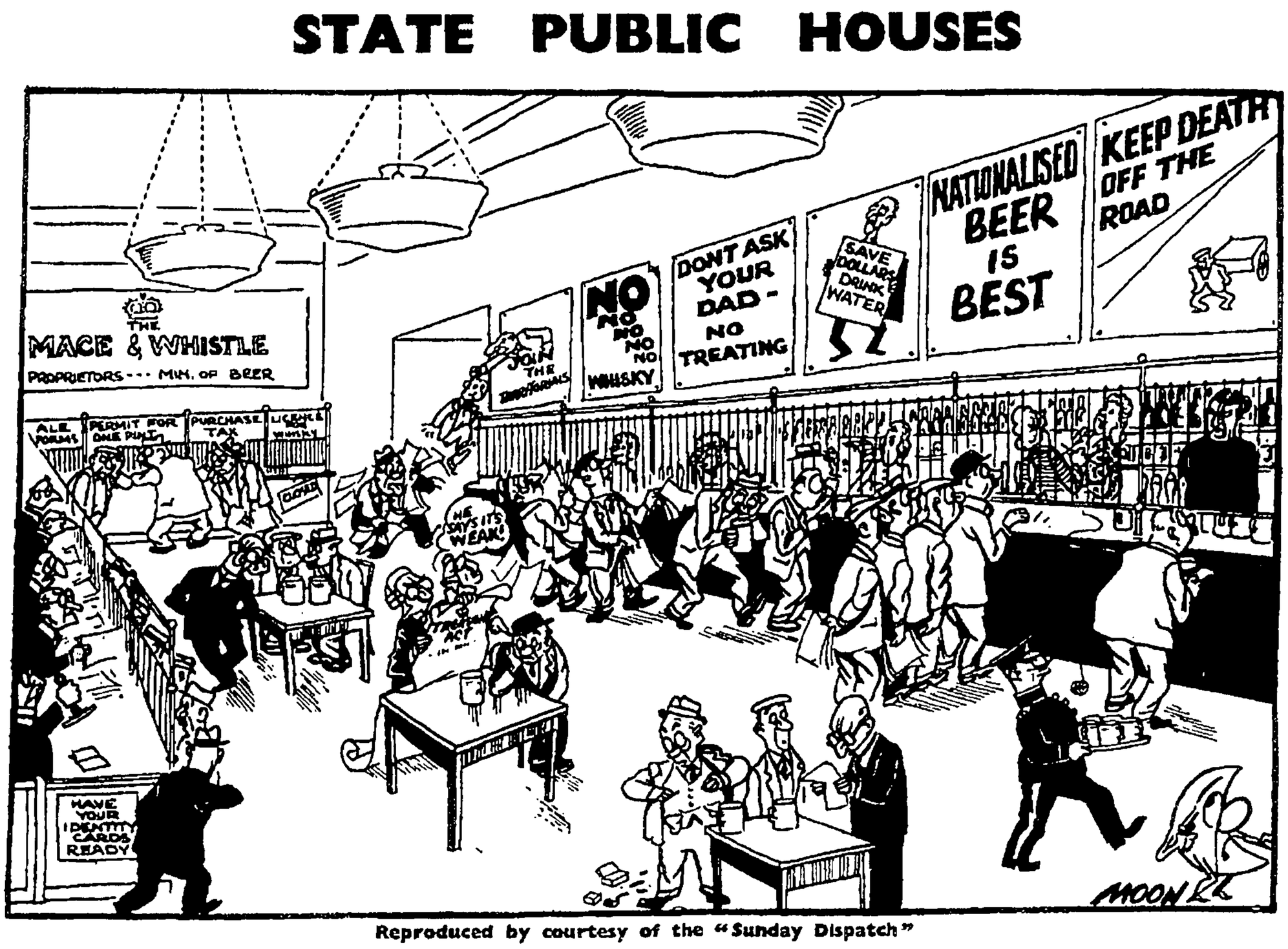
[55] This included in England, Ayecliffe County Durham, Corby, Northants, Basildon, Essex, Bracknell, Berks, Crawley, Sussex, Harlow, Essex, Hatfield, Herts, Hemel Hempstead, Herts, Peterlee, Durham, Stevenage, Herts and Welwyn Garden City, Herts.
In Wales this only included Cwmbran, Monmouthshire.
In Scotland it included East Kilbridge, Lanarkshire and Glenrothes, Fife.

model the plans were abandoned for similar reasons that had dissuaded the earlier expansion of the Scheme, costs were prohibitive and the more immediate economic and social problems of peacetime demanded attention. The hostility to the SMS was replaced by reluctant toleration and eventual cooperation by the commercial brewers accompanied by a lampooning of the perceived bureaucracy of an intrusive state bureaucracy

Illustration 12 – The State Brewery 1949c



(Brewery History Society Archives – Birmingham Central Library)

The initial state monopoly became mitigated by the introduction of other more expensive commercial brands in the SMS area when demanded. Later attempts to sell and market the Carlisle brand outside the SMS area was thwarted by the Home Office since sales were restricted to the Scheme's area.

The success of the Scheme in social terms introduced a new type of public house that became archetypal of the British inn. It introduced alternative refreshments and provided food and recreational activities beyond a narrow male working class environment that influenced commercial practices. However, the qualitative effects of the Scheme are harder to judge. The weak gravities of the government beer became only apparent to those who had also drunk the more expensive commercial brands. Also the puritanical ethos of the entire project was never entirely removed throughout its life.

> "These Carlisle public houses with their official atmosphere, separation of the sexes and rigid rules are as cheerful as morgue…Recently I visited several of these Home Office Houses and I did not know whether I was in a Tavern or post office. The manager and his assistants are Civil Servants – if you can't make them sober, make them sorry seems to be the slogan of these well furnished houses" (*Daily Mail* 3rd February 1930 cited in *The Brewers Journal* 1930: 71, CCRO).

7.7 Conclusion.

The LCCB/SMS was highly innovative in both its concept and management processes. Its production processes were similar to commercial methods but its management structure, ethos and practices were distinctly different from the private sector. Its managers were not drawn from the traditional brewing dynasties and its social agenda was to achieve a socially acceptable level of profit and not to maximise beer sales. In financial terms the SMS remained

consistently profitable (see Appendix 8) and as financially efficient as its commercial sector equivalents. (This was despite the handicap that although the SMS was large in geographical terms its sales were constrained to that area and it serviced a sparsely populated region. Its annual production averaged 250,000 barrels thus placing it within the medium sized class of brewing operations. Of more significance for the thesis the establishment of the Scheme had produced a sophisticated and transparent financial accounting framework that surpassed contemporary commercial practice as noted earlier,

> "An accounting system of the most modern principles has been devised and it is doubtful whether there are many brewing firms in the kingdom, which can show a more concise and useful analysis of trading results" (General Managers Report 1919, TSMS 1, CCRO).

Moreover, the quality of the financial information led the General Manager to report that,

> "Representatives of brewing firms who have visited Carlisle have not hesitated to ask for particulars with a view to incorporating something of our system in their own business and it certainly cannot be contended that the work at Carlisle is not conducted upon business lines!" (General Managers Report, 1920, TSMS 1, CCRO)

Indeed the presence of senior brewing industry management representatives on the board of the scheme and frequent official visits of all interested bodies ensured that the financial practices became known to the Trade, but that these were not adopted as will be explained in the following and concluding chapters.

The major innovation in accounting practice as a direct aid to managerial decision making occurred with the creation and operation of a recognisably modern and enduring cost accounting system. This innovation occurred notably in a state controlled operation with all its attendant bureaucracy rather than in the dynamic private sector and its influence, as will be explained in the last chapter, extended to the commercial trade.

Chapter 8 - The Inter War Period 1919-1939

8.1 Introduction and Overview

The inter-war period has already been partially covered in the previous chapter with the examination of the role of the SMS, but in this chapter I shall be considering the changes in organisation, management and accounting practice within the commercial Trade. This will engage with the impact and adoption of scientific management and scientific costing as recognisable disciplines of modern management and its dissemination within the brewing industry arising from the consequence of the Great War. The specific brewery literature of the period is limited (Gourvish and Wilson, 1985, Vaizey, 1960, Richmond and Turton, 1990, and Haydon, 2001) compared with the consideration devoted to earlier eras and so inevitably the attention given over to management and accounting is meagre.

The Great War had as indicated previously made a severe impact on the Trade which resulted in higher retail prices due to the imposition of increased government duties which continued into peacetime. It was also a period of declining consumption arising from a combination of factors, a change in social leisure activities, the economic effects of the depression, the large loss of traditional market consumers comprising the male industrial class who had become casualties of the war plus a reduction in disposable income levels. Subsequently by the advent of the Second World War consumption level was half of that before 1914.

Figure 8.1

UK Beer Output and Consumption 1910-1939

Years	Beer Output (million standard barrels of 1055°)	Consumption per head in Gallons
1910-1914	34.1	26.9
1915-1919	22.7	16.5
1920-1924	22.3	16.4
1925-1929	20.3	16.3
1930-1934	16.6	13.0
1935-1939	16.9	13.2

(Mitchell and Deane 1962: 253)

Thus an overcapacity in production arose that led to a rationalisation of the Trade through acquisition and mergers of companies especially amongst the less profitable businesses located in areas worst affected by the economic depression. The ultimate effect of this process was to create increasing numbers of brewery companies whose economic importance continued to be reflected in the top 200 UK industrial companies as ranked by market valuation (Figure 8.2). However this inclusion indicated the large investment in the brewers' tied estates of public houses since the share values reflected these assets in real estate (Chandler 1990: 267).

Figure 8.2

Breweries in the 200 Largest Industrial UK Enterprises of 1919 and 1930

Ranked by Market Values

Company	1919 Estimated Market Value £ Million	1919 Ranking	1930 Estimated Market Value £ Million	1930 Ranking
Guinness	19.0	7	43	9
Watney Combe Reid & Co	6.9	22	18.5	16
Bass Ratcliffe Gretton	5.3	34	13.3	22
Mitchell ad Butlers Ltd	3.5	61	9.9	32
Walker and Homfrays Ltd	2.9	76	1.7	167
Mann, Crossman and Paulin Ltd	2.5	83	4.7	75
Threfall's Brewery Co Ltd	2.3	89	5.5	64
Whitbread & Co Ltd	2.3	89	4.4	81
Samuel Allsopp & Sons Ltd	2.2	99	6.4	54
Charrington & Co Ltd	2.1	102	5.0	72
Peter Walker & Son	2.0	107	10.0	31
Cannon Brewery Co Ltd	1.9	114		
Courage and Co Ltd	1.8	123	6.0	59
Barclay Perkins & Co Ltd	1.8	125	7.1	48
John Smith's Tadcaster	1.8	126	4.1	86
Truman, Hanbury, Buxton and Co Ltd.	1.7	133	4.6	77
Ind Coope & Co (1912) Ltd	1.4	153	5.3	65
William Younger and Co Ltd	1.4	154	1.4	190

Northampton Brewery Co Ltd	1.4	156		
Holt Brewery Co Ltd	1.3	160		
Robert Cain and Sons Ltd	1.3	164		
C&E Morton Ltd	1.3	167		
Bristol Brewery, Georges& Co Ltd	1.3	170	2.0	157
Worthington & Co Ltd	1.3	171		
Groves & Whitnall Ltd	1.2	174	2.8	125
P Phipps & Co (Northampton & Towcester Breweries)	1.2	175	2.0	159
City of London Brewery Co Ltd	1.2	176	4.8	74
Meux's Brewery Co Ltd	1.2	182	3.2	112
Style and Winch Ltd	1.1	189		
Wilson's Brewery Ltd	1.1	192		
Taylor Walker and Co Ltd[56]			7.5	45
Hoare and Co Ltd			7.6	43
Ansells Brewery Ltd			3.7	93
Matthew Brown & Co Ltd			2.7	127
Benskin's Watford Brewery Ltd			2.5	129
Wolverhampton and Dudley Breweries Ltd			2.4	132
H&G Simonds Ltd			2.3	137
Holt Brewery Co Ltd			2.1	146
Tamplin & Son's Brewery			2.0	153

[56] Taylor Walker and Co was not incorporated until 1927 and hence its omission from the 1919 list.

Brighton Ltd				
Marston Thomson and Evershed			2.0	158
James Shipstone and Sons Ltd			1.8	264
Usher's Wiltshire Brewery			1.7	170
Parker's Burslem Brewery Ltd			1.6	181
Associated Breweries Ltd			1.4	189
Wenlock Brewery Co Ltd			1.4	193
Friary Holdroyd & Healy's Breweries Ltd			1.4	194
W Butler & Co Ltd			1.4	199

(Chandler 1990: 666-677)

8.2 The Inter War Period: Spatial

The inter war period did not see the construction of any major new breweries with the exception of the Guinness Park Royal Brewery in London initially under the management of William Sealey Gosset (Appendix 9) which commenced production in 1937. This is unsurprising given a contracting industry burdened with overcapacity so that production remained or was diverted into the larger and efficient pre-war breweries. A notable innovation within the beer factory was the large increase in production of bottled beer which had become popular with the consumer. Bottling beer was not new since Bass and others had done so in the eighteenth century mainly for export and as previously remarked (Nevile 1958: 47) pre 1914 it was largely unsuccessful and unimportant in the domestic market. The post war market was more receptive to the product and it required

substantial financial investment to establish new and efficient bottling plants. This made it only a viable option for the successful and larger breweries. Bass, Worthington and Guinness with their national markets were capable of financing such ventures which proved beyond the resources of the smaller breweries which in turn enhanced the rationalisation process. The distribution of the bottled beer was also facilitated by a rapid change in the transport delivery system with a wide switch over to lorries rather than horse drawn drays by the mid 1920's (Richmond and Turton 1989: 16)

8.3 The Inter War Period: Activities and Segments

The inter-war period significantly increased the concentration of the industry which had been occurring to a lesser extent pre 1914. This potentially offered the prospect of forming larger multi-unit divisional company structures identified by Chandler as instrumental in creating managerial capitalism and enhancing the role of accounting as an administrative and co-ordinating management tool.

Figure 8.3

Brewery Companies 1900- 1939

Year	Number of Breweries
1900	6,390
1910	4,482
1914	3,650
1920	2,889
1930	1,418
1939	885

(Haydon 2001: 277)

However this impression is illusory since the rationalisation of the Trade was conducted through a process of acquisition and merger as a defensive strategy to

secure market share in a shrinking market burdened with overcapacity. In this respect the Trade was no different from general post - war industry suffering from economic slump and overcapacity and can be viewed as part of the imprecise 'Rationalization Movement'. Contemporary observers remained ambiguous about the outcome of rationalization and the adoption of scientific management,

"The more financial combination of businesses or wider application of scientific methods of management to existing units of control, can neither by themselves contribute effectively towards equipping Great Britain with that reorganised national economy which is essential if she is to retain her place among the industrialised nations Let us say as scientific organisation – it is intellectually possible: it is in line with our tradition" (Urwick [1930] cited in Hannah 1976: 35).

The purpose in the brewing sector of concentrating production in fewer hands also served to utilise spare capacity amongst the larger plants and the smaller production sites were usually discontinued to maximise economies of scale. This practice had been recognised immediately pre-war which the post war experience served to increase,

"It is clear that brewing costs can be reduced by this method and the closing down of breweries within the metropolitan area and the concentration of brewing operations for a number of companies in a few of the largest and best-equipped plants would be calculated to assist in the financial regeneration of companies…

For with amalgamation they will assist in the regeneration of companies… For with amalgamation they will in a majority of cases be associated with the extinction of capital unrepresented by assets", (*Brewers Gazette* 3rd July 1911, CVC).

Other reasons for this concentration was to secure the tied estates of other breweries as retail outlets, and improve these public houses on the lines pioneered by the SMS, and Mitchell and Butlers and Whitbread which were beyond the financial reaches of the smaller brewing companies who could not afford to finance refurbishments. These objectives were reflected in the policy statement of the board of directors following the combination of Peter Walker and Robert Cain that created a £5 million company in 1922,

"The directors kept steadily before them the aims.. to organize the combine under their control so as to bring about not only their greater efficiency but economy. Gradually duplication was being eliminated… it had been decided to close the Walker brewery at Burton to discontinue the manufacture of lager beer, and to withdraw from the London trade. The ultimate object is to the brewing of the whole of the Company's requirements of ales and stouts under one roof" (Vaizey 1960: 27-28).

This exactly mirrored the earlier objectives achieved by the LCCB/ SMS rationalisation. The largest mergers occurred amongst Allsop's and Ind Coope in 1935 (BD143/1 and B143/2, LRO) and with Bass and Worthington at Burton in 1927 and Bass then took over two further Burton breweries, Thomas Salt in the

same year and James Eadle in 1933. However, in both cases integration was muted and Bass indulged in virtually no rationalisation with the large Worthington company until the 1950's and their merger existed only in name since both continued to be operated, managed and listed separately thus forsaking any economies of scale. Moreover these acquisitions were never hostile but conducted passively within a framework of gentlemanly capitalism. Potential buyers were approached informally to keep ownership with the traditional beerage families that excluded outsiders, a deliberate process that continued until the 1950's. Thus, the Highgate Brewery Walsall passed from family hands to Bass and Mitchell and Butlers in 1939 and the Lichfield brewery passed to Allsopp's in 1930. That a multi-unit structure did not develop was not unexpected, many breweries had long operated separate businesses devoted to wines and spirits, tobacco and aerated waters such as Joules had done, but, as separate companies, never as part of a divisional structure. In no other industry due to its special amalgam of conservatism, great wealth and the gentlemanly conduct of its activities, did owners maintain such a jealous control of affairs (Wilson 1983: 156).

The style of brewery management is usually accorded to have continued unaltered by the historians of the brewing industry, being both conservative and secretive (Gourvish and Wilson (1985:156) and I have been unable to unearth any contradictory evidence to overturn this widely held impression, which also fits in with the failure to adopt any of the accounting innovations of the LCCB/SMS. This may be because the LCCB/SMS was so unique in both its

public ownership and capital funding, which represented a major break with the long-standing structure of the Trade.

Both Chandler (1990: 266-267) and Glamman (1981) claim that the British brewing companies continued to be administered in a personal manner with some alleged minor exceptions at Bass and Worthington with the employment of salaried sales managers and chemists that provided embryonic management hierarchies (accounting does not appear in these functional lists). That these firms were at the forefront of the scientific brewing revolution has been previously established and salaried sales staff were not unusual and rather the norm for all breweries. Yet to discover even the faintest evidence of Chandler's managerial hierarchy in the research has proved impossible in an industry where strong family ownership and executive management remained the norm (Vaizey 1960). At Whitbread, Nevile remarked that the organisation of a larger brewery had little in common with smaller breweries with the directors taking a interest in the whole industry, with a head office controlled by the company secretary whilst production rested with the head brewer and his assistant brewers, chemists and engineers (Nevile 1959: 189) and that the bottling plant was operated more or less as a separate concern as this activity was considered to be beneath the dignity of the wholesale brewers (Nevile 1959: 190).

The route to brewery management appears to not have changed significantly from prior practices, but there is no comparable work such as Tripp's earlier *Brewery Management,* and so some brief insights must be obtained from secondary sources. In the wider management and accounting literature of the post

war period brewing remained as it had done before absent from the agenda. Practical training remained in house or was undertaken by secondment to other breweries as previously described. Thus, for example, William H Whitbread joined the Whitbread company in 1924 following a year's apprenticeship (a much shorter period than pre-war or in the eighteenth and nineteenth centuries) with Truman, Hanbury and Buxton at Burton, with the intention of joining the board as Managing Director (Nevile 1959: 198-199). Nevile readily advocated this common and traditional form of management apprenticeship by obtaining an all-round working knowledge in a small firm as he himself had done. Nevile in his autobiography describes his experience as an outsider joining the board of Whitbread that was comprised of four old Etonians one of whom Cecil Lubbock, held that the only foundation for a cultivated judgement in the larger affairs of life was a classical education and that Nevile was 'a freak' in management terms (Nevile 1959:146), which echoes the arguments offered by Weiner (1981) of a peculiar English ambivalence towards industrial professionalism. Whitbread recruited their trainee managers from the universities in the belief that a graduate although he would initially be behind a man of some practical experience would be by the time he was thirty years old the better informed. However the atypical Nevile a non-university man himself recorded his general disappointment with the calibre of applicants fashioned by this system and one interviewees comments are noted that were reflective of the general perceptions attached to brewery management,

"he chose brewing, he said because that when he met brewers they all seemed pretty well off, so brewing must be a good thing to be in… everyone told him

Whitbread's was good firm: he would never have to come in on Saturdays: they were good sportsmen and would always let him take time off when he had the chance of a bit of hunting or shooting" (Nevile 1959: 195).

Nonetheless, some breweries such as Greene King of East Anglia were renowned for their effective management where the business philosophy was described by its Managing Director Edward Lake as being based on sound 'common sense principles of business management' that were implicit rather explicit and such implicit financial orthodoxy which was practiced by his family successors from 1919 onwards (Wilson 1983:168). At least some brewers recognised the importance for sound management, as George Mackay of the St Leonard's brewery remarked, "bad management as much as bad water could ruin a brewery" (Donnochie, 1985), as the pre-war failures of Ind Coope and the Allsopp had proved.

It is notable that accountancy continued to remain less than prominent within the general trade histories of this period. William. H. Whitbread is accorded by Nevile as having taken an accountancy course without further detail but some lesser concerns put greater store in the accountancy discipline. Edward Venner of the Forest Hill Brewery Company had realised that accountancy was the weak spot of the trade and had articled his son to firm of accountants who later established an accountancy and stock taking service, and the son became a company Managing Director and was invited by Bass to represent their interests following the takeover of Wenlock brewery in London (Nevile 1959:200). Therefore the next section will evaluate and explore whether the relative

weakness of accountancy in the Trade was evident in the inter war period through an examination of primary sources and accounting practices by comparing textual theory with factual evidence

8.4 The Inter War Period : Co-ordination - Financial Accounting

I will examine the post war period by dividing the accounting discipline into financial and cost accounting. This era is distinctive because it provides a bespoke text by Hamilton (1939) *Brewery Accounting* and later *Brewery Income Tax: A Treatise Designed for the Use Brewers and Their Advisers* (1944) that contained a foreword by Cecil Lubbock of Whitbread. These are possibly the first and only texts of their type since no comparable literature has been discovered. Although the former text may be taken to represent best practice this does not necessarily imply that its techniques were applied in practice.

The incorporated brewery financial accounting regime had to comply with the Companies Act of the period. The 1900 Act had reinstated the need for audit that required to reflect a 'true and correct view', the 1907 Act the filing by public companies of balance sheets and as a result of the Greene Report (1926) the 1929 Act required companies to publish profit and loss accounts also – it was not until the 1948 Act that the requirement for group account preparation was imposed and that the financial statements were obliged to display a 'true and fair view' (Myddelton 2004: 49-50). An examination of the published accounts of breweries from after the Great War is not particularly illuminating and these are contained in the case of Bass, Worthington, Mitchell and Butlers and Joules on either one or two sides of a sheet of paper with the other side having the date of

the company annual general meeting, and a very brief directors' report. The published accounts are comparable in both style and content with those being produced in the latter part of the nineteenth century and display no major advance in financial reporting or disclosure. These accounts show a greater emphasis being placed on the balance sheet, which preceded a succinct profit and loss statement. The accompanying directors' annual reports in the case of Joules are equally brief and monotonously repetitive. An example of the directors' report offered for the financial year ended 30th September 1921 is typical of the style adopted,

> "In presenting the twenty-third Annual Report the Directors have pleasure in congratulating the shareholders of the continued prosperity of the Company. Adequate provision has been made for reserves and interest on debentures, mortgages and loans and £22,400 on account of arrears of dividend on preference shares have been paid as shown in the accompanying account, leaving £93,794. 4s.3d at the credit of the Profit and Loss Account subject to liability for Excess Profits Duty and Corporation Profits Tax not yet assessed", (John Joules and Sons Ltd, D1502/2/1, SRO).

Unlike those breweries located in the depressed areas of the country during the inter war period those breweries, including Joules, increased production and maintained profits. Joules continued to pay dividends to their shareholders despite adverse trading conditions. Nonetheless unit profits reflect declining margins post 1925.

Figure 8.4

John Joule and Sons Ltd Reported Profits and Output 1925-1939

Year	£ Reported and Published Profits	Output in Barrels	£ s d Profit Per Barrel (authors calculations)
1925	29,898	27,343½	1. 1. 10.
1926	33.626	39,842	0.16.10
1927	22,814	43,952.5	0.10.4
1928	27,909	45,523.5	0.12.3
1929	28,679	47,562.5	0.12.1
1930	35,439	49,331	0.14.4
1931	25,552	52,163	0.9.10
1932	27,047	50,494¾	0.10.9
1933	37.636	52,901	0.14.3
1934	43,633	54,458	0.16.1
1935	41,829	56,960¾	0.14.8
1936	44,028	59,834	0.14.9
1937	44,783	61,889	0.14.6
1938	unavailable	61,380¼	-
1939	35,157	63,633¾	0.11.1

(John Joules and Sons Ltd, D1502/2/1, D1502/11/19, D1502/11/20, D1502/11/28, SRO)

However, the examination of any published brewery financial statements during this period must be treated with caution. In this instance the reported profits recorded for 1930 include an excise refund of £18,175. Examples of creative accounting and profit smoothing were also practiced,

"A number of companies, reluctant to reveal their true profit position, used depreciation and other devices to reduce sums prior to publishing a profit figure. For example, when H&G Simonds of Reading was negotiating to buy the Newport business of Phillips and Sons, (a

limited company since 1892) in 1949, the latter's auditors admitted that for some considerable time the addition to P&L Balance per the printed Report was purposely kept down to a small figure, and was arrived at after substantial sums had been tucked away... the avowed policy of the Phillips and Sons Board being to make the published figures as uninformative as possible!" (Gourvish and Wilson 1994: 343)

Indeed the chief accountant of H.G. Simonds Ltd observed that the accounts were uninformative in a large degree, perhaps even more so than the old accounts of the great firm of Bass. This practice should not be viewed as particularly unique to the brewers since there was a general reluctance by all companies to provide informative financial information. Edwards (1979:278) states that up until 1925 accounting information was becoming less informative and this view is supported elsewhere, "To many of them, to provide disclosure seemed tantamount to inviting more criticism – at least more questions, and many had had their fill of inquiries". (Kitchen 1979: 118).

Hamilton's (1939) slim text comprising one hundred and thirty nine pages devotes one hundred and twenty seven of those of towards financial accounting reflecting the long established emphasis on a complex financial accounting framework. Hamilton attests that the internal accounts were to be kept in the same form as the published accounts albeit it with greater detail to aid uniformity and speed of closing down the final accounts. The main points pertaining to the internal accounts were that they interlocked and were an elaboration of the printed accounts, were consistent in their preparation and show clearly prior year

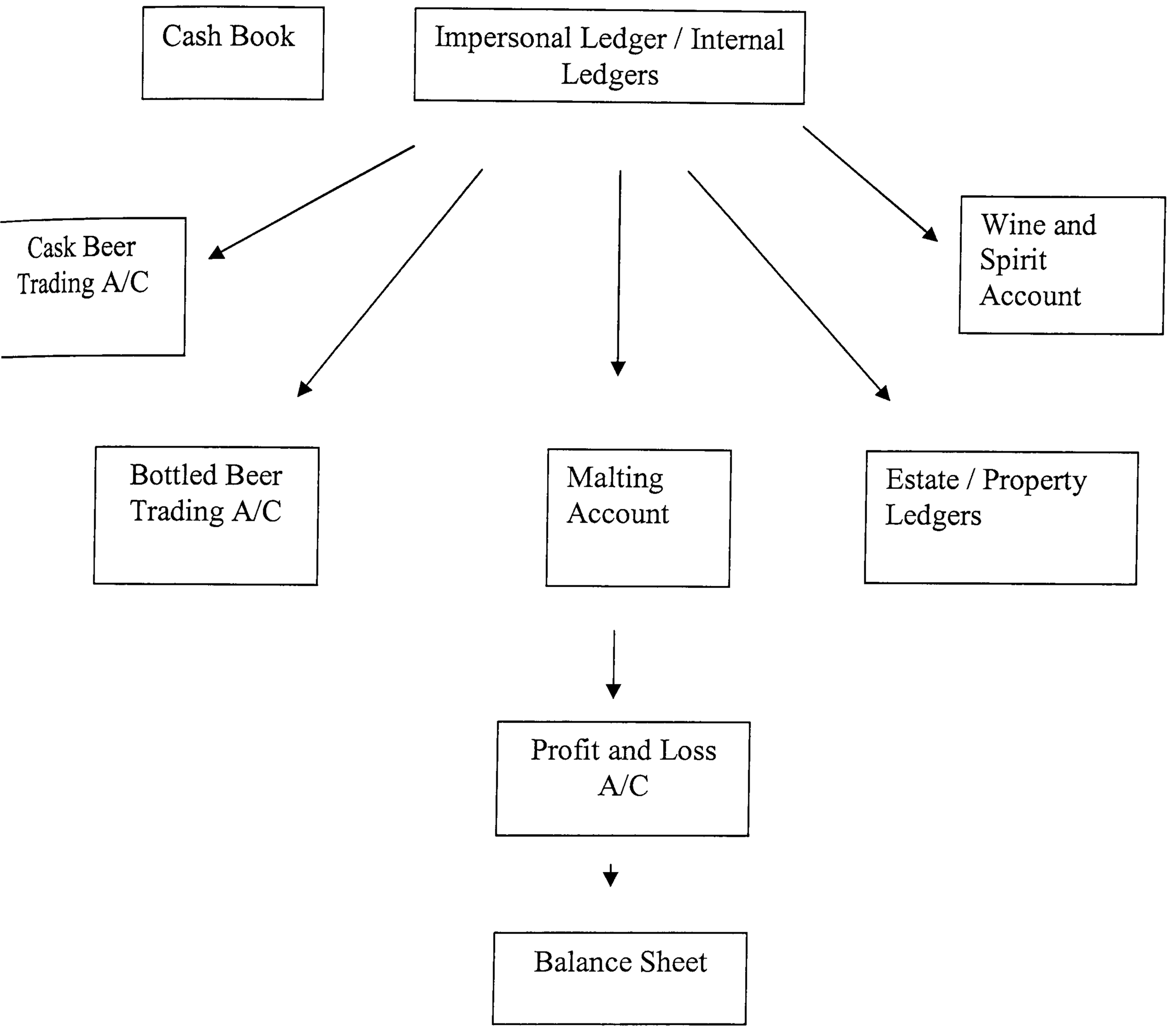
comparisons. This was an innovative practice and Hamilton explained that this,

"...was to avoid-analysis on the face of the accounts. A large difference on any item with the corresponding figure of the previous year will of course, call for a detailed analysis of the particular item but it is thought better to support the internal accounts with analyses of these items rather than to attempt to analyse on the accounts themselves. Quantities of barrels sold and raw materials purchased should, however, be shown on the internal accounts themselves. (Hamilton.G. 1939:13)

The internal ledgers consisted of numerous subsidiary accounts similar to those described by Tripp almost half a century earlier, but was made explicit how these could be utilised to aid managerial analysis rather than be restricted to a narrow stewardship function.

Figure 8.5

Hamilton's Ideal– Brewery Financial Accounting Framework 1939



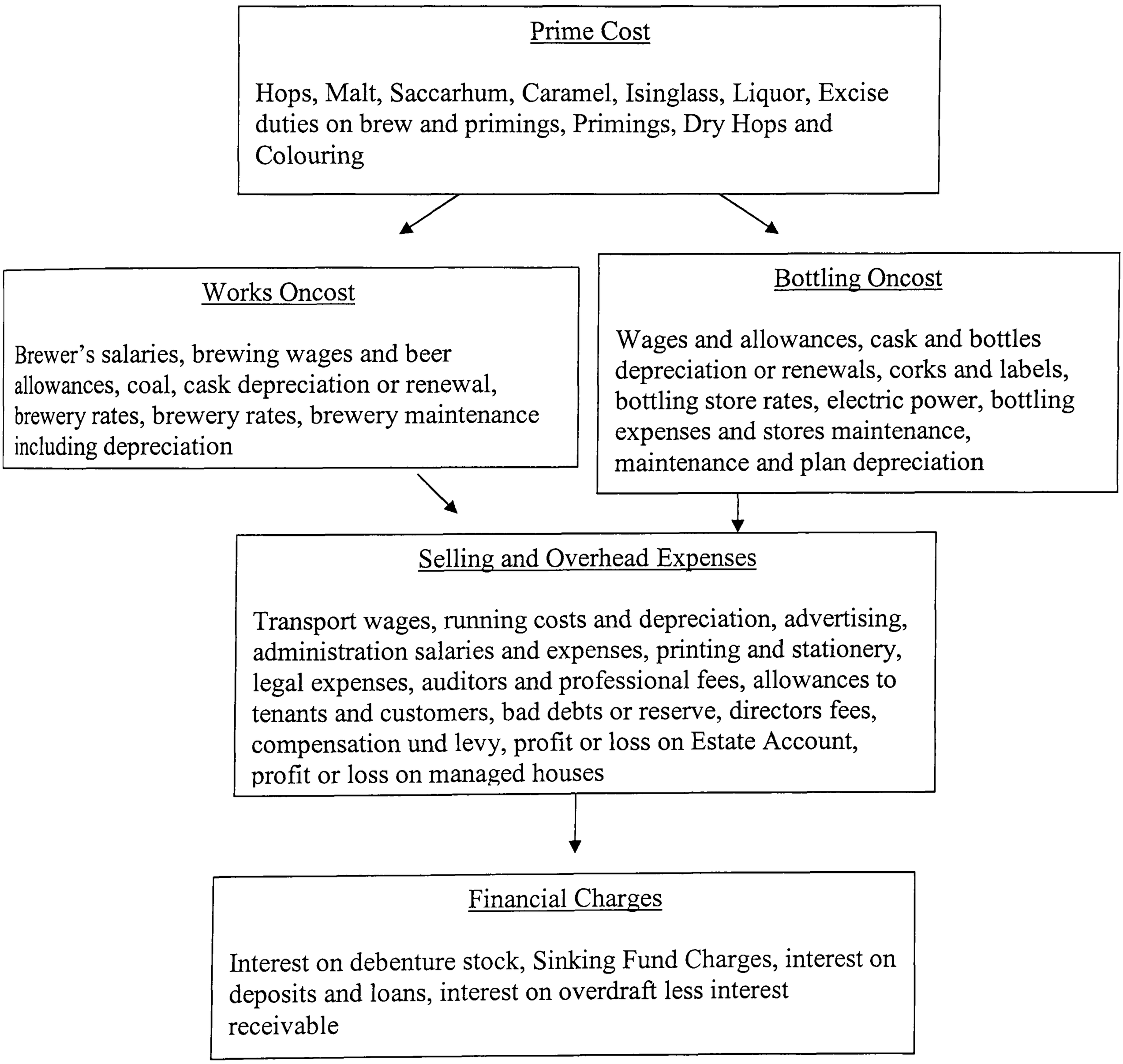
8.5 The Inter War Period: Co-ordination -Cost Accounting

Hamilton's text is unprecedented for including a final chapter devoted to cost accounting. The costing description is limited to seven pages (Hamilton. G 1939: 128-134) of the entire text of one hundred and thirty nine pages, but the reason

for its inclusion is never made explicit other than it was desirable to be able to calculate the cost per barrel and of bottled beers so that substantial cost fluctuations could be investigated.

Figure 8.6

Hamilton's Ideal Cost Accounting Framework - 1939



The distinction between prime cost, works oncost (in modern parlance production overheads), selling and overhead expenses (non-production overheads) and financial charges is explained in detail as is a separate bottling oncost to derive the unit cost for a dozen bottled beers.

This cost accounting framework is explained in uncontroversial detail other than the suggested inclusion of financial charges as a unit cost of production, which Hamilton dutifully acknowledges and defends,

"There are arguments against the inclusion of this item in the costing account, but it is interesting to compare the cost per barrel of these interest charges over different periods. The charges are apportioned equally over the whole barrelage produced", (Hamilton. G 1939: 132)

Nonetheless although such a system may be viewed as best practice, Hamilton stated unequivocally that it would prove impractical to integrate this with an existing financial accounting system and thus by implication indicated that it would be a stand alone and independent costing system. Such a system would still have been expensive to develop, install and employ suitably expert staff to operate it so an alternative and cheaper system was suggested. This comprised constructing separate production accounts for each class of beer which still left the problem of apportionment of non prime costs based on the unexplained brewery statistical record, which was acknowledged as a cumbersome task but that oncost should revised at quarterly or half year intervals irrespective of the system adopted (Hamilton G 1939: 133-134).

The Hamilton text would imply that such cost systems were now evident in commercial breweries as demonstrated by the operations of the SMS. Yet an examination of the Bass archive of the period provides no such confirmation and indeed the detailed production of the previously identified annual 'Accounting Statistics' continued to be consistently carried out until 1949 (A/128, A/138).

The small Walsall Highgate Brewery, that employed a maximum of 65 people, maintained a 'Concentration Account' (the term 'concentration' reflects the amalgamation of J Lord and Sons Bloxwich brewery with the Walsall brewery in 1924 and was used to calculate gross unit costs). The basis of prime cost apportionment between products remains unclear and can have only been performed on either some formulae basis or from more detailed batch cost records similar to Joules that are now lost to posterity. Additionally, within the 'Concentration Account' is an extra section of analysis of other costs which is split between costs created by the amalgamation and other expenses to derive what effectively was an overhead unit cost based on the quarterly barrelage production. The amalgamation costs consist of only three items with attempted netting off of small recharges to the Highgate Bottling Store. The operating expenses are unremarkable; however it remains unapparent as to how this has been applied in practice.

Figure 8.7

Walsall Highgate Brewery Concentration Account Last Quarter 30th September 1924

Description	£ s d	Bitter	Ale	Fourpenny
Malt	2,887.10.3			
Sugar	995.2.10			
Hops	425.4.11			
Other Purchases	39.16.2			
Duty	7,370.0.0			
	11,448.16.6	1004.1.5	8,301.10.9	2143.4.4
Barrels brewed	5,973[57]	353½	4,229	1290½
Cost per barrel		56s.10d	39s3d	30s 10d

(663.3, WLHC)

Figure 8.8

Walsall Highgate Brewery Concentration Account Expenses Last Quarter 30th September 1924 (Summary)

Description	Expenses Caused by the Concentration £ s d	Expenses £ s d
Additional plant, 2 squares and refrigerator	100.0.0	
Repairs to premises	174.3.6	
Repairs to plant	415.17.11	
Various expenses		1906.7.4
	690.1.5	
Less amounts recharged	34.15.0	-57.5.5

[57] This is a miscasting and should read 5,873 barrels – it may reflect an acceptable loss in racking, of about 1.7% but the cost per unit calculation is based on the gross figure. However the discrepancy of exactly 100 barrels appears to be highly suspect especially given the subsequent calculations.

to Highgate Bottling Store	22.10.5	
		1849.1.11
Less discounts received	-	-9.3.1
	690..1.5	1,839.18.10
Quarterly barrels brewed 5973 – cost per barrel	2s.4d	6s.2d

(663.3, WLHC)

The Joules Company at Stone also continued to use the pre war commercially produced Cost Book until this was completed in 1921 having had a working life of nearly nineteen years (John Joules D1502/11/21, SRO). This 'cost system' continued albeit in a modified form throughout the inter-war period and beyond from 1924 until 1946 (John Joule D1502/11/19, SRO) with a now lost period ranging from 1921-1923. The modified cost system had switched from an individual batch cost to a monthly summary recorded in an informal blank ledger. A typical summarised example taken from 1924 will be sufficient to illustrate the information generated. The monthly summary shows no substantive difference with prior cost practice although some insubstantial raw material costs such as yeast, priming and isinglass have been omitted and the equally insubstantial by-product sales of spent grains have not been netted off against the cost of prime production. (Although Joules had invested heavily in the expanding bottled beer market no reflection of this has been uncovered in the archival accounts). However, an approximate cost of production and gross profit per unit of production has been calculated notwithstanding arguments about the basis of attributing costs equally across the different product range. The cost record unlike prior practice does not reveal any computation of gross margin (in this instance 39.6% reflecting a decline in the benchmark margins described before by Tripp and De Peyer). It also serves to illustrate the small gross margins

being achieved on the sale of a standard pint of beer, i.e. approximately 2.2d before overheads. A re-examination of the net profit per barrel calculations in Figure 8.4 for 1925, (albeit 1924 total figures are unavailable) shows that profit per barrel was in the region of £1.1s.10d. Thus overheads equate to 23% of sales leaving a net margin of 16% or approximately 1.2d per pint during a relatively prosperous period.

Figure 8.9

John Joules and Sons (Stone) Ltd Monthly Brewing Account – October 1924

Raw Materials	Quantity		£ s d	
Malt (9 types)	By 549 qtrs		1,757.9.6	
Maize (2 types)	By 32 qtrs		79.16.0	
Sugar (5 types)	By 275 cwt		517.15.6	
Hops (8 types)	?		793.5.0	
			3,148.6.0	
Ale Racked	Barrels	Selling Price	£ s d	
No 1	88	226s	994.8.0	
No 2	1,287	156s	10,038.12.0	
No 2B	1,396½	114s	7,960. 1.0	
No 5	411½	114s	2,345.11.0	
SBB	417½	114s	2,379.15.0	
	3,600½		23,718.7.0	
Analysis			£ s d	
Malt per barrel			0.9.4¼	
Maize			0.0.5¼	
Sugar			0.2.10½	
Hops			0.4.4¾	
			0.17.5¾	
Duty*			3.2.1	
			3.19.6¾	
Selling Price			6. 11.9	
Gross Profit			2.12s.2¼	

Duty total		£11,178.17.3		
Duty rebate		£3,456.2.9		

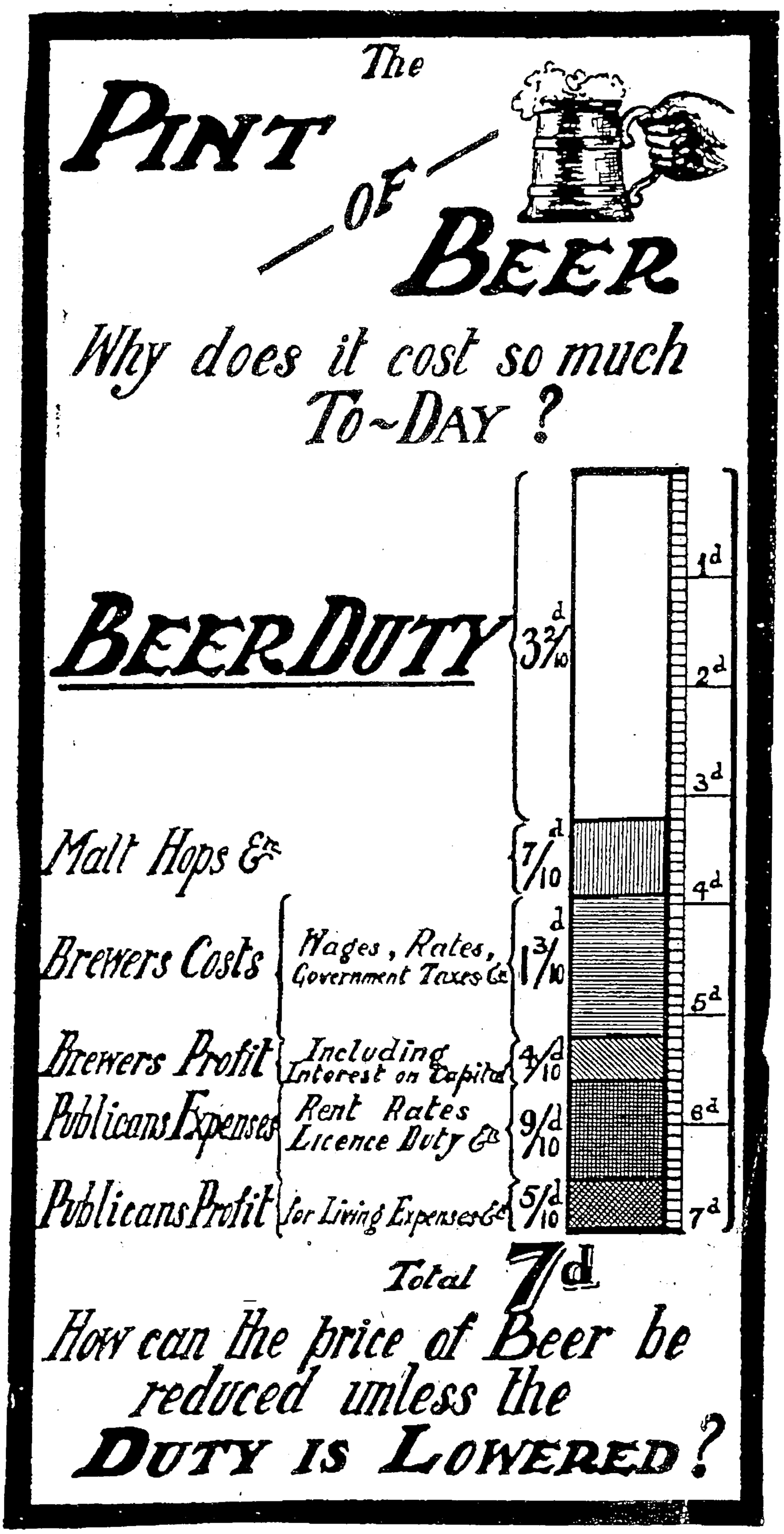
* Duty per barrel has been calculated on the gross duty rather than net duty

(John Joules and Sons, D1502/11/19, SRO)

Such a system could produce an acceptable product cost structure analysis for decision making without indulging in creating complex and costly cost information systems. This is evident from Trade publicity propaganda issued in 1922 as a response to the abortive 'Boycott Beer Campaign' where the brewers were being accused again of profiteering. The chart below was compiled by the manager of the Cheltenham Original Brewery[58] Ltd for public distribution and clearly indicates the cost structure of the product and the small profit margin earned by the brewer. At the same time it emphasised that the major cost incurred was government duty and that this cost structure was generally representative of most brewers costs so that a reduction in retail price could only arise from a cut in duties (Brewers Journal 1922: 98). The chart succeeds in clearly establishing its message but its component cost structures could easily be derived by the simpler cost calculations previously described without requiring the more complex costing system advocated by Hamilton.

[58] The Cheltenham Original Brewery Co Ltd was registered in 1888 to acquire the business of J.T Gardner founded in 1760. It changed its name to the Cheltenham and Hereford Breweries Ltd in 1945 when it acquired the Hereford and Tredegar Brewery Ltd. It was later renamed the Cheltenham Brewery Holdings Ltd and was eventually acquired by Whitbread and Co Ltd in 1963 and was finally closed in 1998 and demolished in 2004 (Barber 2005:39).

Illustration 13 – Cost of a Pint of Beer 1922



8.6 Conclusion

The accumulated evidence appears to consistently undermine the view that he scientific management and scientific costing developed in the brewing industry during the inter-war period. The example of the SMS and Hamilton's (1939) textual description indicated a potential recognition for developing and employing identifiably modern cost accounting systems that was not evidenced by any of the surviving archives of companies examined within the research sample. Rather, instead older and less sophisticated systems seem to have persisted and endured unaltered in various guises without any unduly adverse impact on those involved.

This apparent failure to advance in accounting terms contradicts traditional general accounting historiography of the seminal impact of the Great War on British management and accounting advancement, which now requires a considered explanation in the ensuing and final chapter.

Chapter 9 - An Overall Conclusion

9.1 Introduction

This thesis embarked on an exploration of the genealogy of the professionalisation of brewery management through the adoption of new disciplinary processes and the creation of new disciplinary regimes. At the same time, it attempted through an archaeological approach to ascertain the magnitude and influence of accounting as a contributory micro-discipline of brewery managerial processes through an empirical analysis of a range of primary and secondary sources. As demonstrated, the economically and socially important brewing trade is worthy of serious scholarly research because no existing work has been devoted to the explanation of the deployment of accounting as a calculative knowledge system within the Trade. Overall, this work has added to the growing body of scholarly knowledge labelled as the 'new accounting history' and contributes further to the current accounting history and management debates by addressing the hitherto ignored brewing and malting trades.

The research has been undertaken whilst acknowledging that alternative and legitimate narratives exist within antagonistic theoretical frameworks that could have been adopted and which would have produced different plausible interpretations and emphases of brewery accounting evolution. This is in itself not an inherent weakness of this work since diverse interpretations of the same historical data have persisted to the present day even amongst distinguished accounting history scholars. The prominent examples of the Loft (1986) and

Mariner (1980) dichotomy on the accounting impacts of the Great War munitions industry, the acrimonious debates between Hoskin (1994b) and the neo-classicist Tyson (1993) and the Marxist Niemark (1990, 1994) as to the role of the US Springfield Armory remain unresolved whereas a more tolerant divergence of opinion is evident in the Bryer, Fleischman and Macve's (2005b) interpretation of accounting events at the eighteenth century Carron ironworks. Nevertheless, this thesis has chosen to embrace a Foucauldian disciplinary schema since accounting is a recognised discipline (Boyns and Edwards 2005), which has been taken as a co-ordinating micro-discipline within a Foucauldian paradigm. Thus, the Foucauldian disciplinary model offered a framework within which to construct and present a structured research format and offer a plausible explanation of accounting's role in the Trade. It is acknowledged that this approach has had both advantages and disadvantages and that it has not proved entirely adequate in explaining the development of management and accounting in the English Trade between 1700 and 1939.

An initial implicit assumption was that a technologically advanced and efficient production-centred industry which evolved prior to the first BIR, would provide a suitable business environment for the advancement of accounting methodology as a micro-discipline. This immediately confronted the Foucauldian assumption, which identified new discourses of disciplined ways of thinking and knowledge application having occurred imprecisely around 1800 as ways of seeing, knowing and exercising power (Hoskin 1996: 266). This explanation has been subsequently invalidated in as far as the Trade is concerned, by the range of empirical excavated evidence presented in this thesis. Consequently, the research

has offered reasoned arguments based on detailed empirical evidence to explain why accounting innovation did not occur within the Trade. By doing so it is claimed that an objective and plausible body of work has been constructed within a 'New Accounting History' framework by going beyond the restrictions of a technical accounting construction to include wider social and political fields which were influential in the development of the Trade.

This concluding chapter now reconsiders the key themes and findings of the empirical analyses in relation to the framing observations presented in Chapter One. It then assesses and evaluates the implications and limitations of this evidence. Finally and in detail, it evaluates the factors peculiar to the brewing and malting sectors that precluded the development of modern accounting processes within the Trade and the extent to which it provided a focus for management attention. There is something peculiar and unique to the Trade which failed to embrace any major accounting innovation and answers to this major question will now be presented.

9.2 Re-Evaluation of Framing Observation One - Management

In Chapter One the framing observations around which this research was organised were proposed to highlight disciplinary practices in the brewing industry from 1700-1939. Brewery management is traditionally depicted as a conservative and secretive, unaffected by the passage of time or wider events and largely devoid of energizing drive. This section focuses on those framing

observations to challenge such a portrayal and reflect the disciplinary management expertise exercised within the Trade.

Framing observation one set out to find the temporal location and extent of capitalist brewery management as a micro-discipline located within an overall Foucauldian disciplinary schema. Although it has been demonstrated that the Foucauldian disciplinary schema of spatial and activities were present in the new porter breweries prior to the First Industrial Revolution which were perpetuated and improved upon thereafter in the provincial breweries, it has proved difficult to isolate with any precision or conviction the professionalisation of brewery management as a modern discipline because the brewers invariably and persistently alluded to brewing as an 'art' thus negating it as a codified discipline. The management of breweries was not delegated to any great degree and even the eighteenth century metropolitan breweries which exhibited unique characteristics in advance of first industrial revolution (Pollard 1965: 101), established enduring brewing dynasties which continued into the second half of the twentieth century (Glamann, 1981). Within the putative industrialised Trade, the porter breweries evidenced a discontinuity with previous mentalities which was specifically recognised by the economist Adam Smith in 1776 (Porter 2000: 389) whereby a new capitalist spirit directed towards the pursuit of profit developed. The extent to which this new industrial capitalist spirit did not embrace any form of recognisable Chandlerian managerialism, and which in turn did not develop any modern accounting practices, has been the focus of this research.

It has been shown that in this earliest and formative period distinctly bureaucratic (albeit small) functionalist managerial hierarchies had become standardised through custom and practice in the metropolitan breweries (Pollard 1965: 133). This was evidenced most notably at Whitbread with senior clerks fulfilling such roles that extended to the counting house. These senior clerks, whom Mathias alleges were the first forerunners of the modern executive director, were able to amass sufficient personal wealth to buy into their firms by introducing further injections of financial capital, which has been supported by a re-examination of the Whitbread accounting archive. In the case of John Perkins this led to him becoming an equal partner, but this mainly arose from the firm's reliance on his brewery management expertise and knowledge for the continuance of operations at the renamed Barclay-Perkins brewery. Such senior clerks were few in number and although highly important in their narrow industrial and geographical location, they remained obscure and unknown in the provincial Trade and as a consequence their influence in the wider industrial sphere remained unknown. Consequently, there existed a small cadre of brewery owner/managers supported by a small hierarchy of senior brewery clerks for the unitary brewery businesses, which operated within functionalist systems capable of performing an adequate administrative co-ordination. The breweries were essentially a mass producer of a single factory product and the brewers' self-perception was that they were beer producers and no more: they sub-contracted all other functions such as cooperage and grain purchases to agents and at this stage avoided vertically integrating the business as much as possible. Hence, the simple unitary organisational structures sufficed despite their size and capital values since they could be managed relatively easily by the simple bureaucratic administrative hierarchies. The

production expertise resided and remained with a small managerial élite whose skill and knowledge was not delegated. This was undoubtedly a powerful knowledge system as the advancement of John Perkins proved. The management of production and distribution labour was never a major problem for the brewers since this remained both small in number and was mainly composed of the readily available unskilled where brute strength was needed. The requirements for more skilled labour in the form of wagon drivers, or coopers was similarly widely available or contracted out so that the Foucauldian disciplining of large docile bodies of workers was absent in the Trade. It will be argued later that this labour factor became a key factor in determining the role of accounting in the Trade.

The growth and rise of the provincial breweries in the following century replicated the earlier London-centric managerial experience and brewery organisational structures. The atavistic claims that brewing was an 'art' became less tenable in the nineteenth century. In evidence given at the government committee on the Sale of Beer by Retail in 1830, one prominent member of the metropolitan brewing dynasties, Charles Barclay, explained how the porter brewers had become industrialist mass producers, "Who are to supply these beer shops? The persons who can sell the cheapest and the best, and we say we can sell cheaper and better than others. We are power-loom brewers, if I may so speak" (Gouvish and Wilson 1994: 12). Thus, the replication of metropolitan managerial structures amongst the emerging industrialist provincial brewers depended on the achievement of the production economies of scale which underpinned financial success. The distinctive role of the brewery manager only

became normal practice in the larger breweries compared to the traditional brewer manager/owner:

"The manager concerns himself with the administrative side of the business buys all materials, makes contracts, and generally controls the sales. He has usually been a brewer, and is consequently fitted to maintain a general supervision of brewery operations …. Other departments of the brewery, such as malting, bottling, stables etc… come under his general control. Further, he has to see that the travellers are successfully selling the beers and expanding the trade of the brewery and management house diplomatically handled", (Baker 1905: 142).

It is apparent that a small managerial class had been created, but drawn from within the technical ranks of the brewers. Like today, the effectiveness of such managers was mixed. The unfortunate Howard Tipp was drawn from such a background and despite his authorship of *Brewery Management* (1892) the only technical text available on the subject his self professed managerial expertise failed to save Ind Coope from bankruptcy in 1909.

The widespread incorporation of breweries in the latter part of the nineteenth century did not substantially change either organisational or management structures of the newly created brewery companies or their success which remained mixed. For example, the demise of the mighty Allsopp once second only to Bass at Burton was reflective of the over-priced floatation of the company in 1887 to finance the inflated costs of public house purchases, which

most breweries were guilty of in pursuance of a policy of vertical integration of the Trade. Allsopp was accused of being a grossly mismanaged business and it was said that there was no worse managed brewery in Britain (Economist, 1900). Allsopp finally went into receivership in 1913 when capital financing costs could not be met from annual operating profits. The era of Allsopp's corporate management between incorporation and its demise proved singularly unimpressive leading it to be described as a saga of managerial incompetence (Gourvish and Wilson 1985: 134). Similarly an equally and comparable scathing attack was made of managerial abilities at the 1904 Annual General Meeting of Watney Combe Reid where a disaffected shareholder complained of the, "fossilised condition of the management of a company as autocratic as the Government of Russia" (*Brewers Gazette* 1905: 552). Although Allsopp's management provide the most extreme example of mismanagement, these reflected some of the problems of other major brewery companies who had undertaken incorporation from the 1880's onwards and over-committed themselves to property expansion in an inflated market. It has been estimated that the large brewery companies who subsequently had to engage in capital reconstruction during this period controlled over a quarter of the overall domestic trade – this included Bass, Watney, Combe and Reid, Whitbread, Hoard, Threlfall, City of London, Ind Coope, Worthington, Barclay-Perkins, and Meux (Vaizey 1960: 11).

Nonetheless, whilst such brewery specific examples provide ammunition to critics who have claimed that this era witnessed an amateurish approach and decline in the abilities and effectiveness of British management that was more

concerned with aping aristocratic pursuits, and by virtue of wealth entering the highest ranks of the social élites (Wiener, 1981, and Coleman, 1973), this did not preclude examples of effective brewery management being exercised. At the Burton Brewery Company's[59] annual general meeting of 1891 it was reported that,

"Since the appointment of their new general manager a very marked improvement had taken place in the character of the ales and the economy of manufacture, with the result that trade had received a very healthy and continuous impetus" (*Country Brewers Gazette,* 1891).

Some quarters of the Trade acknowledged the tautology that "bad management as much as bad water can ruin a brewery", so explained the manager of the St Leonard's Brewery (Donnachie1979: 190). Certainly the problems of the pre-Great War era amongst Scottish brewers was less pronounced than in England and Wales leading to claims of high levels of managerial skill being practiced amongst Scottish breweries (Donnachie1979:190). However such Caledonian managerial expertise could be also evidenced in England most strikingly at the largest regional brewer in East Anglia at Greene King[60] under its Managing Director, Edward Lake. Greene King had pursued a careful policy of financing

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[59] The Burton Brewing Company was registered as a joint stock company in 1846 and re-registered as a limited liability company in 1888. It acquired the Penn Brewery Co Ltd, Wolverhampton in 1897 and had two depots in Egypt. In 1907 it went into receivership following moves by the debenture holders and the brewery but not the licensed premises were purchased by Worthington's in 1915. (Barber 2005)

[60] Greene King and Sons Plc were founded in 1806 that expanded substantially in the mid nineteenth century. It was incorporated in 1887 to acquire and merge the business with F. W. King and Son.

expansion through profits and reserves coupled with small levels of manageable debt. Lake's philosophy of management was of financial orthodoxy, common sense principles in business as he referred to them – accompanied by the utmost probity and the old paternalism (Wilson 1983: 168). Such was Lake's reputation and standing in the Trade that he was employed as a consultant by the Cheltenham Original Brewing Company, which was explained thus,

"It sought the expert advice of the Managing Director of an important brewery in the East of England, Mr Lake. They hoped by the aid of his expert knowledge of brewery management to introduce reforms and retrenchments and expenditure of the brewery that would augment its profits and increase its future prosperity" (*Brewers Journal* 1906: 730).

Under Lake's advice the Cheltenham operations had returned to profitability in 1910. Another exemplar of successful traditional management was George's (Bristol) Brewery with its consistent annual stream of high dividends with a policy of caution and committed management that justified its reputation as the soundest of all the provincial breweries (Gourvish and Wilson 1985: 159).

Therefore the immediate pre Great War period presents a diverse picture of brewery managerial abilities with successful, traditional management based on financial accounts exemplified by Greene King, contrasted with the commercially unsuccessful family controlled Allsopp.

The inter-war period resulted in the greater concentration of the industry of friendly merger's and acquisitions against a background of declining consumption levels and difficult overall economic conditions. This process of 'rationalization' was not peculiar to brewing industry but was borne out the post war slump to and overcapacity and was loosely associated with scientific management. However, the movement towards a scientific age through rationalisation was not without criticism since "as often happens with a new immigrant to the language is undergoing a vogue which has led to use it as a cloak for confused ideas, and sometimes as a badge of respectability for processes of doubtful value" (*The Economist* 1929: 1073). The impact of the post war scientific management movement on the brewing trade proved to be insignificant and it was conspicuously absent from the Trade's agenda (there was no updated equivalent of Tripp's 1892 *Brewery Management*) and it failed to be mentioned in a brewing context within the technical literature by the prominent management writers of the day (e.g. Taylor, 1911, Sheldon, 1929, Elbourne, 1934, and Urwick and Brech, 1949). The rationalization of the Trade provided no major organisational changes either, the previously mentioned merger of Bass and Worthington occurred in name only in 1927, "the biggest non event in brewing history in that it failed to achieve most of its objectives" (Owen 1992: 161) that exemplified an adherence towards unitary structures based on departments rather than the Chandlerian multi-unit structures existing in America. The only major change by brewery management was the response to the 'Carlisle Experiment' and disinterested management which posed a serious threat to the Trade up until 1930. The impact of Carlisle's style of operations was actively supported and promoted by a small number of progressive commercial

brewers such as Nevile from Whitbread and Waters-Butler from Mitchell and Butlers who advocated a more socially responsible and paternalistic attitude towards management in an attempt to encourage sobriety. Carlisle, through rationalization, provided fewer and better furnished public houses which were not solely devoted to maximising beer sales. This led to the brewers becoming disciplined by tempering their social instincts with a sense of social responsibility by attempting to reconcile conventional business objectives with an unfamiliar sense of a wider social responsibility which provided a template for future developments (Hawkins and Pass 1978: 46). As explained from within the Trade,

"In the minds of the more thoughtful sections of the industry there is no fundamental conflict between the financial interests of the licensed trade and the social environment of the people, and this social improvement can be carried out without antagonising the consumer. What we may call the backbone of this policy is the improved public house" (*Brewing Trade Review,* 1926)

This movement towards a greater social awareness and public accountability was of course not entirely altruistic being a rational response to declining consumption and external competition in the wider leisure market and a response to continuing criticism from the Temperance lobby. Overall the evidence indicates that there was widespread resistance to changes both in organisational structure and management philosophy during the inter-war era in the Trade.

9.3 Re-Evaluation of Framing Observation Two – Education

The education of brewers was an integral part of the main segmental or stages discipline that was firmly grounded in obtaining a practical experience and knowledge of beer production. This remained a vocational apprenticeship rather than a 'grammocentric' Foucauldian one which suggests that new ways of learning to learn spreading from the universities whereby ultimate success was now measured through a formal written and marked examination. The brewer's system endured well into the twentieth century as Nevile (1959) and Reinarz (2001) attest. Brewery management pupils educated in such a system were not usually recruited from the university elite but from the educated middle classes who could afford the apprenticeship fees. Moreover the usual allusion to the middle classes being dismissive of trade was notably lacking in relation to the Trade as was reflected in Victorian popular literature, "Her father was a country gentleman down in your part of the world, and was a brewer, but it is indisputable that while you cannot possibly be genteel and bake, you may be genteel as never was and brew. You see it every day", (Herbert Pocket to Pip in Charles Dickens, *Great Expectations,* Chpt. 22 cited in Sambrook: 1996). Thus such an apprentice was inevitably recruited from an existing educated background often with strong family links to the Trade although it could equally be also the profession of the desperate, "A brewery was the last resource of a young man… failed for the Army, the Church, or one of the learned professions", (Lott in the *Journal of the Institute of Brewing* 1894 - 1895: 178).

The length of the brewery apprenticeship contracted from the eighteenth century, which had lasted from anything of up to seven years to only two years by the twentieth century. The early apprenticeships were devoted to the art of brewing despite the increasing scientific advances available to aid and assist production. Many master brewers remained suspicious of the scientific approach of making beer preferring to rely on the traditional manner of an oral tradition and inherited knowledge transferred between successive generations of brewers. A truly scientific approach to production appeared only in the latter part of the nineteenth century which may be regarded as the nearest equivalent of the 'grammocentric' university tradition. How widespread the scientific chemists influence extended is debatable even though Barnard (1889) recorded the existence of laboratories in almost every large brewery and even some in the smaller breweries (Gourvish and Wilson 1994: 60). The brewery management apprentices were provided or were advised to obtain some knowledge in this scientific discipline with a grudging acknowledgement towards its increasing importance. This new attitude towards knowledge acquisition manifested itself in the foundation of the School of Brewing at Birmingham University in 1900, a similar school of brewing at Herriot-Watt College chemistry department in Scotland in 1903 and the formation of the Institute of Brewing in 1904 out of various regional societies. A more discernible move towards a formal and professional brewery education became evident from the beginning of the twentieth century,

"To succeed now the brewer must turn to the laboratory. He cannot afford to neglect the teaching of science, as in the darkest days of twenty five years ago…

Those days are gone and are as dead as King John and armour" (*Brewing Trade Review*, 1904)

Nonetheless the succession from apprentice to fully fledged brewery manager adhered to a largely non-examination approach preferring to retain traditional tried and trusted methods of vocational education. This was clearly enunciated thus, "We are strongly of the opinion that in the first place the selection and training of the brewery pupil is of far more importance than an examination of the finished article" (*Brewing Trade Review,* 1913). It was only belatedly in 1922 that an examination and acceptance of a 'grammocentric' progression to management was finally accepted by the Trade, so the picture emerges of slow changes emergent in brewery pupillage. Some of these technically qualified men did emerge as brewery managers in their own right most notably Sealey-Gossett at Guinness's London brewery in 1934, but the strong retention of a traditional, less codified system of knowledge acquisition continued to survive. Therefore a traditional brewer could operate successfully by absorbing scientific findings by regarding the necessity for cleanliness, using good raw materials including yeasts and modern cooling plants, and through consulting laboratories if required. Consequently it was possible for a brewer to produce a first rate product without the necessity of acquiring a detailed knowledge of scientific processes that were being progressively provided in the more formal educational environments. Through personal membership of the Institute of Brewing, which remained non-examinable until 1922, combined with a regular reading of its journal and maintaining reasonably modern plant proved sufficiently adequate to keep abreast of brewing developments (Gourvish and Wilson 1994: 63) for the

average brewer. A comment that was recorded in one of the Trade journals exemplified the longevity of these traditional managerial attitudes, "Perhaps Dr. Morwitz can explain how it is that there were many brewers who although utterly ignorant of science, are successful, while many scientific brewers are completely the reverse" (*Brewing Trade Review,* 1886).

Consequently, the Foucauldian discipline of education and institutionalised examination does not explain brewery management instruction which mainly retained its traditional vocational role. There was no major innovation in the methods of learning until the Inter-War period and then this was muted with the examination process confined to the small group of brewing chemists who were grudgingly tolerated within the ranks of the brewing fraternity. Managerial education strongly retained a substantial level of oral and practical instruction that was not directed into Foucauldian 'grammocentric' disciplined avenues, as there were no major changes in methods of learning to learn.

9.4 Re-evaluation of Framing Observation Three – Financial Accounting

The accounting framing observation has been split into two halves – financial accounting and cost accounting both as sub-disciplines of the overall accounting discipline, in order to facilitate a better understanding of the research findings.

Financial accounting has been identified as one element which was an integral part of the brewery management vocational education process used for benchmarking. The thesis has focused on identifying a discontinuity within, a change to modern bookkeeping to modern accounting methodology, as a

Foucauldian micro-discipline, and the extent to which it was utilised as an instrument of brewery administrative co-ordination as a method enunciated by Chandler (1977), and applied in the development both of a recognisably modern brewing management class and a brewing managerial philosophy.

The evidence is that the brewers emphasised financial bookkeeping and that this remained the focus. In the following section I explain why there was no substantive leap in accounting knowledge or techniques which internalized accounting data for cost and management accounting purposes until at least 1916. This is perhaps unsurprising given that the focal point remained with satisfying the accountability demanded by the strict and successive governmental tax regimes and the need to account to the expanding brewing partnerships which supplied the demands for increasing capital investment. Unlike other industries, the need to discipline and control large docile workforce supposed by Foucault, was absent.

Much of the existing business history texts e.g. Pollard (1965), Gourvish and Wilson (1994) and Haydon (2001) are focused on the eighteenth century metropolitan brewers and these overwhelmingly derive from Mathias's (1959) work, which in respect of the number of accounts looked at remains unsurpassed. Mathias identified sophisticated DEB partnership accounting methods evolving in the London breweries during the earliest phase of brewery industrialisation, which in respect of Whitbread has been partially confirmed by a re-examination of primary source materials. This type of financial accounting has been shown as

evident in eighteenth and early nineteenth century Burton with Benjamin Wilson's accounts and that DEB remained the financial accounting methodology in the expanding provincial breweries as evidenced by Bass, Worthington, and the smaller regional breweries such as the Lichfield Brewery, Joules at Stone and the Walsall Highgate Brewery all in Staffordshire. These brewery financial accounting regimes could become highly complex and intricate. Tripp (1892) provided substantial details of this complexity with numerous examples of financial accounts, journals and ledgers since his instruction was one of the few texts to specifically provide any guidance in the area of brewery accounting in this era. The incidence of widespread incorporation from the 1880's onwards outwardly imposed a new disciplinary regime of accountability for financially reporting within the confines of the sundry Companies Acts to reflect a true and correct view from 1900 until 1948 but even so legitimate accounting techniques enabled these to be manipulated to remain as opaque as possible, which was not insubstantially different from the wider corporate practice with its infamous cases of secret reserve accounting. As noted earlier the case of the Royal Mail Steamship Company (1931) had involved the deliberate manipulation of taxation reserves to convert losses into profits. The Chairman, Lord Kyslant and the auditor were acquitted of wilfully deceiving the shareholders mainly because evidence was presented to imply that such accounting techniques were widespread (Stewart 1991: 41-43). This coincided with the widespread commercial idea that the provision of too much information through the accounts provided an advantage to competitors, which coupled with contemporary trading difficulties, could have precipitated company collapses (Arnold 1997: 41). The chief accountant of H and G Simonds brewery of Reading in 1949 stated that,

"I purposely refrain from entering into any argument concerning the tucking away of substantial sums before disclosing the net profit, as we ourselves have likewise adopted this procedure in the past to the extent of really huge amounts which no doubt will surprise you", (Gourvish and Wilson 1994: 343 and 345).

The objectives of financial accounting in the brewing sphere remained largely unaltered by these superficial changes in structure and continued to focus on tax and now shareholder rather than partnership accountability. As late as 1915 the chartered accountant De Peyer's paper concentrated entirely on brewery bookkeeping and taxation rather than brewery accountancy. Brewery bookkeeping remained defined in this schema as meeting the objectives of simplicity and economy of labour, accuracy, the detection of mistakes and dishonesty and informative classification (De Peyer 1916:20). Moreover nowhere in De Peyer's unique brewery accounting paper is there any consideration devoted to cost accounting, confirming its absence from the wider accounting agenda even at this point of the Great War in December, 1915. The almost universal financial accounting theme that emerged was the use of Beer Manufacturing Accounts albeit with different interpretations of what items were posted to production costs but the evidence demonstrates that such an account could be used as a post production decision making tool. This was achieved by comparison and analysis with either previous annual or monthly financial periods. The manufacturing account could also be used to measure performance as both Tripp and De Peyer indicate which allowed the brewers to develop target gross profit benchmarks.

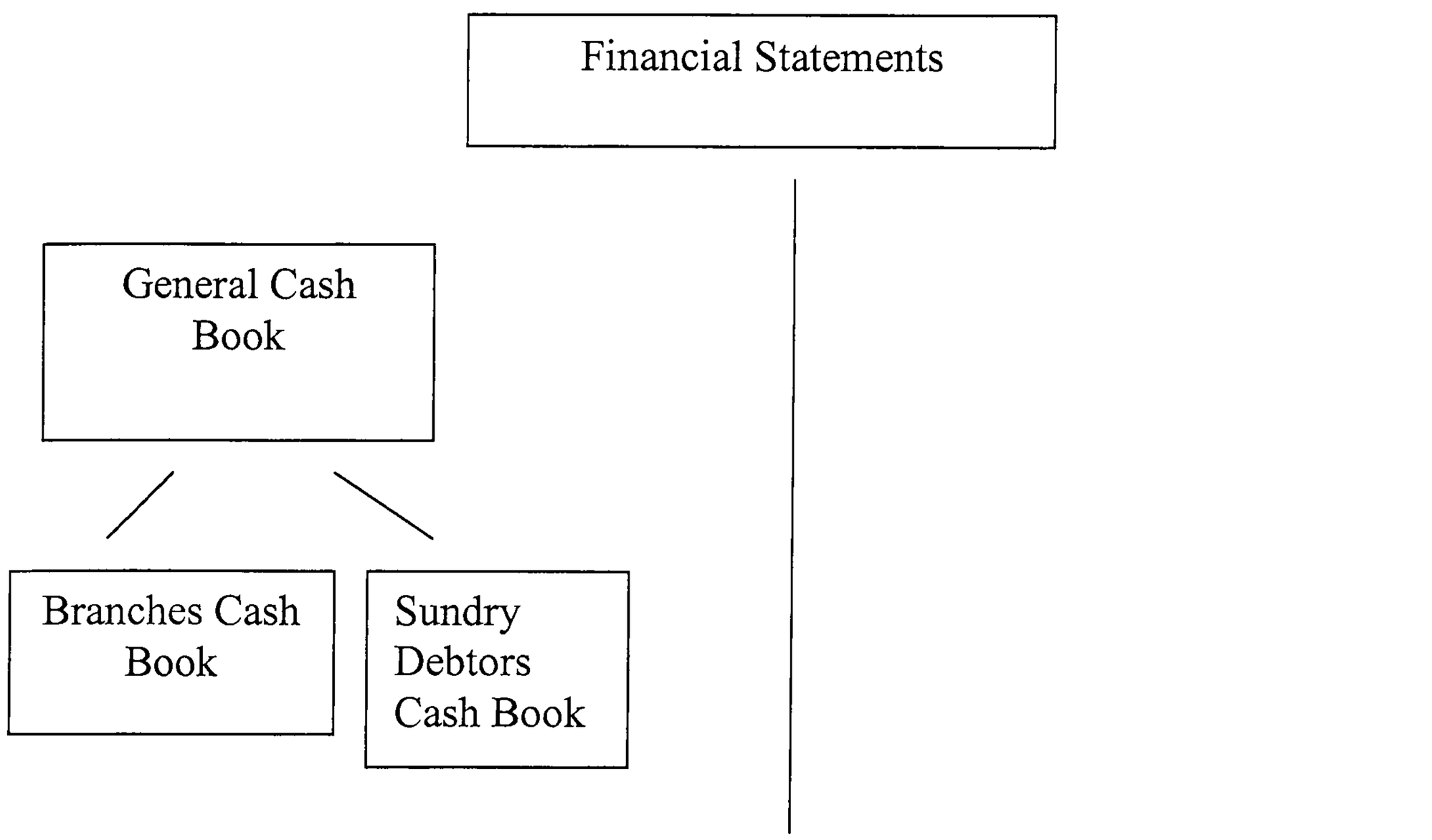
The major innovation in financial reporting was made at the LLCB/SMS where an untypical externally imposed management regime constructed a sleeker and less complicated accounting framework than existed in the commercial sector. This framework was described by the first manager, Sir Edgar Sanders as,

"Normally the book-keeping system in general use in breweries is very elaborate and absorbs a large amount of clerical labour. By departing from the usual systems and introducing a number of labour saving devices it was possible to effect a considerable reduction in the amount of clerical services required as well as in the number of books used and at the same time preserve all the information and statistics" (TSMS 1, General Managers Report 1917, CCRO)

This change had been driven by two imperatives absent in the commercial sphere. Firstly, there was a shortage of skilled accounting clerical labour due to the war and so the new state brewery had to develop a simpler accounting framework (the commercial breweries suffered a similar labour shortage but were burdened with inherited complex accounting frameworks). Secondly the controversial basis and ideology of the state brewery demanded an unprecedented level of public accountability and disclosure to report the financial success of the enterprise and justify its continuation.

Figure 9.1

LCCB –Accounting



(Talbot 2002: 14)

These responses by the LCCB/SMS were entirely rational to the unique situation it was found itself in.

Post 1918 the chartered accountant Hamilton's (1939) text like its predecessors concentrated on financial accounting presented in a less onerous but nonetheless detailed financial accounting framework of sundry individual trading accounts, property and estate accounts, cash books, impersonal accounts and managed houses accounts supported by numerous different ledgers. Hamilton failed to include or mention consolidated financial accounts even though these would have been appropriate for a large number of breweries and not just the larger breweries since many brewery companies exemplified by Joules owned and operated other related businesses trading in malt, mineral water, wines, spirits and tobacco which were accounted for as separate businesses. Nevertheless, this is not to condemn the brewers for further deliberate evasions of financial accountability since the brewers imitated general commercial practice because consolidated accounts were not statutorily required until the passage of the Companies Act 1948 (Myddelton 2004: 50). The preparation of such accounts was mainly untypical prior to this date with the notable exception of Nobel Industries Ltd which became one of the main subsidiaries of Imperial Chemical Industries (Hannah 1926: 92). Therefore the brewing industry remained within mainstream financial reporting practices. The exception was the SMS which from 1930 onwards produced its own form of consolidated financial reporting exhibiting greater detailed disclosure than the commercial equivalents to placate the hostility of the commercial brewing lobby.

9.5 Re-Evaluation of Framing Observation Three – Cost Accounting

This section of the accounting framing observation concentrates on the cost accounting methodologies employed in the Trade. This includes reflecting on both pre-modern cost and modern cost methods and addressing the Loft schema of the impact and bequest of State involvement in industry during the Great War.

The internalisation of accounting data within the Trade being employed as a Foucauldian micro-discipline of control remains, on the evidence excavated, largely absent until the creation of the LCCB/SMS in 1916. Brewing manufacture was capital intensive and production labour was and continued to be vested in the family owner/managers or a small cadre of skilled brewers representing and naturally siding with the brewery capitalist class. No skilled artisans were required in the manufacturing process and no traditional artisan skills were threatened by the new mass beer production methods. Brewing unlike labour intensive factories was not driven by a timetable since it was dependant on a chemical process that could not be controlled and it remained unpredictable because it was reliant on a variety of uncontrollable factors, i.e. weather, temperature and the quality of raw materials. Thus the manufacturing process could not be disciplined in the Foucauldian factory sense despite the limited advances in scientific brewing.

Nonetheless, there are some identifiable albeit isolated very early and fleeting incidences of product costing being undertaken, the Alton Abbey beer costing of 1570 is the earliest and the elusive reference to the provisioning of the Elizabethan army garrison (Urwick and Brech 1949: 17) are further evidence of

this methodology. Mathias also proffers small, fleeting and isolated ad-hoc attempts at pre-modern cost accounting being attempted in the metropolitan porter breweries but nothing that equated to Wedgwood's vase accounting costing experiments conducted in the Potteries or those attempted elsewhere in the metal and textile industries during the eighteenth century. However, it must be repeated and emphasised that the brewers and maltsters unlike these other businesses did not have large amounts of labour to discipline and nor did they have a complex product conversion manufacturing process to control and consequently they did not need to create and operate a detailed Foucauldian type cost accounting panoptic gaze. This was because the production process was capital intensive and was concentrated in a small cadre of highly skilled master brewers. Additionally, the cost accounting agenda is absent from all the limited number of the brewery technical accounting texts and similarly failed to be included amongst the more mainstream accounting texts.

The malting sector as the agricultural arm of the Trade and the impact of the Agrarian Revolution of the eighteenth century has revealed that the farm accounting innovations described by North and Young do not feature in the malting industry and hence these also failed to influence the brewers. Consequently the accounting innovations arising during the Agricultural Revolution in the farming sector do not appear to have spread to the industrial Trade. Indeed the incidence of accounting innovation by the malting for sale and commission maltsters sector was so belated that it did not appear until the beginning of the twentieth century as an economic rationalist reaction to falling prices and increased foreign competition. Even then its influence did not extend

or substantially influence the brewing maltsters who retained simple malt accounting systems which apparently proved as equally reliable as the newly created malt cost accounting regimes. Bass's malting costs in the period 1910-1911 proved remarkably similar to those of the commercial maltsters, exhibiting a "ratio extremely close to that suggested by Lancaster" (Clarke 1998: 123).

Furthermore if the eighteenth century metropolitan breweries had developed any codified system of brewery cost accounting then the later establishment of London brewing firms in Burton, i.e. Ind Coope in 1856, Charrington's in 1873, Truman's in 1873, and Mann Crossman and Paulin in 1875, (Richmond and Turton 1989: 6, Barber, 2005), which diversified production away from porter beer to include new sparkling bitters would logically suggest that they would have transferred any long-standing cost accounting practices to the provinces, but the evidence to support this geographical transference of accounting knowledge does not exist. That such early brewery industrial cost accounting regimes existed has been disproved following the examination of the early Whitbread archives residing at the LMA. The combination of the lack of textual and primary evidence supports the comments of the knowledgeable and important Trade insider Sir Sidney Nevile that no such cost accounting systems existed prior to the Great War (Nevile, 1959).

Instead the evidence is that some brewers employed simple pre-modern cost accounting frameworks such as Bass's 'statistical accounting', an inheritance of the early Victorian Statistical Movement[61], to impose discipline and by

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[61] The 'Statistical Movement' was an attempt by the Victorian generations between 1837-1897 to understand themselves in terms of numbers and at the same time banishing risk. It became

replicating the calculative methods of Colonel Henry Sykes one time president of the Statistical Society. Another type of pre-modern cost accounting was employed through an undeveloped 'Batch Costing' calculative process which had developed it is suggested from 1881 onwards due to a change in the tax regime as evidenced by Joule's commercially produced cost book. The simple raw material calculations supported the tax calculation, although it did permit the establishment of common benchmarks in the form of wastage levels and gross profit margins which had become established, as described by both Tripp (1892) and De Peyer (1916). Arguably these benchmarks could have offered themselves for application as production disciplines and as the basis for a 'panoptic gaze' control, but the surviving evidence suggests they were not and that they operated as an adjunct to the financial accounting and tax framework instead. There is no evidence that any form of even rudimentary management production reporting or production comparison was made of this cost information.

The major discontinuity in brewery modern cost accounting occurred belatedly at the LCCB/SMS from the inception of the scheme in 1916 whereby a new accounting knowledge system and practice was imposed. This cost system heralded a recognisably modern system of cost accounting which continued largely intact and unchanged until the piecemeal privatisation of the SMS during

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symptomatic of a new scientific age reflective of a confidence it could control the surrounding chaos through the unrelenting application of facts and measurements. This was exemplified in the collection of facts and figures, e.g. McCulloch's (1837) *Statistical Account of the British Empire* and Martineau's (1832-1834) *Illustrations of Political Economy* (Boyle 2001). It has been claimed that this was form of risk management that involved the colonisation of time and the eradication of invisible and hidden dangers that could be written into and out of specific places (Freedgood 2000:1). The work of Sykes applied this technique and added a financial metric as early as 1845 in his work *The Statistical Valuation of the East India Company Armies* which was replicated in his 1864 work on the British and French Armies (Talbot 2005c).

1973-1974. That this cost accounting system endured for so long attests to its success in being deployed in the managerial decision making process.

The LCCB/SMS exhibits parallels with Loft's work on the state controlled munitions industry during the Great War. The Loft thesis is couched within the Foucauldian paradigm as applied to general industry and based on purely secondary sources, which has been increasingly questioned as exaggerating the impact of the State intervention. Loft is accused of being, "Favourable to what might have been MM (Ministry of Munitions) pufferage in inspiring the work nation to do a more broadly based costing awareness" (Fleischman and Tyson 2000: 197). This revisionist viewpoint was based on Marriner's (1980) earlier work that had used the same secondary sources as Loft but who had interpreted the evidence as not supporting the wider diffusion of cost accounting. This has led to criticism of Loft which "leave the quality and performance of these innovations seriously in question" (Fleischman and Tyson 2000: 198). Most recently Loft's assertion about the absence of any general cost accounting pre-war practices and the alleged scientific cost accounting war-time legacy has been disproved by the citation of a wide range of existing empirical evidence (Boyns, 2005). In the neglected case of the brewing industry, Loft's assertions become similarly unsustainable since the primary source evidence indicates that the LCCB/SMS's cost accounting modernism was not widely replicated in the Trade even amongst the larger breweries such as Bass and Worthington who clung to their pre-war practices as did the smaller regional breweries such as Joules and Sons or even applied their own distinctive local cost accounting solutions as witnessed at the Highgate-Walsall brewery with the calculation of

cost 'consolidation accounts' or departmental accounts. This was because the older cost accounting methods continued to prove both inexpensive and adequate for brewery production requirements. Amongst the smaller breweries the external added value services of the auditor/ accountant continued to provide a financial ratio analysis and costing overview. Thus the LCCB/SMS incidence appears to have been a local phenomenon because direct governmental control continued to be exercised until 1974 whereas state control in the munitions sector was relinquished post 1918. Therefore the diffusion of what was termed 'scientific costing' as part of scientific management was highly muted in the Trade and it only becomes apparent in the technical textual evidence of Hamilton's *Brewery Accounting* (1939) where the final chapter is devoted to cost accounting albeit briefly. Even then technical textual evidence has to be treated with caution since this could be in advance of commercial practice, as the empirical evidence suggests.

9.6 Synthesising the Themes Arising

It is discernible that a brewing capitalist mentality reflective of a commercial society was present in the Trade with the declared aim of "the desire of bettering our condition" through the pursuance of profits identified by Adam Smith (Porter 2000: 389), that insubstantially changed during the period under review, which requires explanation. Firstly, the brewing process did not substantially change with industrialisation,

"although modern chemistry and technology have helped brewers to carry out their work more swiftly and accurately and greatly reduced the element of

personal skill and experience required, the basic processes of manufacture have changed surprisingly little over a long period of time" (Owen 1978: 28).

The brewing industry thus retained a substantial continuity in manufacturing processes and a similar continuity of family ownership which promoted a distinct management style and organisation from 1700 until 1939. Brewery management as a micro-discipline remained a respectable profession and drew its managers from within the Trade which adhered to a strong vocational training programme that was not reliant on a formal education and examination procedures until at least post 1922. Even then the movement towards a scientific and 'grammocentric' educational process was low-key and resisted by large sections of the Trade. The cult of scientific management and the "electrifying impulse of America" (Sheldon 1923: 44) failed to make any impression on a mature industry where largely effective paternalistic styles of management persisted in being quietly successful. In this respect, Chandler (1990:269) and Glamann (1981) are essentially correct in that the brewers strongly adhered to an earlier form of gentlemanly capitalism well into the twentieth century, although the claims for putative and underdeveloped modern management hierarchies as fit for purpose could be accorded to only the very largest brewery companies who were capable of employing departmental managers.

Organisationally the Trade had become vertically integrated with the rush to acquire tied estates and producing or owning its major sources of raw material supply from the latter part of the nineteenth century. The rationalisation of the

Trade post 1914 was mainly a defensive economic reaction to a contracting domestic market burdened with overcapacity. This did not provoke any seismic organisational changes as unitary structures populated by functional departments continued to be the norm even amongst the largest brewery companies. This should not be condemned as indicative of inadequacy since the multi-divisional structures envisaged by Chandler were mainly unknown in the British corporate environment of pre 1914 where organizational changes were mainly restricted to those provoked by technological change and the adoption of limited liability status which also included the brewers (Gourvish 1987: 21). Indeed, British breweries from 1700 onwards had exhibited a high degree of productive efficiency, a spatial efficiency carried out within well organised beer factories aided by technological advances in science and mechanical steam power that were widely embraced with an increased velocity of production to harness economies of scale. The failure to adopt multi-divisional structures by the brewers was therefore typical of the inter-war era and the muted creation of atypical multi-unit divisional businesses was restricted to a few abnormally large British business undertakings[62] i.e., the semi-federation of different businesses such as Associated Electrical Industries, Tube Investments, Imperial Tobacco, Tootal Broadhurst Lee, Hawker Siddely, Guest Keen and Nettlefold and EMI (Hannah 1976: 96-97). Gourvish (1987: 27-28) offered only Imperial Chemical Industries as the nearest and exceptional large example of the Chandlerian American multi-divisional form of managerial capitalism. That the brewers did not create a large managerial capitalist class thus becomes predictable because

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[62] As Chandler points out, although the brewers occupied prominent positions in the largest two hundred British industrial businesses measured by share valuation, this was the result of the large property portfolio because it reflected the value of the overall brewery real estate in owning public house properties (Chandler 1990: 267)

such a class was not needed outside an M-form structure. In the wider sphere of British industry the threat of foreign competition in various market sectors, e.g. textiles, chemicals and engineering had provoked rationalisation which created larger business organisational structures, but the British beer industry operated under no similar threat nor had it to defend substantive overseas markets. Consequently, no global economic imperative existed to encourage the formation of multi-divisional brewing organisations until the late 1950's when the overseas threat became manifest and foreign brewers commenced investment in the British domestic market through acquisitions. The only peril that the brewers faced prior to this date was domestic, so the Trade's rationalisation became focused solely on defending its relatively shrinking British market;

"Merely to amalgamate various units engaged in the same trade and to carry on their respective businesses as before in partly the same shops, sometimes in competition with each other is a travesty of rationalisation, which were it not a fact would be regarded as a caricature of a movement which has for its object the economic improvement of industry". (Sir Max Johnson cited in *The Economist* 1929: 1074)

Accordingly, the brewers could survive and compete by retaining traditional unitary and department forms with the retention of family members in entrepreneurial positions as demonstrated at Bass, Whitbread and Joules, or by creating the illusion of a merger as at Bass and Worthington, which defied the objectives of the rationalisation movement.

The role of accounting as a discipline within the Trade on the evidence excavated presents confirmation that accounting remained the 'weakness of the trade' as Nevile had claimed. This was because there was no extensive pool of internal accounting knowledge within the Trade and as Nevile and De Peyer indicate this knowledge remained reliant on largely external sources, the professional auditor and accountant, which proved largely adequate. Although the early adoption of DEB evidenced the brewers' capitalist mentality, which formed a part of the normative brewery management vocational training regime, its usage was limited to financial accounting, satisfying the tax authorities and safeguarding assets. Undoubtedly some of these financial accounting frameworks were highly complex as referred to by the manager of SMS in 1916 but their usage was mainly limited to external accountability to the business partners or later to the shareholders. The claims that such systems evident in the metropolitan porter breweries of the Enlightenment exhibited management accounting techniques (Haydon 2001: 115) are unsustainable and expose a lack of technical understanding of accounting. As De Peyer (1916: 20) had noted accounting's functional roles were simplicity and economy of labour, accuracy, easy detection of mistakes or dishonesty and informative classification. De Peyer never elaborated on what comprised informative classification, but the ad-hoc analysis of the beer manufacturing account shows the way in which this data could be utilised for post production analysis as part of the historical financial accountably process.

Nor do the links with the agricultural sector evidence any transmission of accounting innovation from this direction. The existence of the LLCB/SMS branch accounting system version offered the potential of exercising a panoptic

control through the operation of typical modern branch accounting structure over the various retail outlets, "This ledger is kept in order that full information may be available as to the progress of any Branch, and enables comparisons of Branches to be made" (TSMS1 General Mangers Annual Report 1916 – Appendix C, Accounting System, p11, CCRO).

The evidence shows that accounting expertise remained largely external to the firm with a specialised cadre of brewery accountants specialising in serving the Trade. This is evidenced by the sundry brewery adverts and the professional activities of De Peyer and Harries at the Walsall Highgate brewery who offered advice arising from their audit work to the brewery managers when required. Thus the accounting profession provided all the financial information desired:

"The auditor has become the adviser and expert whose assistance is eagerly required. On questions of financial policy, on the raising of capital, on distribution of profits, on costing…his advice is deemed essential….." (*The Accountant,* Vol. LXV. 1921: 545 cited in Carr-Saunders and Wilson 1933: 207-227).

This financial advisory role was thus a value added product which occurred from the normal audit engagement rather than from within the business. In brewing it had been remarked by the Chairman of the London Section of the Institute of Brewing, H.E Field that, "Naturally, an accountant could not tell them how to

manage their business, but he ought to be able to give, and no doubt would be willing to give an idea where the money was slipping away" (De Peyer 1916: 33). Only post 1918 did professional accountants make some general inroads into the boards of directors of British companies, but not breweries. A notable exception was William Peat the chartered accountant who held a directorship of Ind Coope in 1911, mainly in the role of advisor to a fast ailing company (Matthews 1998: 84-85) and Nevile alluded to the brief accounting training of the new generation of the Whitbread industry in the inter-war period.

The dearth of any codified modern cost accounting system as a management discipline has been evidenced by the breadth of the empirical and technical textual evidence to have been lacking prior to the Great War whilst instead various other ad-hoc or pre-modern methods of cost valuation were employed. Urwick and Brech (1949: 15) had stated that modern management was identified with the factory system and that "the story of control in management is the story of the evolution of accounting and cost accounting", which by the accumulated evidence is demonstrably not the case in respect of the brewing industry for cost accounting.

Tripp (1892) and De Peyer (1916) had noted the difficulties of consensus in constructing the beer manufacturing account rendering the construction of any cost system the more problematic and both authors excluded any mention of costing from their observations. Subsequently it is significant that the genesis of a recognisably modern brewery cost accounting in a codified form came not from

within the mature and stable brewery business sector but from an alien and interventionist source unencumbered with traditional doctrines. In this case it was imposed at the LCCB/SMS by external non-traditional forces, the State in the same manner and at the same time that it imposed modern cost systems in the munitions manufacturing sector as enunciated by Loft (1986, 1990, and 1992). It is here that the Foucauldian discontinuity with prior practice can be firmly located within its genealogical context that offered the illusory prospect of scientific costing as part of a scientific management discipline for the assimilation by commercial brewers as a modern micro-discipline.

The war-time industrial experience had elevated cost accounting to a new level of widespread respectability and debate exemplified by the Conference of Scientific Costing held in 1919 by the ephemeral Costing Association of the ICAEW and the formation in the same year of the Institute of Cost and Works Accountants (ICWA) which held its own Costing Conference in 1922. At this conference one of the speakers .J. C. Todman, FWCA presented a paper entitled '*The Necessity for Scientific Costing'*. Todman explained that that the experiences of the recent war had convinced businessmen of the necessity for scientific costing and that this had been widely welcomed in the country. He outlined the broad objectives of scientific costing as comprising, the determination of true cost, the provision of a reliable basis for estimates, the control of stocks and work in progress and the provision of statistical information for the guidance of management (Todman, 1922). Sheldon as a contemporary and leading management author stated that, "Costing is the only scientific

treatment of facts generally accepted in industry… it will bring to notice factors which scientific inquiry, apart from a cash measure, could more easily have revealed" (Sheldon 1923: 203).

Yet although the brewers had been part of this collective wartime experience, the evidence drawn from all the brewery firms examined during this research indicates that they did not embrace the scientific costing so popular in the post war accounting and management literature and, instead, adhered to those traditional pre-war systems of accounting practice. Similarly, the creation of the ICWA specifically for cost accounting expertise located within business which recruited members widely from industry but its ranks excluded any membership from the brewing trade (Loft 1990:114-115). At the end of the period of this historical research it cannot be denied that Hamilton's (1939) text provided the second identification after the LCCB/SMS experience of modern cost accounting as a legitimate discipline within the wider brewing industry. However its wider commercial location has not yet been located and the late date of this text implies it was of belated origin in the Trade. It is notable again that the source of cost accounting innovation was derived externally from the professional accounting sector rather than being generated internally within the Trade. The evidence implies that a class of conservative brewery managers perpetuated a well established atavistic management style and philosophy undisturbed by the wartime traumas. This, though, was not indicative of inefficient management which would have been reflected in widescale incidences of business failure, but

that the Trade remained consistently amongst the top echelons for business efficiency and capita productivity.

Figure 9.2

HMSO 1907 Census of Production[63] Brewing and Malting Trades Tables,

	£ output (000's)	£ Av weekly output per person employed	Total nos employed	% of overall GB workforce	Waged	Salaried	% salaried to waged
Drinks and malt trades	67,250	15.17	84,969	1.22	68,996	15,973	18.8
All UK	1,765. mill	1.95	6,984,976				

(HMSO.1912: 524-526)

Figure 9.3

HMSO 1930 Census of Production Section 500, Chemicals Drink (s540)

		£ output (000)	£ Av weekly output per person employed	Total nos employed	% of overall GB workforce	Oper atives	Admin	% Admin to Ops
	Drink	199,929	40.93	97,679	1.44	79,001	18,678	19.12
541	Aerated waters, cider, vinegar, wine	8,427	11.31	14,895	0.22	11,946	2,949	19.80
542	Brewing & malting	140,884	47.15	59,754	0.88	48,687	11,067	18.52
543	Spirit Distilling	4,827	26.80	3,602	0.05	3,116	486	13.49
544	Bottling	45,791	47.13	19,428	0.29	15,252	4,176	21.49

* excise duty of £70,800,000 included in the value of the brewing output

(HMSO 1930: 66)

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[63] The first Census of Production was undertaken in 1907 and the final report was published in 1912 by HMSO in a slightly different format to the later 1930 version rendering direct comparisons difficult. The 1907 figures are also distorted slightly because Ireland is included as part of Great Britain at this earlier date. The 1930 figures exclude Irish figures apart from Northern Ireland which remained as a part of the British state. However no significant distortion is apparent if Irish figures are removed from the 1907 figures.

Figure 9.4

HMSO - 1930 Census of Production Section All Categories p62

		£ (000) output	£ Av weekly output per person employed	Total nos. employed	% of overall GB work force	Operatives	Admin	% Admin to Operatives
All		3,240,912	9.55	6,784,100	100	6,099,553	684,556	10.09
100	Metals & Engineering	855,001	9.97	1,714,721	25.28	1,479,869	234,852	13.7
200	Textiles	508,443	7.98	1,273,711	18.77	1,181,025	92,686	7.28
300	Coal & minerals	250,592	4.14	1,210,517	17.85	1,172,968	37,549	3.1
400	Civil engineering & building	396,176	7.2	1,100,298	16.22	1,017,651	82,647	7.51
500	Chemicals, drink & food	780,907	21.98	710,402	10.47	578,026	132,376	18.63
600	Sundry Industries	421,265	12.2	684,845	10.09	590,364	94,481	13.8
	Government departments	28,528	6.38	89,615	1.32	79,650	9,965	11.12

(HMSO 1930: 62)

The statistics show that brewing and malting remained highly efficient in per capita output, which was surpassed by very few other industries despite its lack of a coherent cost accounting framework.

The conclusion must be that the Trade could and did operate successfully without the widespread use of expensive management accounting systems as long as this was the general case amongst the Trade. The sundry census data indicates that breweries were highly bureaucratic organizations as evidenced by the high percentage of administrative staff. Chandler has indicated that such a system was integral to the development of managerial capitalism, but the breweries instead

adhered to traditional management styles and unitary organization structures. The unitary organization based on functional departments was adequate for the business and the nature of a basic one product business did not require a sophisticated cost system for effective the management of production. Brewing as a processing industry fulfilled Chandler's general observation that,

"Economies and lower unit costs resulted from an intensification of the speed of materials through an establishment… it came from organization and technological innovations that increased the velocity of throughput than from adding more men and machines. The potential for mass production thus reflected the basic nature of the processes of production….Supervision of the working force required little in the way in the way of systematic procedures.. Nor was costing much of problem.. Their costs were easily calculated" (Chandler 1977: 257)

Indeed the leading American brewer the Pabst Brewing Company in the 1880's like their British counterparts revealed no use of modern accurate cost accounting (Chandler 1977: 258) so this lack of internalized accounting was not unique to the British industry.

Finally the longevity of simple cost accounting regimes in the Trade must be acknowledged, albeit that this may be criticized as anecdotal but was derived from a knowledgeable brewery insider, the late Anthony Avis,

"In the 1950's for medium and small brewery companies the accounts were entirely historical, and to learn how you were doing in the current year you simply looked at the comparative period of the preceding years and applied your experience of the year to date. You had an end of year profit figure based on sales of known number of barrels, so you did your calculations how you were doing by comparison. As for wholesale and retail prices you adjusted these pragmatically according to the price of raw materials and how the economy was doing: it was very rough and ready. With just one shrewd man in charge of the company, he could manage things by instinct, and he did this very well" (Avis 2001)

This displays the incidence of long standing practices that may be traced all the back to the porter breweries and in the case of costing,

"As for calculating profit per barrel sold, brewery companies hardly bothered about this: they knew they made so much profit last year on so many barrels sold and broke this down into a rough figure per barrel, and they made adjustments to cover increased material costs. As for pricing they pragmatically considered what they could get away with bearing in mind their tenants' interests and what the customer might think", (Avis, 2001).

Consequently the search for modern management and locating a managerial breakthrough in the technological context of the English brewing industry where early breakthroughs in mass production were realised, did not foster a management or accounting revolution. The continuity of production methods in

both the brewing and malting sectors adapted to the availability of the new technologies without any major change occurring which permitted a mostly successful adherence to traditional management practices. Therefore, the technological advances did not alter the brewers and maltsters' business mentalities since no major Foucauldian discontinuity occurred with prior practices which continued to operate efficiently.

It is only at the atypical LCCB/SMS constructed by the State that a major but localised and confined discontinuity was artificially imposed in 1916, " toleration tinged with nostalgic resentment at having a piece of the cake in government hands" (Avis, 2002), whose wider transference of managerial and accounting techniques within the Trade was muted. It was only in 1939 that a commercial Foucauldian accounting discontinuity appeared and then only in the form of Hamilton's textual evidence representing an idealised form which has not been discovered in the commercial primary sources examined during the course of this research. This undermines the creation of Foucauldian accounting micro-disciplinary regimes advanced by Loft in the munitions industry and its post-war dissemination which did not substantially affect accounting regimes within the Trade.

There are several reasons for the failure of the Foucauldian paradigm to offer a complete explanation for the lack of accounting's disciplinary role in the Trade. The search for managerial capitalism has been sought in an advanced technological context with manufacturing breakthroughs that pre-dated the normally identified Foucauldian date of 1800c for the creation of new

disciplinary discourses. The British industrial brewery regimes were well established prior to this date in London and were replicated later in the provinces. The Trade had thus established successful and robust pre-modern management systems and styles in a mature trade whose manufacturing processes did not substantially alter. Further technological advances and organisational changes did not alter this tradition, which persisted largely unaltered in both brewing and malting. From the neo-classical and Marxist perspectives the failure of brewery accounting innovation deployed as a micro-discipline was an economically rational response by the brewers where direct labour was minimal and where financial accounting systems were adequate to exercise an effective control in a similar manner to malting and the British canal systems. Thus, the brewers formed a resilient class of early capitalism that did not develop its early accounting regimes any further because they remained financially adequate for directing effective business operations until the traditional organization of the Trade began to decay and implode by the beginning of the 1960's. This marked the end of the dominance of the 'beerage' and disappearance of many historic brewing firms,

"…from 1955 onwards mergers and acquisitions were the order of the day, formally ending in 1972 when Grand Metropolitan Hotels added Watney Mann… and Imperial Tobacco acquired Courage, Barclay and Simonds. It was significant because it marked the end of breweries being solely concerned with a sale of beer…." (Haydon 2001: 297).

The traditional brewing management objectives enunciated by Colonel W.H Whitbread in 1955 that 'the continuance of old established concerns run on progressive lines, (which) is in the public interest and consequently sound business' (Hawkins and Pass, 1979), began to disappear in favour of establishing diversified businesses. The emergent diversified businesses it is claimed subsequently became the vehicles whereby "the arrival of the 'accountants' became the mechanisms he (Whitbread) established became a convenient vehicle for takeovers" (Haydon 2001: 298) and the introduction of a new corporate culture within international rather than national and regional beer producing companies.

9.7 Limitations of Study and Further Research

There are several limitations to this thesis. The research agenda has been mainly confined to a Midland centric focus with the prominent exception of the Carlisle brewery and the early Whitbread archive for pragmatic reasons of access, but it should be remembered that Staffordshire was a pre-eminent centre for beer production, particularly at Burton upon Trent. Thus, there is an inherent geographical bias in the thesis which is focused on the nineteenth and twentieth centuries. The metropolitan eighteenth century brewery records proved initially difficult to locate as the Whitbread records had been dispersed nationwide to various county archives after the company moved out of brewing in 2000 and closed the Whitbread Museum in London. Other problems were encountered with other London based records as these were removed from long standing archive locations some of which were eventually being traced to the London Metropolitan Archives in the middle of 2005. Therefore it is acknowledged that

much of this data employed in this thesis relevant to the earlier period is dependant on the work of Mathias as are all the other major sources for this era.

Inevitably, the archive research is incomplete and the removal of access to the Bass and Worthington records and the extensive secondary sources held in the Bass Museum plus the guidance of informed museum staff which occurred following the takeover by Coors removed a valued source of information.

This study of the brewing industry which has taken a broad time horizon adopted a disciplinary perspective which was heavily influenced by similar studies taking a Foucauldian perspective to the field of accounting history influenced by Loft, since this offered striking parallels whose conclusions were not replicated by this research.

The future research agenda of the brewery industry is to extend the scope and breadth of primary sources since extensive brewery archives[64] are held in many other county depositories throughout the Great Britain and to forward the temporal examination of the Trade to the post 1945 period to try and locate further discontinuities of organisation and accounting practice. This is also intended to include examinations of the records of domestic brewers, particularly those of the county aristocracies who maintained their own brewhouses well into the nineteenth century. All of this future research it is hoped will present a more definitive story of the role of accounting has played within the Trade.

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[64] Richmond and Turton (1989) *The Brewing Industry A Guide to Historical Records* devote pages 37-385 to separate brewery company archives and pages 387-405 to national trade and regional Trade Associations and minor county archival deposits. Barber's (2005) *A Century of British Brewers1890-2004* devotes pages 1-174 organised by county to different brewery businesses leading to approximately 9,600 separate entities.

Appendix 1- Brewery Management and Accounting History Questionnaire

	<u>General Management</u>
QA1.	Indicate your brewery company employment with dates and positions held.
QA2.	A. Indicate any academic, professional qualifications held B. Indicate any brewery specific qualifications held.
QA3.	Indicate your recruitment process to the brewing industry and whether this was a conscious decision on your part. Comment on the perception of working for a brewery company in a managerial position. How typical of the overall Trade was your personal experience
QA4.	Post recruitment what specific brewery training or qualifications were you expected to follow? Did the Trade have any specific management courses or qualifications and how reliant was the Trade on training in house?
QA5.	Broadly indicate what management responsibilities you held and how these changed if at all over time
QA6.	Several commentators have referred to brewery company management as a adhering to an outmoded form of paternalism up until the 1960's because of wide-scale family ownership. How would you respond to these criticisms?
QA7.	Please indicate the typical senior brewery management organisation in your experience, (i.e. divisional structures, reporting structures) and whether this changed over time
QA8.	Are there any other observations on brewery management practices you would wish make regarding recruitment, training and changing influences
	<u>Accounting</u>
QB1.	One commentator in the 1950's has said that accounting was always a 'weakness of the trade'. How would you respond to this criticism? Did you experience any major change in emphasis regarding the accounting function during your career?
QB2.	Did the brewery/ (ies) you worked for always have a specific finance director and if not could you indicate the status of the accounting/finance function within a brewing company. Was this influenced by the size of the brewery and if so was reliance placed on

	external accounting firms? Were accountants trained in house?
QB3.	One commentator has stated that brewers deliberately made their annual published accounts as uninformative as possible with the collusion of the auditors. How would you respond to this allegation?
QB4.	Many breweries, especially the smaller breweries prepared internal Manufacturing Accounts. Did you come across these and how were these used by management?
QB5.	Most accounting textbooks especially after the Great War specifically refer to improved production methods, i.e. cost per barrel of production separated into prime costs and works overhead absorbed. Was such a system present in your experience and how typical was this of the Trade? If no indicate what type of costing system(s) were used and employed by management.
QB6.	Closing stock values on balance sheets are usually are referred to as certified by management at cost or market value. How was this value calculated if a costing system not present?
	<u>SMS (1916-1974)</u>
QC1.	What was the Trade's attitude o the SMS in your experience?
QC2.	How influential was the SMS on commercial brewery practices in your experience?
QC3.	How did the SMS policy of 'disinterested management' compare to commercial public house management practice?
QC4.	Have you any comments or observations on the Public House Trust Movement?
QC5.	Are there any other comments you would like to make regarding the SMS?
2ndJuly 2002	

Appendix 2 - British Technical Accounting Literature – Genealogy

Date	Author	Details
1179	Richard FitzNigel	*Dialoguus de Saccario* – treatise on charge and discharge accounting
1543	Hugh Oldcastle	– *A Profitable Treatyce*...the first English publication on DEB largely copying Pacioli's 1492 text. This was followed by many other similar examples, most notably John Mellis's 1588 *A Briefe Instruction and manner how to keepe bookes*
1620	London Worshipful Company of Bakers	Calculating the cost of baking a loaf, cited by in *Cost Accountant* (November 1941)
1697	John Collins	*The Perfect Method of Merchant Accompts* – dyers process accounts for separate processes with transaction examples dated 1664 and 1665.
1714	Roger North	*The Gentleman Accomptant* – accounting for the results of individual farms and their operations
1750	James Dodson	*The Accountant or The Method of Bookkeeping*- shoemakers accounts that split costs into separate processes
1760	John Mair	*Bookkeeping Methodized* – some cursory mention of plantation accounting for different crop types.
1777	Wardlaugh Thompson	*The Accomptants Oracle* – contains a chapter on thread hosiery manufacture through the putting out system.
1779	Robert Hamilton.	*Introduction to Merchandise* – referred to a small number of accounting records kept by artificers and manufacturers with references to the types of accounts to be kept. It includes farm accounts and an indirect reference to brewery accounting. However the 1820 edition dropped all the prior cost style references. Robert Hamilton (1743-1829) was a Scottish academic who Rector of Perth Academy (1769-1779) later becoming Professor of Natural Philosophy and Professor of Mathematics at Marischal College, Aberdeen (1779-1817).
1818	F. W. Cronhelm.	Notable for discussing accounting for perpetual inventory and work in progress
1832	Charles Babbage.	*On the Economy of Machinery and Manufacturers*- the first treatise on the scientific management of factories - not cost accounting as such but a table of cost analysis.
1858	F. W. Krepp.	*Statistical Bookkeeping* – described as a special

		system for manufacturers but 'unsophisticated'.
1862	J. W. Sawyer.	*Bookkeeping for the Tanning Trade* – described as a sorry example of cost accounting in this 'Dark Age'
1878	T. Battersby.	*The Perfect Double Entry Bookkeeper and the Perfect Prime Cost and Profit Demonstrator (on the Departmental System) for Iron and Brass Foundries, Machinists, Engineers, Shipbuilders, Manufacturers etc..*- described six types of cost accounts used by he author in his public practice all of which he criticised.
1881	Edward Amsdon	*Brewery Bookkeeping* – cited by Solomons but noted for excluding any consideration of cost accounting.
1887-1922	E.Garcke and J. M. Fells	*Factory Accounts* - traditionally cited as the most influential cost work of the nineteenth century that endured until a final seventh edition in1922. However *The Accountant* described it as more theoretical than practical, and pedantic, in the nature of a work on political economy.
1889	G.P. Norton.	*Manufacturers' Bookkeeping* – systematised bookkeeping in manufacturing industries which was widely adopted in the British and American woollen mills with imputed costs that was close to the standard costing concept.
1892	H.C. Tripp.	*Brewery Management* – included complex and detailed financial accounting frameworks and debating the justification and legitimacy of costs included in beer production.
1896	J.S. Slater-Lewis.	*Commercial Organisation of Factories* – included integrated accounts with a consideration of allocation and apportionment of overhead costs based on modern concepts.
1914	E.T. Elbourne	*Factory Administration and Accounts* – synthesised administrative methods, including cost accounting, with the planning of production and control of stock.
1915	E.C. De Payer	*Brewery Accounting and Income Tax* – the paper was focused on financial accounting and tax and excluded any mention of cost accounting. It also debated the problem of which costs could be legitimately included in the cost of production via the Manufacturing Account.
1939	G.S.Hamilton	*Brewery Accounting* – mainly devoted to detailed financial accounting frameworks but notable for including a chapter on brewery cost accounting and the treatment of overheads on modern lines.

Appendix 3 -Management and Trade Organisations

Date of Foundation	Name of Organisation	Details
1437	The Worshipful Company of Brewers	Originally founded sometime in the fourteenth century as the Wardens and Commonalty of the Mistery of Brewers of the City of London which ranked fourteenth in precedence of the eighty-four Livery Companies. It was granted its first royal charter in 1319 and was referred to as the Guild of St Mary and St Thomas the Martyr and was allowed to regulate the beer trade in the City. The Guild was incorporated in 1437 reflecting its growing wealth and status reaching the peak of its power in Tudor times. Attempts to extend its power beyond the original City limits were unsuccessful and the growth of the major porter brewers rendered it ineffectual. It continued to survive as a charitable organisation and as a powerful trade lobby when required. By the Victorian era it was dominated by the major brewers and fulfilled a largely symbolic and ceremonial role.
1887	Institute of Brewing	Originally founded as the Laboratory Club which in 1890 was renamed the Institute of Brewing in 1904; responsible for brewing research and establishing professional standards.
1904	Brewers Society	Formed from the various local associations of which Burton and London were the most dominant.
1911	Sales Managers Association	
1913	Welfare Workers Association	Did not strictly speaking become a 'management institute' until 1931 when it adopted the title 'Institute of Labour'.
1915	Office Managers Association	
1920	Institute of Industrial Administration	Founded by E T Elbourne

1920	Industrial Institute	
1921	National Institute of Industrial Psychology	
Post 1918	International Management Institute	Set up by League of Nations at Geneva –sponsored biennial Scientific Management Congress
1926	Management Research Group	? existed by 1930
1931	Institute of Labour Management	Originally founded as the Institute of Personnel Management 1920, that became the Institute of Welfare Workers Incorporated in 1924.
1931	Works Managers Association	

Appendix 4 - British Professional Accountancy Bodies in existence at 1930

Date of Incorporation	Name	Members
1854 (by Charter)	Society of Accountants in Edinburgh	952
1855 (by Charter)	Institute of Accountants and Actuaries in Glasgow	1,825
1867 (by Charter)	Society of Accountants in Aberdeen	163
1880 (by Charter)	Institute of Chartered Accountants in England and Wales	9,047
1885	Society of Incorporated Accountants and Auditors	5,225
1891	Corporation of Accountants, Limited	1,927
1901 (formed 1885)	Institute of Municipal Treasurers and Accountants (Incorporated)	642
1903	Institute of Certified Public Accountants, Limited	175
1905	London Association of Accountants, Limited	2,900
1905	Central Association of Accountants, Limited	739
1919	Institute of Cost and Works Accountants, Limited	c.796
1923	Institute of Poor Law Accountants, Limited	409
1923	British Association of Accountants and Auditors, Limited	333
1927 (formed 1925)	Society of Statisticians and Accountants, Limited	c.300
1927	Professional Accountants' Alliance, Limited	158
1928 (formed 1927)	Faculty of Auditors, Limited	c.200
1929 (formed 1928)	Institute of Company Accountants, Limited	c.600

Growth in membership numbers of the main accountancy bodies

	1888	1911	1930
ICAEW	1,576	4,391	9,047
SIAA	400	2,442	5,225
LAA	-	1,897	2,956
ICWA	-	-	796
SAE, IAAG, SAA	377	1,280	2,940
IMTA	85	455	642
ICAI	44	100	261

(Stafford. A, (2003), Capitalising Education) Warwick Business School, unpublished thesis).

Appendix 5 –British Brewery Companies: Primary and Associated Sources

Company	Details
Bass, Ratcliff and Gretton, Ltd. High Street, Burton on Trent, Staffordshire[65].	Established in 1777 by William Bass, originally a carrier who used his local lottery winnings to form the business. The third generation owner, Michael Thomas Bass, M.P, substantially increased the size of the business so that it became the largest British brewery by 1877. Annual barrelage rose from 9,700 barrels in 1827 to 1 million barrels in 1877. The firm was incorporated in 1880 and reconstructed in 1888 with a share capital of £2.7 million. It merged with Worthington's in 1926 though both continued to be managed and operated separately. It acquired Thomas Salt and Co Ltd in 1927, James Eadie Ltd, Cross Street Brewery in 1933, (both in Burton), Duncan and Dalgleish Ltd, Westgate Hill Brewery, Newcastle upon Tyne in 1940, Wenlock Brewery Co Ltd, London in 1961. It merged with Mitchell and Butlers Ltd Cape Hill Brewery, Birmingham through a new company, Bass, Mitchell and Butlers Ltd. The company changed to Bass Holdings Ltd. It withdrew from brewing in 2002 selling its beer production to Interbrew to concentrate on its leisure and hotel businesses.
John Brown Maltster's Business, Yoxall, Staffordshire and The Trent Brewery, Staffordshire	The master's records held at Stafford Record Office date from 1845-1865 and comprise malt ledgers, customer accounts for malt and hops, a cash book and wages book. An examination of Harrod's Directory of Staffordshire 1851 and 1870 editions variously describes Brown as a beer seller and farmer, and later a maltster, corn merchant and the village post master. Brown seems to have operated as a localised maltster for sale. However this business operational base is complicated with transactions entered into

[65] Access to these sources was denied in 2004 following the takeover of Bass by Coors. "We can't take personal enquiries any more, but unfortunately we are also unable to allow new researchers to use the archive at the moment. Because of this, we have been developing our website (www.coorsvisitorcentre.com heritage section) in the hope that the answers to many queries can be found there....
The Curatorial Department is now only able to undertake private research for a fee. I imagine that readers of the BHS Newsletter will be disappointed with this response, and it is of course with great regret that we have to cut back on our services. We remain committed to preserving the brewing heritage of Burton and of Coors Brewers Ltd... and hope that, in the future, we will be able to resume access to the archive" (Brewery History Society Newsletter 29, (2004:3).

	with the Trent Brewery, Burton on Trent dated 1862-1864 and the supply of malt flakes. However the Trent brewery at Burton was not built until 1881 and originally traded under as Sykes and Co until 1889 and changed its name to the Trent brewery in 1893.
Flower and Sons Ltd, The Brewery, Brewery Street, Stratford upon Avon, Warwickshire.	Originally brewers in Hertford, Herefordshire from 1725 they emigrated from England to the USA in 1818. Edward Fordham Flower returned to England in 1824 and entered a brewery in Shaftsbury, Dorset. He established the Stratford brewery in 1831 being later joined by his son. A new brewery was opened in 1870 and the firm was incorporated in 1888. It acquired the W. Turner, Candle Brewery, Shipston-on-Stour, Warwickshire in 1896, the Tavistock Brewery Co Ltd, Devon in 1899, Gardner Brothers, Little Compton, Warwickshire and J. O. Gillett, Swan Brewery, Moreton in Marsh, Gloucestershire in 1900, Fortescue and Son, Bromsgrove, Hereford and Worcestershire in 1926, and Rowlands Brewery, Evesham, Hereford and Worcester in 1948. J.W. Green Ltd, Luton, Bedfordshire acquired the company in 1948 along with its 350 tied houses and changed the name to Flowers Breweries Ltd. Brewing ceased in Stratford in 1969.
Highgate-Walsall Brewery Co Ltd Brewery, Sandymount Road, Walsall, West Midlands.	The proprietor of Fletcher Brothers, wine and spirit merchants, J.A. Fletcher built a new brewery in Walsall in 1898. It was incorporated in 1898 and brewing commenced in 1899. Mitchell and Butlers Ltd, Wolverhampton acquired it in 1939. Bass later acquired it and the brewery is still in production.
T.Hoskin Ltd, Beaumanor Brewery, Beaumanor Road, Leicester.	Jabez Penn, a blacksmith and grocer commenced brewing in 1877. Thomas Hoskin, Penn's son-in-law joined the firm in 1904, taking control in 1906. It was incorporated in 1947. The family maintained ownership and operational control until 1983 when it was disposed to the Hoar family and was acquired by Hoskin Brewery Plc. in 1985 and production ceased in 2001. Records deposited in Birmingham Central Library Archives by the Brewery History Society

John Joule and Sons Ltd, The Brewery, High Street, Stone, Staffordshire.	The brewery was established in 1780 and the original owner, Francis Joule was a maltster. Later generations were also seed crushers and corn millers. The firm was sold to the Liverpool brewers, John Arrington and Thomas and John Harding in 1873. It was incorporated in 1898. It operated the Premier Water Mineral Co, (Harley and Longton) Ltd as a subsidiary. The company was acquired along with its 124 licensed properties by Bass in 1968 and ceased production in 1972.
Joseph Law and Co, Maltster's Business, Wombourne, Staffordshire.	A small selection of records relating to the period 1923-1932 are held at the Stafford Record relating technical processes and no financial records survive.
Lichfield Brewery Co. Ltd Lichfield Brewery, St. John's Street, Lichfield, Staffordshire.	The company was incorporated in 1869 to acquire J.A.Griffiths and Co, Lichfield Brewery and that of the Lichfield Malting Co. Ltd. It acquired Smith and Royds, brewers with 25 licensed properties in 1888. The company went into voluntary liquidation and was reconstituted as a company with the same name in January 1890. It owned 112 houses at this period. It acquired the Trent Valley Brewery Co. Ltd in Lichfield in 1891, and James Lloyd, Lichfield in 1892. It was taken over by Samuel Allsopp, and Sons Ltd, Burton in 1930. The Lichfield site ceased production in 1935.
Littleton Manuscripts, Hatherton Hall, Staffordshire	One of the minor Staffordshire estates. Cellar Book records weekly beer issues, 1866, D260/M/E/210, Stafford Record Office
Samuel Allsopp and Sons Ltd High Street Burton Upon Trent	The brewery was founded by Benjamin Wilson I in the 1740's and was inherited by his sons of whom the youngest Benjamin Wilson II took eventual control. This in turn was inherited by his nephew Samuel Allsopp in 1807. A second 'New Brewery' was established in Station Street in 1859-1860 and the business was incorporated in 1887 after which progressively worsening financial difficulties forced it into liquidation in 1911. A new board was appointed in 1913 and recovered thereafter. It went into voluntary liquidation to merge with Ind Coope to form Ind Coope and Allsopp Ltd with 1800 houses. Some legal documents relating to the merger were deposited at the LRO in the summer of 2005.

State Management Scheme, Carlisle, Cumbria.	Created through a takeover by the State in 1916 as wartime expediency it continued until 1974 under the auspices of the Home Office. It involved the compulsory purchase of five private breweries, David Hall and Sons Ltd, established in 1895, Graham and Sons, Queens Brewery, founded 1860, F.P.Dixon, High Brewery, Carlisle New Brewery Ltd originally registered in 1879 – all of which were closed in 1916. The fifth brewery, Sir Richard Hodson and Co, Carlisle Old Brewery was founded in 1756 and continued as the State Brewery until 1973 when it was disposed of to T and R Theakston Ltd of Ripon. It was sold in the late 1990's and is now student accommodation for the University of Northumbria.
Duke of Sutherland Manuscripts, Trentham Hall, Staffordshire.	One of Staffordshire's great estates where domestic brewing continued into the nineteenth century. Records include the Wages Book for brewing labour costs 1840-1847, D593/4/3, and brewer's monthly reports D593/r/11/7Stafford Record Office.
Worthington and Co Ltd, High Street, Burton on Trent, Staffordshire.	Established in 1744 by William Worthington the firm was incorporated in 1889. It amalgamated with Bass in 1926 but operated and brewed independently until 1967 when production ceased. Its name changed to the Bass label in 1977.
Whitbread and Co Plc The Brewery Chiswell Street London	Samuel Whitbread I entered into partnership with the Shewell brothers in 1742 trading a Godfrey Shewell &Co from the Goat Brewhouse in the Old City of London. Godfrey Shewell departed the partnership and the new firm of Shewell and Whitbread acquired another brewery, the King's Head Brewhouse in Chiswell Street in 1750 and built a new porter brewery there on adjacent land. Thomas Shewell left the business in 1761 leaving Samuel Whitbread I as the sole proprietor. It became London's and the nation's premier brewery producing 200,000 barrels annually by the time of the death of Samuel Whitbread I in 1796. After his demise the brewery was run by an extended partnership of Samuel Whitbread II, the senior clerks Robert Sangster, Jacob Yallowley, and Timothy Brown a banker. The partnership expanded with further admissions and resignations. Those joining the partnership were most notably William Henry Whitbread, Jacob Whitbread a cousin, Sir Benjamin

	Hobhouse and William Wilshere both bankers. In 1812 the business merged with Martineau & Bland of Lambeth and this brewery was closed, a very early example of rationalisation and acquisition of other public houses. A new partnership was formed after the suicide of Samuel Whitbread II in 1815 with largely the same members and including, Samuel Charles Whitbread, William Whitbread and the Maritneau brothers. This close family partnership continued and the business was incorporated as Whitbread and Co in 1889 with Samuel Whitbread III as chairman. It subsequently went on to a policy of acquisition of a large number of other breweries in London and the south east. It began acquiring other breweries further afield only in mid 1950's. It ceased brewing entirely in 2000 to concentrate on leisure activities. The cessation of brewing saw also the closure of the Whitbread Museum and Archive in Chiswell Street. The archives were subsequently broken up and dispersed amongst numerous county archives and record offices. The earlier business records are held at the London Metropolitan Archives, Northampton Road, EC1R 0HB. These archives were still being catalogued in September 2005 when the archives were visited

Appendix 6

British Beer Tax Regimes: The Early Modern to the Modern Period

Date	Details
1660	Rate of 4s 9d per barrel of strong beer and 1s 3d for each barrel of small, intermediate and table beer.
1697	A malt tax at the rate of 616/21d per bushel was levied in addition. This rate stood at 9¼d in 1760, 1s 4¼d in 1780, 1s 7¼d in 1791, 4s 5¾d in 1803, 2s 5d in 1816, 4s in 1854, 3s 8½d in 1856 at which figure it remained until its abolition in 1880.
1711	A hop duty of 1d per lb was imposed. In 1801 it stood at 2½d, was reduced in 1860 to 1½d and in 1862 the duty was abolished.
1784	A licence duty was imposed on brewers, with a minimum o 20s for table beer, and for strong beer it ranged from 30s up to £50. From 1875 until its repeal in 1880 a uniform rate of 12s 6d per 50 barrels was imposed, yielding about £400,000 a year.
1800	The beer duty after some minor changes was raised to 10s for strong beer and 3s for small beer.
1830	On its abolition in 1830 the rates were 9s to 10s for strong beer and 1s 9½d for small beer. Including the malt tax, beer at the end of the reign of King George IV was approximately 4½d per gallon.
1850	A sugar duty of 1s 4d per cwt was imposed. In 1854 it was increased to 6s 6d, in 1874 11s 6d and in 1880 it became merged in the beer duty. In 1901 when a general tax on sugar, molasses &c , was imposed, distillers were given exemption from he duty, but brewers had to pay it.
1880	Gladstone's budget repealed malt and sugar duties and brewers' and maltsters' licence duties. In their stead a licence duty of £1 was imposed on all brewers for sale and a duty of 6s 3d for every barrel of beer of a specific gravity of 1057° with an allowance o 6% for waste. The change was mainly the result of long years of agitation by the agricultural interest, which disliked the malt tax. The Brewing Trade opposed the change.
1885	Childer's budget proposed increasing duty on beer by 1s and on spirits by 1s generated so much opposition that the Government was turned out.
1889	In Goschen's budget the standard gravity was changed from 1057° to 1055°, equal to an increased duty of 2½d.
1890	Goschen reduced the duty to 3d per barrel so far as Imperial Revenue was concerned, but immediately re-imposed it for local taxation purposes.

1894	Harcourt's budget increased the duty from 6s 3d to 6s 9d
1900	Hicks Beach the duty was increased by a 'temporary' (2nd Boer) war tax of 1s, which remained permanent.
1910	The brewers' licence duty was altered from a flat rate of £1 and based on a sliding scale, the effect of which was to increase the duty by about 3d per barrel.
1914	Output 36,165,000 as the standard pre war annual barrelage, duty raised from 7s 9d to 23s per standard barrel.
1916	Duty rose to 24s, and various War restrictions on output, gravities, prices, &c, imposed until 1921.
1917	Duty rose to 25s per barrel.
1918	Duty rose to 50s per barrel.
1919	Duty rose to 70s per barrel.
1920	Duty rose to 100s per barrel – an increase of 1,190% from pre war levels.
1921	Restriction as to Average Permitted Gravities ended, control of wholesale prices abolished.
1923	Rebate of 20s per bulk barrel made from a duty of 35 per standard barrel with arrangement that the Trade should bear the balance of 4s by reducing the price of beer by 1d per pint, equal to 24s per bulk barrel and maintain gravities.
1930	Duty rose from 103s to 134s per standard barrel subject to rebate above.
1933	Standard barrelage basis for calculating Duty abolished and Duty charged at rate of 24s per barrel up to and including 1027 ° and 2s per additional degree. The Duty was 10.32 times the pre-war rate.

(*The Manual of British and Foreign Brewery Companies 1938-1939: A Compendium of Joint-Stock Brewery Enterprise*, 1939: 26-27, CVC).

Strong beer is that derived from the first racking, table beer from the second racking and mall beer from the final third racking. Table beer as it names suggests was to be drunk at the table at mealtime and small beer was designed for female and children's consumption.

Appendix 7

Malt Tax Regimes per Bushel [66]

Year	England and Wales.
1697	6 16/21 d
1760	9¼d
1780	1s. 4¼d
1791	1s.7¼d
1803	4s.5¾d
1816	2s.5d
1854	4s.0d
1856	3s.8½d
1880	Abolished

In Scotland and Ireland a similar tax was imposed from 1713-1880. However from 1725 onwards these were lower than in England and Wales to reflect the inferior qualities of the Scottish and Irish native barley. (*The Manual of British and Foreign Companies* 1939:104, CVC)

[66] A bushel was a unit of measurement for barley and malt (56lbs for barley, and 42lb for malt). Approximately two bushels of malt were sufficient to produce a 36 gallon barrel of beer. A quarter contained eight bushels.(Gourvish and Wilson 1994: 639)

Appendix 8 - LCCB/SMS Reported Profits 1916-1974

Year	£ Profits	Year	£ Profits
1916-1918	107,392	1948	Unavailable
1918-1919	96,518	1949	145,289
1919-1920	139,263	1950	130,159
1921-1925	Unavailable	1951	135,494
1926	95,131	1952	144,887
1927	86,099	1953	157,651
1928	79,020	1954	167,321
1929	69,784	1955	153,949
1930	77,341	1956	189,686
1931	73,069	1957	193,681
1932	59,300	1958	192,757
1933	42,747	1959	195,991
1934	51,422	1960	196,809
1935	63,571	1961	211,776
1936	65,064	1962	240,141
1937	74,004	1964	284,281
1938	76,025	1965	279,961
1939	79,959	1966	262,958
1940	111,845	1967	245,506
1941	168,017	1968	186,986
1942	207,713	1969	162,135
1943	230,339	1970	259,451
1944	244,091	1971	400,598
1945	219,662	1972	328,646
1946	228,741	1973	150,937
1947	196,162	1974	(82,775)*

*the only reported loss occurred when the Scheme was being broken up piece meal. The profit figures were compiled from the annual reports held at the Cumbria Archive, Carlisle.

Anthony Avis (died 2004)

Anthony Avis gained an MA LI.B from Cambridge and qualified as a professional solicitor with a family connection to the brewing trade which extended back to 1800. In 1956 he commenced working for Hammonds Breweries, Bradford as the company secretary, legal adviser and estates manager gaining the appointment through family connections. He was seconded to Ind Coope at Burton for six months to observe estate management because the chairmen of both companies were personal friends and he installed management training schemes at Hammonds on his return. He continued to work for Hammonds and its successors which ultimately became owned by Bass Charrington. He wrote *The Brewing Industry 1950-1990: Notes and Reflections* and *Timothy Bentley, Master Brewer* as well as contributing articles to *Brewery History* the Journal of the Brewery History Society.

Michael Thomas Bass II (1799-1884)

The Bass brewing dynasty was founded in 1777 at Burton by William Bass a carrier with the proceeds from a fortuitous lottery win. Michael Thomas Bass II established the dominance of Bass in the nineteenth century. Initially Bass was principally involved in the export of bottled bitter beer, notably India Pale Ale marketed under the famous Bass red triangle.[67] Bass's domestic trade expanded from 1827 with the improvement of first water and later railway transport. Bass's

[67] This can be seen prominently displayed in Edouard Manet's 1882 painting 'A Bar at the Folies Begère.

dominance and fortunes were firmly established in 1851 under M.T. Bass II's guidance.

He was educated at Burton and Nottingham grammar schools and then entered the family business as a traveller. He was also an officer in the Derbyshire Yeomanry and became a Liberal M.P in 1848 and retired from office in 1883. He was noted for his commitment for public reform and the improvement of the conditions of the working class and made generous public donations. By 1880 Bass under his leadership were completing as much business in three days as they had done in twelve months fifty years previously. By 1882 Bass's annual turnover was £2.4 millions and they employed 3000 staff. He continually declined the offers of a knighthood and peerage and lived comparatively modestly. However his son Sir Michael Arthur Bass, the M.P for East Staffordshire accepted a peerage becoming Lord Bass. It is M.A Bass that appears as a captain in the Bass Volunteer Rifles and signed the unit's annual financial accounts.

(Dictionary of National Biography 1939: 1291-1292)

Edward Charles De Peyer or Peyer FCA.

De Peyer was admitted to the Chartered Institute of Chartered Accountants, England and Wales on 1st February 1888. He was thus amongst the original cohort of founding members. He worked for the firm of Alfred, Thomas, Peyer and Miles in London. He appears to have worked extensively in brewery accounting from 1865 onwards from information disclosed in his paper. At a meeting of the London Section of the Institute of Brewing held at the Imperial Hotel, Russell Square on 6th December 1915 he presented his paper Brewery

Accountancy and Income Tax that in two discrete parts considered brewery accountancy and Income Tax. At the time he was working at Thomas, Peyer and Miles of 5, South Street, Finsbury Park, London. In the paper he claimed to have been considering producing a text on brewery accounting but this was never realised. He was also the honorary auditor of the Institute of Brewing at this time. (ICAEW Library and Information Service, London).

Arthur Greenwood MP (1880 - 1954)

Arthur Greenwood was born in Leeds and he followed an academic career by lecturing in economics at Leeds University; Greenwood became Secretary of Research and Information Department of the Labour Party from 1920 to 1922. In this period Greenwood wrote *Public Ownership of the Liquor Trade* (1920) which was one of 'The New Era Series' of politically left-wing texts that broadly supported the aims and objectives of the SMS at Carlisle and its extension. In 1922 Greenwood was elected to the House of Commons. In the 1929 Labour government he was appointed as Minister of Health but he was amongst many Labour MP'S who chose not support the Prime Minister, Ramsay MacDonald. He lost his seat in the subsequent election but was returned in 1932 for a new constituency. In 1935 he became deputy party leader. In the war-time Coalition Government he served as Minister without Portfolio until 1943. He then became the acting leader of the Labour Party in the Commons. In the post-war Labour government he served as Lord Privy Seal from 1945 to 1947), Paymaster General from 1946 to 1947 and Minister without Portfolio in 1947.

(Davies, 1992, Greenwood, 1920)

Joseph Henderson (1890 – 1952)

Joseph Henderson was educated at the Church of England Maryport School and the Nelson School, Wigton, Cumberland. He began his career with the Maryport Brewery Ltd before the Great War. According to his Army records Private J Henderson 11581 served during the war reveal with the Border Regiment and was he was also listed with the South Wales Borderers in the Balkans until 1916. He was recalled to serve in as the Assistant Accountant to the Chief Accountant J Baird FCA in the LCCB based in Carlisle. He was appointed as the Chief Accountant of the SMS in 1926 serving in that capacity until 1934 when he was appointed Assistant General Manager and then General Manager in 1951.

(SMS 1/4/2, Box 16, CCRO).

(Army Service Medal Records, National Record Office, Kew, London).

Francis Joule, John Joule (1783 - 1858), John Smith Joule

The Joule family came from Youlgreave, Derbyshire and a William Joule established a brewery at Salford, Lancashire which was sold in 1854. One of his grandsons, James Prescott Joule as born at this brewery and is now best remembered as the physicist who identified as the 'Joule' measurement of electricity.

William Joule's brother, Francis moved to Stone, Staffordshire and established a brewery there. According to Banard's *Noted Breweries of Great Britain and Ireland* he was a maltster who came into possession of the brewhouse and White House Inn in 1758. The inn was demolished in 1767 to be replaced by a residence for the head brewer. In 1780 he established a 'public brewery' to

supply not only Francis Joule's own premises but other public houses. The business proved successful and expanded and new land was acquired in 1797. Francis's son John took over the management of the brewery in 1813 when the business was named John Joule and Sons. John's third son, John Smith Joule was the last family member to manage the business in partnership with his brother in law, W.S Matthews and the brewery was sold in 1873 o a group of three Liverpool brewers, John Parrington, Thomas and John Harding but the name John Joule and Sons(Stone) was retained becoming a limited company in 1898. (Rhodes and Ecclestone, 1980)

Charles Howard Tripp (1858 - 1929)

Charles Howard Tripp was the son of the Reverend John Tripp (1821-1900) rector of Carhampton and Sampford Brett, Somerset. The census of 1881 shows that he was recorded as a lodger of Thomas Charlton in Tewskesbury, Gloucester listed with the occupation of brewer. In the same census a Howard Tripp, forty-four years old and possibly an uncle, resided in Bristol being described as a brewer. C H Tripp subsequently became the general manager of the Tadcaster Tower Brewery that became a limited company in 1894. Tripp left prior to incorporation to become manager of Allsopp's at Burton upon Trent from 1893 to 1896. In 1897 he as promoted to the position of managing director of Ind Coope, Romford on a seven year contact worth £4,000 per annum. This contract was renewed in 1905 but Tripp agreed to receive a reduced annual salary of £3,000 because of the company's financial difficulties. In 1912 Ind Coope was liquidated. He resigned a joint managing director in 1913. He was also chairman of the British Pure Yeast Co and the Diamond Soda Water Co. and a director of the Crystal Palace. Co.

Until his death he appears to have pursued a career as an independent general merchant and exporter, specialising in lager beer operating out of London. He wrote *Brewery Management* (1892) that was the result of a series of articles originally contributed to the Brewers Journal. The text was subtitled 'how to run a brewery' – later the employees at Ind Coope suggested that the word not should have been inserted before the word run. He was described as a tireless self publicist.

One of his sons, Geoffrey Charles Howard Tripp was associated with Savilles of Manchester (1902), consulting brewers, brewing chemists and isinglass merchants. He was described on his death certificate as a brewing chemist. He is stated that he was likely to have spent time training in Germany like his father learning his trade. He spoke German fluently and spent the period of the Great War working as an interpreter.

(Gourvish, and Wilson 1994: 64, n99, 204, 208 n64, 283 n47).

(Brewery History Society Newsletter 2000:18-19).

Sir Sidney Nevile (1873 - 1969)

Sidney Nevile was born at Thorney, Nottinghamshire the son of Christopher Nevile a clergyman although the family had long and distinguished naval connections. He was the thirteenth child of fifteen from the last of his father's three marriages. His mother was Mary Anne Tooth who was the daughter of Robert Tooth who had interests in hop-growing, brewing and banking. Three of Tooth's sons built up the large Australian brewery Tooth and Company in Sydney. Nevile's widowed mother, (his father having died when he was four

years old) failed to have him apprenticed to Tooth's Australian brewery and so a local brewery was sought instead. This option was undertaken because of the poor financial position of the family which precluded the young Nevile attending either public school or university.

The family was then living in Hove and he began his career in 1888 as an apprentice brewer for a premium of £100 per year to E Robins and Son Brewery, Hove, and achieved the position of head brewer when he was 21 years old. He then moved to become the manager of Brandon's Brewery at Putney in London. The acquisition of the brewery by Whitbread &Co Ltd in 1919 led him to become a Whitbread director for the remainder of his career.

He also undertook many additional roles within the brewing industry where he sat as a member of the Council of the Institute of Brewing from 1907-1958 becoming President between1919-1921. He was also actively involved in the Brewers Society being a member of its Council from 1917-1958 and later becoming Chairman from 1938-1940. He was generally considered to be a radical by the Trade for his support of the SMS in 1916 (though he later alleged that it had outlived its usefulness) where he also sat as one of the two brewer members of the LCCB from 1917-1921 and then with its successor the State Management Council from 1921 until 1955 with responsibilities to the Home Office. He also sat on the Hop Control Committee of the Ministry of Agriculture between 1917 and 1923. Along with Sir William Butler of Mitchell and Butler's Ltd, he urged the wisdom of 'fewer and better' public houses as the answer to the problems of insobriety inherited from the nineteenth century conditions and

gradually he won the whole industry to his views. As Chairman of the Brewers Society on the eve of the Second World War he was instrumental in establishing and sitting on the Brewing Advisory Committee of the Ministry of Food, 1940-1946 and appointing a Brewing Advisor to the government. During 1942-1944 he was a member of the Home Office's Morris Committee that examined the public house licensing organisational and administration issue.

Post war he continued to be active in the Brewers Society and he became Vice-president of the Council of the Federation of British Industries in 1958 having been appointed to the Council in 1922.. In 1958 at the end of his career he wrote his autobiography

(Nevile, 1958).

(*Brewery History* 2002: 29-30).

William Sealy Gosset: 'Student' (1876 - 1937)

William Sealy Gosset was one of the leading early statisticians who became a brewery manager with Guinness. After gaining a first class honours degree in Mathematical Moderations and Chemistry he joined Arthur Guinness, Son and Co. in Dublin working in the Research Laboratory. In conjunction with the distinguished chemist Horace Brown he researched the conditions of brewing, which allowed Gossett to apply his mathematical skills. In 1904 Gosset submitted his first statistical report to the Board of Directors on 'The Application of the Law of Error to the Work of the Brewery'. Gosset advanced the argument for further applying statistical methods, such as the error curve, random variables and hinted at the effects of correlation. However he concluded that the existing standard methods of combining standard independent errors (later known as the

law of distribution) were inapplicable in a brewery environment and that more advanced statistical methods were needed that were then beyond him. He had at the same time identified a further problem arising from large-scale brewing processes that prevented total control being exercised over the production process, which made any accurate experimentation impossible. Thus any subsequent statistically derived conclusions were necessarily probabilistic rather than certain. He stated,

> "…..in such work as ours the degree of uncertainty to be aimed at must depend on the pecuniary advantage to be gained by following the result of the experiment, compared with the increased cost of the new method, if any, and the cost of each experiment"(Mackenzie 1981: 112-113).

Gosset's first report had concluded that it was advisable to consult a professional mathematician about the degree of probability to be accepted as proving various propositions. This resulted in long term consultations with one of world's leading mathematicians, Karl Pearson (1857-1936) which resulted in Gosett introducing standard error theory at Guinness in 1906.

Gosett also attended Pearson's laboratory the Galton Eugenics Laboratory, University College from 1906 until 1907 and on returning to Guinness he worked on the Poisson limit to the binomial, the sampling distribution to the mean, standard deviation and the correlation coefficient. As Gosset realised "If the Brewery is to get all the possible benefit from statistical processes techniques valid for small samples had to be devised" (Mackenzie 1981:115)

Gosset was subsequently put in charge of the 'Experimental Brewery', which involved some statistical work and he began publishing his statistical research in the mathematical journal *Biometrika* under the pseudonym. 'Student' demanded by Guinness. He authored two papers *The Probable Error of a Mean* and *Probable Error of a Correlation Coefficient* both in 1908 that both dealt with the problem of small samples. This resulted in the creation of Student's *t*- test for quality control in brewing, which Gosset claimed could draw inferences from sample sizes a low as four. These techniques permitted a judgement as whether a series of experiments, however short provided a result that conformed to any standard of accuracy or whether further investigations were necessary (Mackenzie 1981:115).

At sometime around 1910 Gosset with the encouragement of Pearson began writing a book on experimental sampling in conjunction with the maltster Edwin Beaven who was an agent of Guinness. Only initial draft chapters were ever completed and Gosset's other work diverted him from ever completing the text that has not survived, which he acknowledged would find difficulty finding a publisher.

The Great War and the creation of the Irish Free State interrupted Gosset's attempts at further research and instead he resigned himself to his brewery management work,

"My own war work is obviously to brew Guinness stout in such a way as to waste as little labour and material as possible, and I am hoping to do

something fairly creditable in that way. All the same I wish government would double the tax again, it's such an obvious waste of pig food now!"

(Plackett and Barnard 1990: 19)

In 1922 he was allowed a statistical assistant, Edward M. Somerfield and later another assistant A.L. Murray and thus began a distinctive small statistical department which he managed until 1934. During this period Gosset presented papers to the Society of Biometricians and Mathematical Statisticians and he also became a member and contributor to the Royal Statistical Society's Industrial and Research Section.

In 1934 Gosset was given responsibilities over the new Guinness Park Royal brewery in northwest London and in 1935 he was appointed Head Brewer but he died unexpectedly in 1937 (Pearson and Kendall: 1970).

Colonel William Henry Sykes (1790-1872)

Sykes followed a career path that eventually led him to becoming a statistician. His career began in 1803 when he joined the Bombay Army of the East India Company popularly, known as 'John Company'. He remained in India until 1820 during which time the mysterious basis of his personal fortune was laid down. In 1820 he returned to Europe for four years leave and passed his time travelling the continent, pursuing scientific studies and acquiring foreign languages. He returned to India in 1824 with the rank of captain where he was appointed as 'Statistical Reporter' to the Bombay Presidency. Sykes was promoted to the rank of major in 1826 but due to financial retrenchment the office of Statistical

Reporter was abolished in 1829. Nonetheless, his Sykes personal wealth allowed him to continue to work gratuitously in that role until June 1833. He retired from the East India Company Army with the rank of colonel in June 1833 and returned to England where he became a founder member of the Statistical Society of London (eventually rising to become a vice-president. He was also appointed as a director of his former employer the East India Company, becoming Deputy-Chairman in 1855 and then the last ever Chairman in 1856. In 1857 he was elected as MP for Aberdeen and he served in this capacity until his death in 1872. In 1864 he undertook a Statistical Account of the British and French Armies and the techniques he applied are remarkably similar to Bass's application of its 'accounting statistics'.

Samuel Whitbread I (1720 - 1796)

Samuel Whitbread was born in Cardington, Bedfordshire the seventh child of the second marriage of Henry Whitbread the Receiver-General of Taxes for the county. The family was of Puritan stock having sided with Parliament during the Civil War. He was apprenticed as a brewer in 1734 to John Wightman's brewery in Clerkenwell, London, becoming a freeman of the Brewers Company in 1743 through service. He went into business with Godfrey and Thomas Shewell operating two small breweries, the Goat Brewhouse and another in Brick Lane both in London. In 1750 in partnership with Thomas Sherwell he purchased the derelict Kings Had Brewhouse demolishing it and constructing and expanding a new brewery called the Chiswell Street Brewhouse specifically for the mass production of porter. Sherwell retired from the partnership in 1765 whilst Whitbread bought a small estate at Cardington, Bedwell Park, which he

progressively enlarged and another property Ion House nearby. Whitbread married in 1758 and produced a daughter but then first wife died in childbirth delivering a son in1765. He remarried in 1769 to Lay Mary Cornwallis who also died in childbirth delivering a daughter in 1770. In 1768 Whitbread was elected as a Tory MP for Bedford and also became a local Justice of the Peace. In the Commons he supported the abolition of slavery and prison reform and contributed towards hospitals and charity schools. By 1791 Whitbread had made plans to sell the brewery after realising that his son was not keen to enter the business but the price o £300,000 deterred any purchasers. He died at Bedworth Park in 1796 being recorded by the *Gentleman's Magazine* as being worth a million at least and describing him as a man whose abilities, integrity, benevolence and public spirit will transmit his character with respect to the latest posterity (Sykes, 1864).

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