

Rational Evolution or Socially Constructed Counter-myth? Cross-cultural Perceptions of the Development of Chinese Commercial Accounting up to c.1850 and its Significance

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Abstract

The recent rapid growth of China's economy has reopened historical debate about the extent to which it had also prospered during the last Imperial dynasties (the Míng and the Qīng, 1368-1911). Some economic historians have argued that China's prosperity may have even matched that of Europe, through developing significant market activity on its underlying agricultural base, until 'the Great Divergence' sometime in the late 18th / early 19th centuries. Given the recent revitalisation in the literature of Sombartian arguments that Western economic growth was linked to the advent of Italian double-entry bookkeeping (DEB), we question here the extent to which there is justification for the claimed development of a concomitant and indigenous Chinese form of double-entry bookkeeping (CDEB)—conventionally seen as having developed among bankers, merchants and proto-industrialists—and for its significance within that successful Chinese market economy. We sceptically review how far the emerging archival and related historical evidence for the development of Chinese accounting practices and discourses supports the arguments that have hitherto been made for CDEB. Our scepticism reinforces medieval and Renaissance European accounting historiography that continues to indicate that the development of DEB had a textual / pedagogic as well as commercial provenance, and further supports the view that any direct or linear connection between its development from the fourteenth century and that of Western capitalism has become institutionalized as a 'rational myth'. We comment briefly on the more foundational issue concerning what is increasingly recognised as an Occidentalism that has repeatedly cast the West as 'modern' and 'more developed'; and we also explore how it has in turn influenced the now conventional Chinese expositions about the nature and timing of their historical accounting developments, and led to the creation of a 'counter-myth' of CDEB. Drawing *inter alia* on recent work on original Chinese archives, our aim is to clear away the tangled undergrowth of misconceptions about Chinese accounting history that have accumulated (without a solid evidential base) in the existing literature, and to indicate what we believe are the more important questions that should in future guide Western and Chinese researchers, preferably working collaboratively, in approaching the primary Chinese archival sources as they are increasingly (re)discovered. There is a need to further test the arguments, developed both here and in wider existing research literatures, about the historical roles of accounting microtechnologies in constituting significant domains both of economic activity and of organizational and social structure in both the East and in the West.

Keywords: *Chinese accounting; double-entry bookkeeping; writing; Sombart thesis; cross-cultural translation; mercantile capitalism*

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1. Introduction

The recent rapid growth of the Chinese economy (e.g. Deng, 2000; 2011) has also reopened historical debate about how prosperous was the economy there before the clear arrival of Western economic practices from industrial Europe and the US, in the later 19th Century. At the same time there has been a re-awakening of a wider interest in such ‘macro-questions’ as the roles of bookkeeping and accounting—and in particular ‘double-entry bookkeeping’ (hereafter DEB)—in the shaping of Western organizations, institutions and states. While understandings of the history of DEB have long encompassed the significant non-economic factors in its genesis and its wider institutional and social consequences (e.g. Macve, 2015),¹ there has recently been a revival of approaches focussing on the question of how far DEB may be regarded as having catalysed Europe’s economic growth from the Renaissance onwards (e.g. Chapman *et. al.* 2009; Padgett & Powell, 2012; Gleeson-White, 2013; Soll, 2014; Dean *et al.* 2014; cf. Robertson & Funnell, 2012; Goldthwaite, 2015; Vollmers, 2015; Anon***2015a; Hoskin & Macve, 2016; Matringe, 2016). Strong arguments have been developed both for and against DEB’s significance. But insofar as the focus is on ‘the economic’, and on ‘the economic within or across European states’, two problems emerge.

First there is a correlation versus causation problem: i.e. insofar as Europe had both economic success and DEB, and given that DEB both was and is embedded in so many ways in Western business practice and culture, it is not straightforward to unravel how far, if at all, these phenomena were causally linked, independent, or following linked but distinct trajectories. A major subsidiary issue here is the extent to which evidence suggests that, before the Industrial or Managerial Revolutions, DEB functioned in ways that appear to have differed systematically from those familiar in modern economic discourses of profitability (e.g. Yamey, 1977). The second problem is that of residual forms of Eurocentrism (or Occidentalism): whether in the sense of focussing on developments within Europe (or the

¹ Several of the more incautious views on the non-economic roles of and rationales for DEB that have been advanced are sceptically reviewed by Yamey, 2005. Moreover the underlying foundations of bringing accountability and order through its ‘naming and counting’ are common to accounting in its various forms throughout history (e.g. Ezzamel, 2014). Pacioli extended this motivation more specifically to DEB, quoting the maxim: ‘*ubi non est ordo ibi est confusio*’ in Chapter 1 of his 1494 bookkeeping treatise (von Gebattel, 1994, p.42).

West more generally) with too little consideration for their interaction with developments elsewhere, or through paying too little heed to the ways in which European developments such as DEB have technical and conceptual parallels beyond Europe, even if the format of such parallels may mask the similarity or even homology.

China therefore offers an opportunity for a comparison that illuminates the Western arguments, as there is increasing acceptance that it had considerable economic success up till the late 18th / early 19th century. As argued in Yuan *et al.* (2016), the debate that features most prominently revolves around the so-called ‘Great Divergence’ exemplified by Pomeranz’s (2000) book with the provocative claim that living standards in China—at least in the advanced region of the Lower Yangzi—may be comparable to Northwestern Europe as late as the 18th century. A multitude of explanations have been advanced to explain the post-18th century divergence between China and the increasingly industrialized West, ranging from natural resources to political institutions to cultural tradition; additionally many of these Great Divergence debate arguments hearken back to Max Weber’s arguments on the rise of capitalism (see Brandt *et al.* 2014 for an extended review).

One interesting chronological conjunction is that it is generally accepted that China did not import *Western* DEB for use in merchant and/or financial enterprises until the late 19th / early 20th century. Thus there is no possibility of associating its supposed earlier economic success with this particular accounting system. But an alternative form of association has been mooted: namely that China developed its own DEB, in the form of a ‘Chinese Double-Entry Bookkeeping’ (CDEB), possibly in the eighteenth or even the seventeenth century. The question has then emerged that, if this was the case, how was this CDEB related to China’s earlier degree of economic success?

There are a number of logically possible answers: (a) DEB was crucial to Western capitalism (the ‘Sombart’ thesis—cf. Yamey, 1949) so either (a)(i) if China’s economy rivalled the West’s then it ‘must’ have had either DEB or an equivalent Chinese form of DEB, namely CDEB; or (a)(ii) if China did not have DEB (and if there was not an equivalent CDEB), then its economic development ‘must’ have been handicapped. Alternatively (b) if DEB merely accompanied but was not crucial to Western capitalism then either (b)(i) China’s lack of DEB (or an equivalent CDEB) was no handicap to its economic development at that stage; or (b)(ii) even if evidence can be found for CDEB this would not necessarily have been a key factor in China’s economic development.

Subsidiary possibilities are either (c)(i) that the accounting developments in China were basically indigenous or alternatively (c)(ii) that they were at one or more historical junctures influenced by knowledge of Western developments and in particular of Western DEB.²

Previous literature in English (which we review in Section 3 and the Appendix) has generally argued for versions of (a)(i),³ usually together with (c)(i), and has claimed that an indigenous CDEB was developed in China some considerable time before the early 19th century. We shall argue for (b)(i), together with (c)(i), on the basis that (a) itself is an institutionalized rational myth (e.g. Meyer & Scott, 1992) and (a)(i) is a reciprocal counter-myth.

Clearly the applicability of these possible explanations might have varied across time, in particular before and after the advent of the Industrial Revolution, conventionally dated as starting in Britain in the mid-eighteenth century, bringing changes in Western forms of accounting within factory settings (e.g. Fleischman & Toms, 2015). In order to manage our analysis of such possibilities in terms of a relevant timescale, we limit our explorations in this paper to the period before the ‘terms of trade’ between China and the West were drastically changed, around the middle of the 19th century, which saw China’s forced opening by Western Imperialism through the so-called Treaty Port system following the first Opium War in 1839-42.⁴

By imposing a historical dividing line at this point, we exclude such developments in the West as the emergence of the first large-scale multi-unit and managerially-run business entities, where modern forms of both cost and management accounting begin to be developed and disseminated across industry sectors, e.g. in the US railroads (e.g. Chandler, 1977; Hoskin & Macve, 2000). We also exclude such new manifestations of industrial and imperial might such as the first British Great Exhibition of 1850, at which were also exhibited examples of the ‘American System of Manufactures’ that symbolised the emergence of the US, which was destined to become the next major world economic, and then military, power (e.g. Hoskin & Macve, 1994a). In a separate paper (Anon*** 2015b) we shall focus on accounting and management developments in this later period, and how they interact with the phenomena of

² We shall not explore the possibility that Western DEB originated from Eastern sources. While Marco Polo (1958) (perhaps strangely for an Italian merchant) did not describe Chinese accounting he did describe the paper money in circulation in parts of China (1958 edn: 147-9; cf. Needham, 1985: 96-102; von Glahn, 2016: chapters 7&8). We do not here enter the controversy over whether Marco Polo actually reached China in the late thirteenth century or merely reported other travellers’ tales: <http://www.britannica.com/biography/Marco-Polo> (accessed 22.04.2016).

³ Or alternatively (b)(ii).

⁴ The Emperors had closed all ports except Canton (modern Guangzhou) to all foreign trade, except that with Asian partners, since 1757 (Brandt *et al.*, 2014).

industrialisation and of the growth of large-scale service and transportation industries, first in the West and later in China. Here we concentrate instead on the preceding dominantly ‘mercantile’ economies found in both settings, the primary focus of Sombart’s thesis.

We shall argue that the writing to date of the history of both CDEB and DEB reflects the wider changing and re-changing perceptions, in both the East and the West, of the relative superiority of the other’s economic and social institutions. The legacy has been two different, ‘socially constructed’ (e.g. Hacking, 2000) literatures, that in our view manage to misunderstand the nature and significance of both the Chinese and the Western accounting histories.

In the next section we review the main interpretations now being given of Chinese economic development and the possible roles of accounting, and how these have been seen from both Western and Chinese perspectives. Then in Section 3 we focus in particular on the expositions given by previous authors (that have been published in English) of what is known about Chinese accounting developments—with further technical details of these sometimes confusing claims being described in the Appendix—and we compare them with Western accounting practices before the advent of DEB. Our analysis will show how it is now possible to utilise the first-hand Chinese evidence now becoming available, while recognising its essential limitations, (a) to challenge those claims and (b) to offer an explanation of why such claims have gained the credibility that they have, but which we now argue is undeserved.

After that, in Section 4, we focus on the recent revival of Sombartian-type claims about DEB and briefly rehearse our own understanding of the significant textual, institutional and individual factors (‘conditions of possibility’) underlying the emergence of DEB in Italy in the Renaissance, and its subsequent gradual dominance of Western accounting practice, in order to offer a basis for comparisons with the situation in China. There we shall briefly give our own evaluation, in the light of this comparative evidence and the related historical-theoretical issues, of how far we can know whether DEB did have an important role to play in the development of Western capitalism.

We shall also correspondingly seek to show how, on the basis of our challenge to the widespread view of the literature to date, there is, in China during the period up to 1850, not only no full DEB, but also no comparable CDEB: in which case, accounting innovations of a DEB kind may be considered unlikely to have either furthered or constrained the development of economic institutions and business organizations there. Here our overall objective, through the analyses developed across these three sections, is to open up the possibility for a new

historical-theoretical basis for cross-cultural comparisons between the situations in China and the West at various stages.

Finally, given these comparative analyses of the effects of accounting in each of these two geographical-economic-social-political arenas, and also of their possible historical interactions, Section 5 summarises our conclusion that, of the possible hypotheses given above, it is on balance possibility (b)(i) that is historically and theoretically the most plausible: namely, that China lacked both DEB or an equivalent CDEB but this was no handicap to its economic development at that stage.⁵ This correspondingly strengthens the case—despite the various recent attempts at reviving the contradictory Sombartian view—that Western capitalism and DEB were not causally related.

We also summarise our understanding of how the mutual misunderstandings of the respective accounting histories have gained (and repeatedly regained) traction in the literature. At the same time, given that the first-hand evidence about the Chinese history is only gradually now coming to light (e.g. Ma & Yuan, 2015; Yuan *et al.*, 2016), we indicate the future research importance of further collaborative study of China and its history—as it emerges as the latest contender to challenge the US as the global economic superpower—so as to illuminate and inform the mainstream of comparative international historical accounting research (cf. Carnegie & Napier, 2012). Section 6 concludes.

⁵ Coupled, as noted above, with (c)(i) [i.e. that the accounting developments in China up to about the 1850s were probably indigenous, while it was the later development of CDEB that probably reflected the increasing influence of knowledge of Western DEB].

2. Imperial China's economic success: what could have been the role of accounting?

There is a growing range of work, often though not exclusively associated with the 'California School', detailing the sophistication, extent and success of late-Imperial Chinese forms of agricultural, business and proto-industrial activity (over and above its famous exports to Europe of porcelain, silk and tea), and of the forms of banking and finance connected to them. Such work draws generally positive comparisons with the analogous sets of activity as undertaken in Europe across the same eras down to the eve of the British Industrial Revolution in the 18th century (e.g. Bin Wong, 1997; 2002; Goldstone, 2000; Goody, 1996; 2006; Pomeranz, 2000; 2002).⁶ This strand of 'comparative history' has also elicited increasing and thought-provoking concern over the forms taken by a residual Eurocentrism (or Occidentalism) in analyses of East-West connections and interactions, in terms both of long-term cycles and trends, and of specific moments where differences may make a significant difference, whether within Western or Eastern settings or between them.⁷

In posing such questions, particularly concerning issues of scientific and technological priority, borrowing and divergence, the work of Joseph Needham remains a key reference point. The framing of key questions, not just of priority in discoveries and innovations, but also concerning how far there was technological and scientific isolation of China from the West, often found their first significant expression in his work (e.g. Needham, 1985; cf. Temple, 2007). As a result, it is now highly likely that a wide range of Western technologies were based on or directly copied from Chinese technological inventions or scientific understandings, developed first from before the Christian Era but most notably in the Song dynasty (960-1279 AD); and that Chinese scientific and technological discourse and practice in the Song were in many cases superior to those later developed or 'discovered' in the West (cf. Fairbank *et al.* 1973; Huff, 2003).

However, one issue that arises, as such first-level historical issues get resolved, is how best to frame certain long-term and comparative puzzles which remain very much alive, or indeed intensified, as the form and degree of relative economic development in China and the

⁶ Such work has however focussed mainly, at least in the economic historiography tradition, on the similarities and differences between such constructs as levels of production, productivity, prices, wages, interest rates and consumption, rather than on the micro-level of the technologies of financial record-keeping, performance tracking and stewardship evaluation or audit put to use (or not) in these respective cultural contexts which we focus on here.

⁷ See for instance the 2009 collection of papers by leading historians and anthropologists in *Theory, Culture and Society*, 27(7-8), which engages extensively with Jack Goody's strictures on the forms taken by such Occidentalism, but also indicates the range of theoretical and empirical issues already put into historiographical play.

West at different periods is increasingly contested (and particularly as the Occidentalist assumptions of much earlier historiography are taken into account). We see a particular resonance with the way that the work of Goody (e.g. 1996; 2006; 2009) has challenged Occidentalist assumptions, e.g. by positing that Renaissance European developments represented more a ‘catching up’ with the East than ‘a great leap ahead’.⁸

However, it is only fairly recently that a sustained questioning has begun (although see Goody, 1996) about the possible roles of the historical *accounting* developments that were taking place in China and in the West. And here perhaps one particularly sensitive Occidentalist or Eurocentric sticking-point concerns the status of the ‘rationality’ supposedly implicated in DEB as a ‘form’ of accounting, not least because both Weber and Sombart put a particular (even peculiar) stress on DEB as *formally* capturing capitalist rationality.⁹

We see this longstanding western discursive focus on DEB’s formal rationality as conceptually important, but also a source of conceptual confusion, insofar as DEB’s formal ‘rationality’ has been equated with an ‘economic’ rationality that is recognisably modern but not necessarily found in the pre-modern western past. Here we suggest, as a necessary interpretive complement, the importance of following Goody’s (2009) approach of beginning analysis from a focus on ‘literacy and modes of communication’, and so paying initial attention to the possible significance of historical changes in the modes of writing and reading undertaken by the literate elites in the West, along with associated changes in the pedagogies of writing and reading, and the consequent enabling of new forms of accounting ‘value statement’. We draw here on recent analyses (e.g. Macve, 2015; Hoskin & Macve, 2016) which re-frame and revise older interpretations of the genesis both of DEB and of modern forms of accountability, and of how older modes of ‘naming and counting’ are consequently remade. At the same time, we recognise that these are heuristic analyses, and that there is a need also to build further on other significant ways in which ongoing work is reinterpreting

⁸ At the outer fringes, this focus leads, along with the generally increasing fascination in the West with China as it emerges as an economic superpower, to populist speculations such as those of Menzies (2003; 2008) that Renaissance Italy derived its range of technical advances from supposed expeditions there by the famous 15th century Chinese admiral Zheng He. These were then supposedly ‘lost’ to China itself with subsequent back-translation of such advances from the West. Menzies’s speculations have however been generally dismissed by mainstream academic historians (e.g. Thompson, 2008, consistent with Franke, 1967; see <http://www.1421exposed.com/> [accessed 27.08.14]). Unlike Lall Nigam (1986)—arguing implausibly for origins from Indian traders—Menzies (2008: 74) does not however speculate that the Chinese brought DEB to Italy.

⁹ So for Weber, it is the system of ‘capital accounting in its *formally most rational shape*’ (1978: 93, *emphasis added*) and as such ‘(up to now) the most highly developed (system) from a technical point of view’ for the central modern function of ‘profitability accounting’ (1978: 92). And for Sombart ‘it is simply impossible to imagine capitalism without double-entry bookkeeping; they are like *form and content*’ (Sombart, 1924: 118, *emphasis added*). See also Chapman *et al.* 2009.

the framework of the medieval and Renaissance European developments (as discussed in Section 4 below).¹⁰

Such heuristic questioning in relation to China is equally important. However we see it as having been constrained to date by the very limited range, until recently, of accessible scholarship on analogous developments there, given the long-standing Confucian denigration of business activity¹¹ and the longstanding focus in formal education on the Confucian values desired of an Imperial civil-servant rather than on managerial or mercantile skills (Elman, 2000; Brandt *et al.* 2014). But we suggest that there is now a level of material sufficient to form the basis for beginning to pursue such questions, and so to form a valuable complement and contrast to the recent re-awakening of a more general interest in the macro-questions of the roles of bookkeeping and accounting—and in particular of DEB—in the shaping of Western organizations, institutions and states.

Nevertheless, we shall argue in the next two sections that the questions that have generally been posed about China have been posed without an adequate theoretical and historical framework from which to understand the potential significance and power of accounting both there and in the West. At the same time, in order to frame our categorisation of Chinese developments and our scepticism about the claims that have been made for an indigenous CDEB, we must make clear what we mean by DEB.

‘Double-entry’ is sometimes used in the literature fairly loosely to refer to any systems which record the ‘natural’ functional duality of asset (inventory) movement accounting, reciprocal debtor / creditor accounting (particularly in ancient banking-type institutions—Davies, 1994: 53) and summarisation of detail, which are found historically (both with and without monetary amounts) in many cultures (e.g. Macve, 2002). In more modern Western records, historians have, in similar manner, sometimes also seen DEB where there is really only ‘charge and discharge’ accounting, which may also employ the labels ‘Dr’ and ‘Cr’ (cf. Baxter, 1980; Lee, 1994; Hoskin and Macve, 1994a: 6). But here we use DEB to refer to the

¹⁰ Accounting was developing long before writing (e.g. Ezzamel and Hoskin, 2002) but that is not our main focus here.

¹¹ Confucius (551-479BC) was himself described as a lowly ‘stores accountant’ in a state warehouse in his poverty-stricken youth, and the story goes that Chairman Mao was familiar with his saying ‘Accounts must be recorded correctly and accurately’ (Guo, 1988a; Zhao, 1987: 166). In Confucian ethics, ‘noblemen think about *Yi* (justice) while common people think about *Li* (profit)’, and desire for profit was seen as an evil for society (Gao and Handley-Schlacher, 2003: 49; Richardson, 1999: 66-7). However this has clearly never stopped Chinese individuals (except perhaps in the Mao era under a different ideological repression), from being shrewdly practical about how to make profits (e.g. Gardella, 1992: 322; Brandt *et al.*, 2014). So it is now recognised that systems for marketing agricultural surpluses and agricultural family textile products were well developed by the 18th century and that successful merchants were an important economic group in China (e.g. Richardson, 1999:

‘full’ system¹²—as described by Pacioli in 1494¹³—which forms the basis for the arguments by Sombart and Weber, and in a later context for example by Bryer (claiming the support of Marx, e.g. Bryer, 2005, 2006), that businessmen could, thanks to this new technology, generate a new kind of measure of the rate of their accumulation of capital and thereby become enabled to act as ‘true capitalists’.¹⁴

So there are a variety of manifestations of what are ‘more or less’ DEB, whether focussing on form, content, and/or functions. But by the ‘full’ DEB—against which we will compare the claims that a Chinese equivalent to DEB (‘CDEB’) was independently developed there—we mean the integrated system whereby fully monetised changes in assets-liabilities (i.e. ‘transactions’—more recently including ‘revaluations’) are processed through a fully interlocking system of account ‘books’ (whether kept manually or nowadays electronically).

Starting from these chronological records of events as they occur, this processing classifies items as assets, liabilities, revenues and expenses, and from these classified ‘ledger’ accounts the (almost) automatic precipitates are a ‘profit and loss account’ and a ‘balance sheet’, which show how the ‘owner’s equity’ has changed during the accounting period. If there are no transactions between the owner and the business entity this change will equal the ‘profit’ (or ‘loss’) for the period¹⁵ (through what is nowadays labelled the ‘clean-surplus equation’ e.g. Ohlson, 1995). The ‘balance sheet’ and a ‘profit and loss account’ are thereby integral parts of the system which are nowadays presented as its outputs, i.e. as ‘financial statements’ (e.g. Macve, 1985). The first examples of ‘full’ DEB as a practice can be found in late 13th century Italian partnerships (i.e. approximately 200 years before Pacioli’s exposition, e.g. Macve, 1996; Sangster, 2015a).

Attempts to find the origins of, or forms of, DEB as understood here in a variety of other ancient civilisations have so far failed (e.g. Lall Nigam, 1986; Solas & Otari, 1994; cf, Macve, 2002). Here we attempt to explore the nature of any possible links between Chinese and Western developments. As we shall see the attempts to describe CDEB have focussed on emphasising how far the processing in Chinese account books matched that in Western DEB books. However it is clear that Chinese systems could not have had the complete internal cross-referencing exhibited in Western books as (a) they did not have the page numbering or

16; 72), while the overseas (and Hong Kong) Chinese in particular have been outstanding as business entrepreneurs, especially since the mid-nineteenth century (e.g. Gardella, 2000).

¹² What King (2010), who describes the variety of bookkeeping systems employed in the Foley family’s charcoal ironworks in the late 17th century, calls ‘the classic Italian method’.

¹³ Pacioli gave the first printed exposition of DEB (translated in von Gebattel, 1994). See Sangster (2015b) for description of the manuscript exposition by Cotrugli and Raphaeli written in 1475.

¹⁴ Bryer’s thesis is disputed e.g. by Macve, 1999; Chiapello & Ding, 2005; Toms, 2010.

indexing that Pacioli recommends and (b) they did not incorporate all arithmetical operations within the textual ‘universe’ made up by the full set of books kept, since many operations continued to be performed on the abacus, with the resulting calculated amounts only being entered into the records if and when required. Nevertheless it is argued (and we shall contest) that an indigenous Chinese form was developed that did meet the logic of a ‘closed system’ (where ‘assets’ – ‘liabilities’ = ‘equity’) that Mattessich (2000) argues is the essential feature (and advantage) of DEB.

In his view (which we share and as argued in Yuan *et al.* 2016), although the presence of integrated real, personal and nominal accounts may be the most significant medieval development in Western bookkeeping technique, nevertheless, as the nominal accounts (e.g. for sales, purchases, expenses) are conceptually only temporary subdivisions showing the sources of changes in equity, they do not add to the underlying logic of the ‘closed system’ (as Mattessich (2000), Introduction p.13 observes). Accepting this view it is not necessary to follow Sangster (2015a) in regarding it as necessary in the evolution from single-entry to DEB for there to have been what he labels an intermediate stage of ‘dual entry’ (i.e. where there are reciprocal or ‘doubled’ entries—e.g. for credit transactions and their settlement—but where the *location* of the corresponding account in the books is not identified) as it is the *cross-referencing* of each side of the entry *to identify the location of the corresponding account* that he regards as crucial for there to be fully developed DEB. (The medieval evolution of such indexing and ordering of books is traced in Hoskin & Macve, 1986; cf. 2016.)

But we would not regard this technological element as essential to what Mattessich correctly identifies as the ‘logic’ of DEB; and we would accept CDEB as having the essential features of DEB *if* it could be shown that there was indeed integration across the three ‘stages’ of books that we discuss further in Section 3 below (as has been claimed by other authors for Chinese accounting, e.g. Aiken & Lu, 1998) as this would achieve Mattessich’s ‘closed system’ and provide the feature of DEB that has generally been regarded as the most significant, i.e. its ability to systematically track ‘profit’ and ‘capital’ (albeit that it is not the only method by which this can be done).¹⁶

Before proceeding we should also note that, although in modern accounting theory the focus is on the financial statements that are the outputs of the DEB system (e.g. Bromwich *et*

¹⁵ perhaps supplemented by ‘other comprehensive income’ accounts for revaluations etc.

¹⁶ However, as we shall argue, no first-hand evidence of such CDEB is available before the late 19th / early 20th century (i.e. after the penetration of Western influences into China); and we shall also argue (see further Section 3 below) that earlier Chinese accounts at most show evidence of some ‘doubled’ (i.e. Sangster’s ‘dual’) entries

al. 2010), first, the content of such statements ('income' / 'capital') can (and has often been) produced in the West *without* the use of DEB (e.g. Macve, 1996; 2002); and, second, it is clear that in the early centuries of DEB little concern was shown with producing and interpreting these financial summaries and the focus was rather on controlling and managing the individual assets (and particularly debtors) recorded in the ledger 'balances' (e.g. de Roover, 1956; Matringe, 2016). Moreover, the basic functions (i) of providing a written memory, (ii) of calculating commercial results as the basis for sharing them out between co-venturers / partners, and (iii) of providing information which might assist different kinds of decision making, can and have been achieved without requiring the form of full DEB (e.g. Macve, 2002).

With these caveats in mind we can now approach the history of Chinese accounting and its possible roles.

3. The history of Chinese bookkeeping and accounting: is CDEB a Chinese counter-myth?

Previous English-language literature has purported to identify several stages in the development of Chinese bookkeeping practice. We trace these here while pointing out that for much of the story little or no first-hand evidence has been adduced (see the Appendix for further technical details). We also trace how Occidentalism has at different times shaped both Western and Chinese perceptions of the relative superiority of the other's economic and social institutions in such a way as to shape the writing of their respective histories. Broadly speaking we can see the following stages.

First, until around the mid-19th century, China did not regard the West as 'superior' although the European West, basking in the glow of the Enlightenment and the Industrial Revolution, tended to regard China—like much of the rest of the world, including at that stage the US (Hoskin & Macve, 2000)—as 'backward'. As a result when Lord Macartney's 1793 embassy visited China from Britain to display potentially attractive exports it is well known that the Qiánlóng Emperor¹⁷ cursorily dismissed them, saying 'we have never valued ingenious articles, nor do we have the slightest need of your Country's manufactures.'¹⁸

(i.e. where required for credit transactions) but not of full DEB according to either Mattessich's or Sangster's criterion.

¹⁷ We generally use the modern *pīnyīn* system for Romanisation of Chinese characters, but where our sources use the earlier Wade-Giles system we sometimes follow them. An equivalence table can be found e.g. in Appendix II to Hsü (2000). We also selectively give the corresponding Chinese characters.

¹⁸ But see e.g. http://www.lse.ac.uk/economicichistory/research/gehn/gehnpdf/conf4_mberg.pdf (accessed 22.11.2014).

Consequently, before the ‘Great Divergence’ it makes sense that any accounting developments in China would also then be indigenous. What limited first-hand evidence there now is (e.g. Yuan *et al.* 2016) indicates that functionally it was as adequate as generally similar accounting systems in antiquity and in the West pre-DEB (e.g. Macve, 2002)).

Following China’s forced opening from the mid-19th century, and particularly after China’s disastrous defeat in the First Sino-Japanese War of 1894-96, leading Chinese reformers increasingly urged ‘modernization’ (including industrialization) on the last Qīng Emperors, looking *inter alia* to the example of the Meiji Restoration in Japan and its Westernization on the European model (1868 to 1912) (Brandt *et al.* 2014). So from this period on within China itself some leading protagonists did subscribe to ‘Occidentalism’, particularly in the various reform movements preceding the 1949 founding of the Communist PRC. People became familiar with Western-run businesses in China using DEB; additionally leading Chinese accountants, who had increasingly been abroad to study, had independently become familiar with DEB and learned about its central place in ‘modern’, Western accounting.

However, during Chairman Mao’s era (blaming the Emperors and the capitalist West for China’s travails)¹⁹ China turned inwards again—finally turning its back even on Communist Russia—and pursued self-sufficiency in achieving modernization, including rejecting DEB as a Western capitalist tool. But with Deng Xiaoping’s subsequent ‘reform and opening up’ (starting in 1978 and accelerating after 1992), China once again began to look to Western economic practices and systems to help in a new form of ‘modernizing’ which would both relieve extreme rural poverty and develop a new urban-based business economy; at the same time these initiatives were tempered by the need to retain ‘Chinese characteristics’ (e.g. Ezzamel and Xiao, 2015).²⁰

DEB was reintroduced in this context, drawing on the significant arguments developed by Professor Ge Jia-Shu of Xiamen University from 1978 onwards: namely that accounting is not political or class-based but is a science (Ezzamel *et al.*, 2007, pp. 686; 695). DEB was then made compulsory for business accounting in 1992 when the first Chinese accounting standard was issued under the auspices of the Ministry of Finance (Ji & Lu, 2013, p.333). All of this reinforces the point that there has been a lengthy, complex and shifting pattern of mutual understanding and misunderstanding between Western and Chinese perceptions of

¹⁹ Modern Chinese history as presented in the Museum of the First National Congress of the Chinese Communist Party (held 23 July 1921 in Shanghai) begins with the Opium Wars.

²⁰ Characteristics which the current regime appears to be reemphasising strongly now. Although the wholesale import of Communist ideology into China under Mao may be regarded as having been a most extreme form of

each other's accounting systems. And in our analysis here we see this dynamic as having contributed to shaping, not just the changes in accounting themselves (as described in Ezzamel *et al.* 2007; Ji & Lu, 2013), but more importantly their historiographies, particularly in the ways that histories of accounting, both Chinese and Western, have been written at various stages through projecting contemporary concerns onto the past.

That said, the history of accounting's beginnings in China seems basically uncontroversial. Lu and Aiken (2004) argue for a broadly similar but independent²¹ line of Chinese development to the Mesopotamian findings by Schmandt-Besserat, from about 3,200 BC, of impressions made on clay *bullae* (envelopes) containing tokens. They focus on the interrelated evolution of writing, abstract counting and accounting systems and the development of Chinese characters, of which the most famous early examples are the ox-bone and turtle-shell oracular inscriptions from the late Shāng dynasty (1766-1122 BC). Called *jiǎgǔwén* [甲骨文] and discovered in 1899, they record divinations and include countings of various animals. They have linkages to slightly later bronze-vessel inscriptions, reaching their acme in the Western Zhōu dynasty (1100-771BC). There are possible, albeit still controversial, linkages to earlier pottery inscriptions dating back to at least 4000 BC and possibly even earlier (e.g. Basu, 2009).²²

A continuing series of authors²³ have traced the subsequent history of Chinese bookkeeping from the earliest forms of government accounting and related government 'auditing' known in the Western Zhōu dynasty, through to what is claimed to be the emergence of an indigenous Chinese form of commercial double-entry bookkeeping (which hereafter we call 'CDEB') during the Míng and Qīng dynasties (mid-14th to early 20th centuries AD). Therefore, if this is the case, this development of CDEB would be prior to the

Westernization, the current President, Xi Jinping has been expressing suspicion of 'Western values', especially within university teaching.

²¹ Robinson (2009: 20-23) notes that some scholars argue that 'China could surely have borrowed the idea of writing from Mesopotamia during the 3rd/2nd millennium BC or after via the Central Asian cultures of the Silk Route, and gone on to develop the unique set of Chinese characters' but points out 'that there is no evidence for any such borrowings from Mesopotamia by writers in China, the Indus Valley, Crete, or Meso-America. Moreover the signs of the scripts from these regions are extraordinarily unlike each other'. So independent development 'in response to local needs' is a possibility.

²² Unfortunately Lu and Aiken's conclusion (p.48) states that 'Chinese characters...remain pictographic in nature' whereas their discussion (p.38) has shown that the signs include both pictographs (of objects) and ideographs (including numbers; prepositions) which later Chinese characters have supplemented with 'phonetic derivatives' (where words borrow the sounds of other words, such as in the word for the 'sampan' kind of river-boat, 舢舨 [pīnyīn: *shānbǎn*] which makes use of the symbol for 'mountain' 山 [pīnyīn: *shān*] just to indicate the pronunciation). Robinson (2009: 111-113) notes that 'today the vast majority of [Chinese] characters, over 90 percent, are of [this last] "semantic-phonetic" variety.'

²³ e.g. Zhao, 1987; Guo, 1988b; Gardella, 1992; Lin, 1992; Aiken and Lu, 1993, 1998; Huang and Ma, 2001; Lin, 2003; Li, 2007; Solas and Ayhan, 2007; Song, 2011; Guo *et al.* 2011. Further authors (e.g. Ji & Lu, 2013) have focussed more on the period after 1850 (cf. Anon***, 2015b).

known introduction into China of Western DEB during the late Qīng period after 1840 and continuing into the 1920s-30s. However, while this time-scale potentially suggests some possible knowledge-transfers between China and the West, or between the West and China, these claims for CDEB as indigenous first need to be critically examined for sufficient ‘conditions of possibility’.²⁴

Previous researchers (see e.g. Lu and Aiken, 2003) have addressed possible religious and philosophical cultural influences on the development of Chinese accounting such as Confucianism (Bloom & Solotko, 2003), alongside Feng Shui and Buddhism (Gao and Hendley-Schlacher, 2003) but have failed convincingly to delineate how these influences would actually distinguish Chinese from Western *accounting practices*.²⁵ This seems to us a form of analysis that is likely to promise more than it delivers. For such influences—in all societies—seem more likely to operate at the level of the social and cultural frameworks underlying work organisation, employment practices, and business and financial relationships (e.g. Child, 1994), and also often be characterised by a kind of necessary collective ‘hypocrisy’ (e.g. Brunsson, 2002), where at one level respect is always ritually paid to these higher ideals to cement social and organisational cohesion, while at another there is development of institutions, practices and attitudes which encourage apparently incompatible activities.²⁶

Despite the absence of substantial identification of surviving original records, the various authors who have published in English have presented the historical developments in China, on the whole, as generally received knowledge, and without critical debate.²⁷ However, it is

²⁴ We shall compare these with particular reference to the (A) textual, (B) script and (C) institutional power-knowledge conditions that we shall consider further in the case of Western DEB in Section 4 below.

²⁵ Ezzamel *et al.*, 2007 consider changes in the later dominant political discourses in the Mao and Deng periods of the PRC, but apart from the rejection of DEB as ‘capitalist’ and then its reinstatement as ‘scientific’ and apolitical, do not convincingly show how these changes were linked to the changes in particular accounting principles such as ‘conservatism’.

²⁶ See also Yamey (2005). An example where such ideals clearly influenced the need to develop alternative accounting and business practices in Europe was the medieval ban on usury, requiring the development of alternative legal forms to achieve the effective payment of interest (e.g. de Roover, 1956; Matringe, 2016) which has parallels in the some of the techniques of ‘Islamic finance’ today (e.g. Napier, 2009).

²⁷ We mainly follow Aiken and Lu (1998) as these various authors all generally appear to base their story primarily on the prior secondary literature *in Chinese*, in particular Guo Daoyang’s two-volume *History of Chinese Accounting* published in 1982 and 1988 in Beijing by Chinese Finance and Economics Publishing House; as well as Wei Zhenxiong (1984), *Chinese Bookkeeping Methods*, Beijing: Chinese Financial and Economic Press; and Zhao Youliang (1992), *Accounting and Auditing History in Ancient China*, Lixin Publishing Company. They generally do not differ significantly in their interpretations of these Chinese writers, whose only papers to date in English appear to be Zhao, 1987 (who makes reference to some archival records but without identifying how they can be accessed), Guo, 1988a, 1988b, and Guo *et al.* 2011. However, Lin (1992; 2003) differs from Aiken and Lu (1998) over some of the nomenclature and dating of developments (but neither specifically comments on the other) and Ji (2000: 50) notes, in relation to the similarities between CDEB and DEB, that ‘Lin [1992] believes that the principles between the two methods are basically the same.’

not a straightforward matter to distinguish the precise ‘stages’ and extent of these claimed historical developments, especially over the last 600 years or so. One issue here is that the China-based researchers who have previously written in English on this possibility have done so without making a detailed comparison between the accounting practice of the Chinese merchants studied, *as a system*, and the DEB system as defined above. This is something that we seek to do more systematically here, while also, in line with our observations in Section 2 on what does and does not constitute DEB as a system, seeking to avoid an Occidentalism that may fail to recognise that an accounting practice that is different in certain *surface* respects may be following similar principles of doing accounting at the system level.²⁸

It is in this spirit that we can consider the recent rediscovery in China of archives containing original commercial accounting records (e.g. Ma & Yuan, 2015; Yuan *et al.*, 2016),²⁹ while also seeking to give due consideration to the rhetoric underlying claims and counterclaims in the debates over accounting reform in the 1930s, which reinforce our more sceptical approach that we set out below.

First we review the history that has prevailed in the literature to date. [Further details of the stages that these previous authors have set out are given in the Appendix.] We provide a critical commentary, including offering an explanation of how the historical ‘counter-myth’ of CDEB probably originated within China as a response to the perceived economic advantages of DEB (which we shall argue in Section 4 were themselves essentially an ‘institutionalized rational myth’—e.g. Meyer & Scott, 1992).

So here we explore how accounting in both the East and the West manifests many common characteristics before the advent of DEB (i.e. around the beginning of the 14th century AD in the West). Then we can ask ‘what difference did DEB possibly make in the West?’; and correspondingly ‘Would a lack of DEB (or equivalent CDEB) have hampered China’s economic development?’

Aiken and Lu [1998] contest that the underpinning of Western bookkeeping method is the property right and the fundamental basis of the Chinese bookkeeping method is the cash movement.’ Ji and Lu (2013) develop the argument further illustrating how they see CDEB as focussing more on ‘sources and uses of funds’ within a period (similar to the modern ‘cash flow statement’ required by International Accounting Standards) than on balance sheet assets and liabilities.

²⁸ Moreover, the researchers who have previously written in English have sometimes, as we shall see, exhibited a less than complete grasp of the technicalities of DEB which undermines confidence in some of their comparisons between DEB and their claimed indigenous equivalent in CDEB.

²⁹ Extensive accounting records of the Tǒng Tài Shēng (TTS) merchant / banking enterprise have recently been found covering 1798-1850 and are being analysed for the data they reveal about the economic history of the time (Yuan and Ma, 2010 *in Chinese*). Yuan *et al.* (2016) now give an English-language analysis of the accounting structure and practices that they reveal.

The main Chinese developments in antiquity occurred in government accounting (for which much more evidence survives than for private accounting until some recent rediscoveries of the latter—consistent with the historical regularity that state economic activity has generally been more significant than ‘private’ economic activity³⁰ to the present day, even in the ‘capitalist’ West. Beginning in the Western Zhōu dynasty (late 12th to early 8th century BC) the authors identify early record keeping by the ‘Three-Column’ (or ‘Three-Pillar’) method for tracking each year’s receipts and disbursements and their balances, in accounting for inventories of grain and precious goods—such as gold, silver, silk and jade—collected through different kinds of taxation.

There are also, as in other early states, various early forms of audit, focussed on accountability in the sense of being accountable for losses or misappropriation of goods or taxes, rather than the efficiency or effectiveness of ‘human performance’.³¹ At the same time, as in other early states, the role of merchants in moving and distributing goods on behalf of the state (but also to their own benefit in their entrepreneurial role) was integral to the ‘political economy’ of the state. Thus, despite embedded prejudices against merchants in the ruling political and social ideology of Confucianism,³² which in some periods led to penal oppression, a merchant culture inexorably expanded and deepened over the dynasties (cf. von Glahn, 2016).

Following the standardisation introduced under the first Qín emperor (Qín Shǐhuáng [秦始皇], who ruled 221-210BC)³³—who standardized *inter alia* the writing characters, a currency unit, a system of weights and measures, and road widths and also introduced coinage—

³⁰ This is in line with the findings in both Mesopotamia and Egypt: merchant accounts are more focussed on specific ventures or voyages whereas state accounts often compare actual with ‘standard’ or expected outcomes and carry forward shortfalls and surpluses on the basis of outcomes actually achieved (e.g. Nissen *et al.*, 1993; cf. Macve, 2002).

³¹ Of Guo’s (1988b) eight pages almost all are devoted to the developments in governmental accounting, internal control and audit from the end of the 2nd millennium BC, with only about one page focussing on the developments in commercial accounting and CDEB (a comparable relative emphasis is presented in relation to the relevant historical periods in Guo *et al.* 2011). In the case of the former, it is not clear what the relationship would have been at different times between oral accountability and written records, although the scale of Chinese geography and the long-standing stability of the administrative structure (despite frequent changes in the ruling dynasties) perhaps make it more likely that written accounts and reports had greater importance for the Emperors much earlier, and with much greater continuity back to antiquity, than in say England in the Middle Ages (e.g. Jack, 1966). The shared meanings across the variety of Chinese languages and also other South-East Asian languages of Qín Shǐhuáng’s standardized characters (whose archaic forms are still recognizably related to modern forms) would also tend to embed writing.

³² Similar to the prejudice against the *kapelos* in ancient Greece as ‘the huckster’ (but cf. Moreno, 2012, pp.225ff.).

³³ And left the ‘Terracotta army’ (*bīngmǎyǒng* [兵马俑]) to protect his tomb near Xi’an (Wood, 2008).

accounts could also be kept in money terms. By the end of the Eastern Hàn dynasty (25-221AD) paper was used and the abacus had become popular.³⁴

During the Táng and Sòng dynasties (618-907; 960-1279AD) accounting reports were now in a regular, usually ‘Four Column’ (or ‘Four Pillar’), form showing a) Opening Balance, b) New Receipts, c) New Disbursements, and d) Closing Balance³⁵ (so ‘balancing’ checked either that $a) + b) = c) + d)$; or equivalently that $b) - c) = d) - a)$; or $a) + b) - c) = d)$). However, it is not clear whether/how far this involved going beyond confirming the internal consistency of the accounts to ‘audit’ verifications of the closing balances.³⁶ Some famous examples of government reports included comparisons with the previous year and explanations for income and outgo variations (Aiken and Lu, 1993: 179-80).³⁷

While Guo (1988b: 6) claims that, using this ‘world famous’ method, ‘the application of these accounting equations in China was several hundred years earlier than that in the Western world’ it is unclear what, if any, technical advance they represented over the processing and balancing of inventory accounts (e.g. of grain, wine, animals) and cash accounts to be found in Roman farm accounting in the second century AD, and on the Appianus estate in Egypt in the mid-3rd century AD (Macve, 2002; Rathbone, 1994: 59),³⁸ although in Europe these written forms may have been lost and had to be ‘rediscovered’ in the Middle Ages (Jack, 1966: 139-40). While one must respect the ‘archaeology’ of concepts, to modern eyes, at least, these arithmetical relationships between accounting for stocks and flows seem ‘only natural’.³⁹

³⁴ Before paper, the account ‘books’ (*bùshū*) were made of bamboo slips or silk pieces (Zhao, 1987: 174; Guo, 1988a). Aiken and Lu, 1993:173 illustrate a bamboo slip ‘roll’ (which is presumably a facsimile of an original although no source is identified). According to Zhao (1987: 175) the preceding bamboo slips used for recording might be bound together either chronologically (to act like a ‘journal’) or by classification (to act like a ‘ledger’ account). Guo *et al.* (2011) refer to the earliest accounts being on wood (*Jian Ce*). While China has been credited with the invention of the abacus (*suànpán* [算盤], lit. ‘counting tray’) (e.g. Zhao, 1987: 174-5), this is still contested as similar technologies were used by the ancient Greeks, Romans and other even more ancient civilizations: http://en.wikipedia.org/wiki/Abacus#Mesopotamian_abacus (accessed 02.09.11). Zhao (1987: 168) refers to identification of similar calculating devices as far back as the Western Zhōu dynasty.

³⁵ The descriptions by Lin (1992: 107-8; 2003: 85), Ayeung and Ivory (2003: 10) and Guo *et al.* (2011) of the method (*sìzhùfǎ* [四柱法] or *sìzhù jiésuàn* [四柱結算]) indicate these were labelled respectively *jiùguǎn* [旧管], *xīnshōu* [新收], *kāichū* [开除], *shìzài* [实在]. For an illustrative example see e.g. Yuan *et al.*, 2016, Picture 4.

³⁶ Lin (1992: 108) refers to Guo’s 1982 book [*in Chinese*] as reporting that the complete books of the Jingtǔ Temple in Central China were kept by this method in 925AD.

³⁷ Zhao (1987: 176-8) notes that during the Western Wèi dynasty (535-557AD) official forms had ‘stipulated red characters for payment and black for income’; while during the Táng dynasty simplifications in summarization were introduced which reduced the enormous volume of individual records submitted to the central government, together with significant improvements in audit with the establishment of the *bìbù* as an inspection department.

³⁸ Comparable accounting in India, apparently back as far as the 4th century BC, is described in Lall Nigam (1986).

³⁹ They still underlie the ‘asset/liability’ approach to measuring income in accounting as now propounded by financial accounting standards setters (e.g. Bromwich *et al.*, 2010: 360).

The basis for Guo’s claim appears to be rather that the adoption of the Four Column method represented an important change in the Chinese *conceptualisation* of what the accounting should be ‘naming and counting’ and for what purpose, as he has indicated⁴⁰ that initially each period’s account had been regarded as conceptually separate: opening balances had to be extracted if required from the preceding period’s books. However problems of loss and theft of records led accountants to recognise the need for continuous records and to incorporate the closing balance that belonged to the previous period’s account as the opening balance in the new period’s books, thereby inventing the ‘four column’ system.

During the era of the Míng and Qīng emperors (mid-14th to early 20th centuries AD), commercial and credit activities gradually increased further, albeit still circumscribed within the institutions of the mainly agricultural and domestic economy (Brandt *et al*, 2014). But hereafter the claims made for how Chinese accounting developed become, in our view, increasingly tenuous. There were now, it has been claimed, three successive stages of records in the bookkeeping system, argued to be comparable to the ‘Memorandum’ (or ‘Waste Book’), the Journal and the Ledger used in DEB (von Gebattel, 1994). What the authors generally claim to be the indigenous development of CDEB (the *Lóngmén zhàng* [龙门账] system) supposedly originated from about the middle of the 17th century (i.e. about 150 years after the first appearance in Italy in 1494 of Pacioli’s printed *Summa*, and up to 350 years after the first Italian records believed to have been kept in full DEB (Sangster, 2015a)) with a final refinement (the ‘Four Feet’ system (*sìjiǎoshū* [四脚书]), also known as ‘Heaven and Earth Matching’: *Tiān Dì Hé* [天地合]) coming in the mid-18th century—although it has been claimed that elements of ‘reciprocal-entry’ in accounting for movements in personal accounts and accounts for various commodities (the ‘Three Feet’ or ‘Three Leg’ system—*sānjiǎoshū* [三脚书]) can be traced back to around the middle of the 15th century.⁴¹

However, it can now be shown how this supposed history of an indigenous CDEB and its dissemination, both within China and overseas, was born and how it evolved in the 1920s and 1930s as a ‘counter-myth’ to the institutionalized rational myth that framed perceptions of DEB as ‘modern’ accounting (Anon*** 2015a). The historical legend had it that the *Lóngmén zhàng* system was invented and developed by the Shānxī bankers or *piàohào* [票号]. The founding of *piàohào* was associated in legend with two well-known anti-Manchu intellectuals

⁴⁰ In conversation (November 2011).

⁴¹ We explain below why these datings generally appear to be mythical, with hard evidence for most of these ‘systems’ not having yet being found before the late nineteenth/early twentieth centuries by when, following the Opium Wars, Western influences would have become much more powerful.

by the names of Gu Yanwu [顾炎武] (1613-1682) and Fu Shan [傅 (or 富) 山] (1607—1684). The conflation of these two legends led to the myth that CDEB—the use of *Lóngmén zhàng*—was born in the 17th century.

There are, on our reconstruction, three logical and historiographical pitfalls contributing to the evolution of this myth. First, it has not been clearly established that *Lóngmén zhàng* was truly CDEB (i.e. was actually equivalent to a ‘full’ Western style DEB).⁴² It could just be a more sophisticated variation of the long-standing Chinese four-column system for keeping individual accounts, coupled with a periodic reckoning of profits (e.g. as often continued in the West even after the invention of DEB (Yamey, 1949; 1977)).⁴³

Second, all the pieces of evidence cited so far only show that Shānxī bankers may have used *Lóngmén zhàng* book-keeping in the late 19th / early 20th centuries (e.g. Li, 2012 *in Chinese*). The claim that *Lóngmén zhàng* had originated from the 17th century was a speculation based on the belief that the Shānxī bankers originated in the 17th century.

Third, this second point can now also be almost entirely dismissed. Although Shānxī *merchants* had been long-standing, the Shānxī *bankers* or *piàohào*, who constructed a nationwide network of banking and remittance activities, only started in the early 19th century. More specifically, the first Shānxī *piàohào*⁴⁴ was probably founded in 1823. This dating is important as the allegedly double-entry style of the *Lóngmén zhàng* was connected with the banking aspect of the Shānxī *piàohào* (and all banks have needed to keep accounts for their *individual* customers similar to those also found within a DEB system—e.g. Sangster, 2015a).

The above summarizes the research done by Shi Yuqian, who showed (1985, *in Chinese*) that the origin of the Shānxī *piàohào* had no connection with Gu Yanwu and Fu Shan in the 17th century, and the research done by Zhao Lishen (2006, *in Chinese*), who showed that *Lóngmén zhàng* also had nothing to do with Gu and Fu.

Both articles cited a variety of sources in China today that continue to perpetuate the myth, beginning in the 1980s and with an increasing range of citations written in the 1990s and 2000s. The paper by Cheng Shenshu (cited in Guo Daoyang, 1988) published in 1980 (*in*

⁴² An indigenous system which does seem closer to Western DEB (on Mattessich’s (2000) criterion) is that adopted by the Nakai family in Japan from the early 18th century (Ogura, 1982; Kudo & Okano, 2011), and deserves further investigation.

⁴³ Cf. Li (2012 *in Chinese*), pp. 44-8. Further investigation is still needed of some of the accounts (mostly 20th century accounts, like those of the Zìgòng brine-wells which are argued by Auyeung *et al.* 2005 to illustrate traditional practices) that have been claimed to be examples of *Lóngmén zhàng*. However, a preliminary review of the account books in the Zìgòng archive in Sichuan province by one of the present authors in October 2015 has not revealed any evidence of the supposed CDEB system.

⁴⁴ The famous *Rìshēngchāng* [日升昌] bank in Píngyáo, Shānxī province (e.g. Morck & Yang, 2010), now a museum.

Chinese) is the earliest piece that we have seen that speculated on this origin and made the claim that *Lóngmén zhàng* began with the Shānxī bankers, who in turn had supposedly originated in the 17th century, but the paper gives no references in support of this claim. The claim was then taken up in Guo Daoyang's book published in 1988 (*in Chinese* at pp. 114-123). This major work is widely recognised as the most authoritative contemporary treatment of the history of Chinese accounting; and it should be noted that Guo himself treats the dating of the origin of Shānxī bankers as uncertain. However he was inclined to believe that it originated in the late Míng / early Qīng period. Both in his 1988 book and in his later joint work with others, the claim that *Lóngmén zhàng* also originated in the 16-17th centuries is then repeated but without detailed substantiation through references to original sources.⁴⁵

Guo's 1988 work did cite work by Zhang Taiyan (n.d), Zhang Yilin (1914) and others who were writing (*in Chinese*) in the 1910s and 1920s. But both these Zhangs only wrote about the (supposed) relationship between Gu and Fu and the Shānxī *piàohào* with no mention of *Lóngmén zhàng* as far as we can see.⁴⁶ However, Guo did not cite the work by Shi Yuqian (published in 1985 *in Chinese*) on which we prefer to rely, who disputed the late Míng / early Qīng origin of the Shānxī bankers.

Guo Daoyang's interpretation of *Lóngmén zhàng* as a form of CDEB appears to have relied largely on a series of articles published (*in Chinese*) in the *Accounting Journal* (*kuàijì zázhi* [会计杂志]) in the 1930s, especially the articles by Zhang Xindeng (1934) and Li Mengbai (1935). These did discuss the method behind *Lóngmén zhàng*, albeit they made no mention of the claim that it originated with Shānxī Bankers in the late Míng / early Qīng period.

It is out of these disparate traces that the story of China's own version of DEB appears to have been fashioned, in a first form by scholars working early in the 20th century, and then in a revived form from the 1980s. Under the circumstances, we feel it is a fair description to describe the resulting narrative as an 'institutionalized rational myth' (e.g. Meyer & Scott, 1992). Most significantly, the *Accounting Journal* published in China in the 1930s was part of the movement initiated by Xu Yongzuo (republished in 2009 *in Chinese*) that campaigned for adapting and reforming Chinese traditional accounting methods rather than completely abandoning them in favour of the 'foreign' Western-style DEB method. So the authors writing there had a natural bias towards showing that supposedly 'traditional' Chinese accounting

⁴⁵ As noted by Goody (1996) p. 79, fn.103.

⁴⁶ Both Zhangs were eminent historians and politicians but had no background in accounting. Even their tale of the linkage between Gu, Fu and the Shānxī *piàohào* was written just as newspaper articles or notes rather than serious academic works. Hence, their tale was highly influential with the public even though it was not actually credible as research, as argued by Shi Yuqian (1985).

practices such as *Lóngmén zhàng* already contained the crucial elements of Western DEB and, with some reform, could continue to constitute an adequate CDEB system for modern times.

It then appears that these 1930s arguments were picked up again in the 1980s, in the context of the now decisive ‘modernisation’ and Westernization of accounting during Deng Xiaoping’s reforms, when a revived interest and belief in China’s legacy of past economic success, from its long history preceding the Opium Wars, spread more generally. Nevertheless, on the basis of the evidence available and adduced so far, the story of indigenous CDEB remains, in our view, no more than a myth, and in fact a ‘counter-myth’ to the perceived economic significance of Western DEB which, as we argue in Section 4, had itself become an institutionalized rational myth.

What then may we say about the formal status of these most sophisticated CDEB accounting systems? Certainly their textual layout and the signifiers in which they are written (using Chinese characters) remain major surface differences from Western DEB. However the difference in the Chinese layout (‘bivertical’ rather than ‘bilateral’) can be easily adjusted for by a reader and is minor compared to the important differences in processing methods (see e.g. Yuan *et al.*, 2016).⁴⁷ These add to the aura of doubt surrounding the claims that have been made for how far CDEB developed. For example, the illustration in Aiken and Lu (1998: 152)⁴⁸ claims that the progress of entries through their supposed three stages of the Chinese ‘books’ apparently required transcribing each entry *in full* each time. This was unlike DEB where, after transcription from the rough Waste Book to the formal Journal—which might at that stage involve compression into ‘compound entries’—posting into an account in the Ledger could be effected largely by cross-referencing to the Journal, coupled with some (often abbreviated) identification of the *corresponding* ledger account.

So in DEB a purchase on credit of calico cloth merchandise for £100, for example, might appear in the Journal (or a subsidiary purchases journal) as ‘Dr. calico £100; Cr. X cotton mill £100’, showing the cross-references to the folio pages of the respective ledger accounts; and

⁴⁷ The use of the Chinese-character writing system (rather than the Western alphanumeric system), and of writing from top to bottom but in columns from right to left (which Huang and Ma (2001:8) mistakenly transpose to ‘left-to-right’), rendered account books significantly different in appearance from DEB books. Their ‘bivertical’ physical layout placed entries for income and ‘owing’ accounts at the top of the page, and entries for outgo and ‘keeping’ accounts at the bottom. While DEB had also originally followed various layouts in different cities (including ‘top’ and ‘bottom’), the method which eventually became dominant was that used in Venice and described by Pacioli (*‘alla veneziana’*), which placed the comparable Credit and Debit entries on opposite pages of the ledger (or on opposite side of one page), in the now-familiar bilateral ‘T’ account layout with Debits on the left and Credits on the right (e.g. Yamey, 2010a: 166).

⁴⁸ No reference is given to any original source for the example entries here. Moreover the kind of ‘mill’ from which calico is purchased in the first transaction is an industrial mill which suggests a late 19th century/early 20th century context rather than any earlier.

then in the ledger account for calico inventory as a debit amount cross-referenced to the folio (or identifying number) of that journal entry and stating ‘To X cotton mill’ (maybe also referencing the folio of that ledger account), and in the ledger account for X cotton mill as a credit amount cross-referenced to the folio (or identifying number) of that same journal entry and stating ‘By calico’ (and maybe also referencing the folio of that ledger account).^{49, 50}

In what the authors claim was CDEB apparently this entry (#1 in Aiken and Lu’s example) would, in their equivalent of the ‘journal’ (*Xì Liú*),⁵¹ also be entered in the same fashion as ‘disbursement for calico T100’ (in the bottom—i.e. *Fù* = pay—portion of the page) [≈ ‘Dr.’]; and as ‘receipt from X cotton mill T100’ (in the top —i.e. *Shōu* = receive—portion of the page) [≈ ‘Cr.’].⁵² However, in the equivalent of the ‘ledger’ (*Zǒng Qīng*) it would appear *in full again* in a *Cún*, i.e. ‘keeping’ [≈ ‘Dr.’] account, as ‘disbursement for calico T100’ (in the bottom portion of the page) and in a *Gāi*, i.e. ‘owing’ [≈ ‘Cr.’] account as ‘receipt from X cotton mill T100’ (in the top portion of the page), instead of using DEB’s posting method of simply cross-referencing the journal and the ledger.

Moreover, such posted entries would contain redundant information (in the relevant *Cún* account one would not need to be told again that the purchase was of calico inventory; in the relevant *Gāi* account one would not need to be told again that the purchase was from X cotton mill) while also omitting valuable information that one might expect to find (in the *Cún* account for calico one would not be told that the purchase was from X cotton mill; in the *Gāi* account for X cotton mill one would not be told that the purchase was of calico), an omission made more serious by the lack of cross-references in Chinese books (where account pages were not numbered) to assist tracing the ‘other side’ of entries (cf. Sangster, 2015a). The

⁴⁹ ‘Compound entries’ in DEB (used to reduce clerical effort and potential posting mistakes) would only be able to identify the original journal source, often appearing in the respective ledger accounts as ‘To/By Sundries’ or ‘To/By Several Accounts’ (e.g. Yamey, 2010a: 168-9). Sangster, 2015a, while arguing that ‘The difference between dual entry and double entry lies in how the contra entry is recorded. In double entry, each entry in an account must include the *location* of the account in which the contra entry has been made’ does not discuss such compound entries which would appear strictly not to fulfil his criterion for DEB (and would also appear problematic for Aiken & Lu’s description of CDEB).]

⁵⁰ Again, if the DEB ledger used ‘control accounts’ (e.g. for debtors, creditors, or inventory classes) only the ‘control totals’ would be posted from the journal and appear in the main ledger, while the related subsidiary day-books and ledgers containing the individual accounts and their detail would strictly be ‘memorandum’ books, further assisting the division of clerical duties and ‘internal control’ (e.g. Bigg & Perrins 1971, Chapter II). The use of such control accounts in Italy predates Pacioli’s 1494 treatise by about 100 years, although he does not mention them himself (e.g. de Roover, 1956; Macve, 1996; Goldthwaite, 2015).

⁵¹ The authors writing in English give only a few Chinese characters (Gardella, 1982 and 1992, is a helpful exception). We have tried to avoid repeating their usage of English terminology that reflects modern accounting concepts that may convey a misleadingly anachronistic impression (such as ‘revenue and ‘expenditure’ where there is no clear reason to believe that anything more than basic ‘in’ and ‘out’ transactions were being recorded—so ‘income’ literally means ‘come in’ or ‘bring in’ rather than the complex economic concept it now represents: e.g. Bromwich *et al.*, 2010).

⁵² We are here using ‘T’ to represent the monetary unit of taels of silver (*yín liǎng* [銀兩]).

visual structure within the purported CDEB ‘books’ and accounts was therefore quite different to that in DEB, which focussed on the reciprocal interrelationships, giving support to Aiken and Lu’s own observation (1998: 151), (followed by Ji & Lu, 2013) that the ‘ledger’ accounts for ‘Keeping’ and ‘Owing’ were not strictly equivalent to DEB asset and liability accounts but represented *increases* of assets and liabilities respectively. In other words they were more like modern ‘uses and sources of funds’ accounting statements.⁵³

Again, at a textual level, processing entries written in Chinese characters would not allow the visual summation that is possible within the columns of Western DEB books kept in Arabic numerals (as Chinese numeric characters have no place value) nor could the progress of accumulating transaction values be readily traced through the ‘books’. Evidence now available from original account books indicates that, as calculation relied on using an abacus ‘outside the books’, the results might not be systematically entered into them but quickly recalculated as and when required.⁵⁴

So two key ‘differences that make a difference’ as between the form of the (supposed) CDEB and Western DEB are, first, the lack of the Arabic numerals that allow ready visual representation of the ‘counting’ of what is ‘named’ in the accounts and their summation; and second, the repeating of entries in full at each stage of processing (rather than DEB’s system of gradual reduction of redundant information through integrated cross-referencing) which leads to *both* redundancy and omission of important information. To these must be added what is their significant consequence: no ‘automatic’ output of financial statements.

Although ‘profit and loss’ statements and statements of inventory and personal balances within CDEB are identified by most of the previous English-language authors, their expositions currently leave it somewhat unclear how the kinds of Chinese bookkeeping they describe could have actually achieved the integration comparable to DEB’s internal structure which formalizes the equation ‘profit (or loss) = change in net assets other than transactions with owners’.⁵⁵ It is this inbuilt ‘closure’ of the system that Mattessich (2000, Introduction,

⁵³ However other authors (e.g. Lin, 1992; Auyeung *et al.*, 2005; Guo *et al.* 2011) regard the ledger accounts as showing ‘assets’ and ‘liabilities/equity’, more comparable to Western DEB. They do not give any (legible) illustrations of actual account layouts or individual entries (cf. Li (2012 *in Chinese*)). Writing out entries in full would provide the customer/supplier accounts in a form that could be used as evidence in settling disputes, which may have been their primary function (a function also envisaged by Pacioli’s treatise, e.g. in his Chapter 30 (von Gebattel, 1994)).

⁵⁴ For further discussion (including discussion of what summaries of results might be prepared) see Yuan *et al.* (2016) (cf. Li, 2012 *in Chinese*).

⁵⁵ It is still a matter of choice within DEB systems how far matching of costs and revenues (e.g. by measuring cost of sales, depreciation and accruals and prepayments) is carried out continuously within the system or only at accounting period-ends when financial statements are to be prepared (Macve, 1985). Of course DEB can also be adapted to not-for-profit accounting as in its survival in Communist Russia (discussed further in Anon***,

p.13) regards as the essence of DEB, whatever form the individual accounting entries might take. The chart of the purported full CDEB system given by Lin (1992: 117) leaves it unclear which accounts in its *Zǒng Qīng* [总清] or ‘general ledger’ were for ‘real’ movements (such as changes in merchandise inventory) and which (if any) were for ‘nominal’ movements (such as ‘sales’ and ‘purchases’) that would be periodically transferred into ‘profit and loss’ and thence into equity.

So the most significant features from the perspective of the relationship of accounting to economic development, given the form of the Chinese accounts and their processing methods, are that it remains unclear how readily periodic financial statements could be prepared and how far recognisable and/or comparable bases for calculating for calculating profits and valuing assets were established.⁵⁶ Again it is not apparent—as most papers do not give analyses of any identified original records—whether this uncertainty is due to lack of surviving records, or to difficulties in interpreting any that have survived. However, Yuan *et al.* (2016) now argue from examining the surviving records of TTS (1798-1850) that such summarisation was possible even though not ‘automatic’ (cf. Li, 2012 *in Chinese*).

How widely were these various Chinese commercial bookkeeping systems used? Here previous authors have generally actually made only modest claims for any economic significance of CDEB. Auyeung and Ivory (2003: 11) claim (following Guo’s 1988 book *in Chinese*) that: ‘During the Qīng dynasty the four pillar balancing method was used by the majority of commercial firms, regardless of their size. While the three-leg bookkeeping was employed by a minority of small- and medium-sized businesses, the dragon-gate [i.e. *Lóngmén*] bookkeeping and the four-leg bookkeeping were adopted only by a small number of large scale firms.’ However, after reviewing all these developments they conclude that ‘bookkeeping was mainly valued as a more effective memory aid rather than a means of determining business profit. Profits and losses were calculated on the cash basis and hence prepayments and accruals were generally not accounted for. There was no clear distinction between capital and revenue expenditures and no attempt was made to allocate capital expenditures to accounting periods by anything resembling the present-day depreciation’.

On the other hand, Lin (1992: 116) argues that the *Tiān Dì Hé* system ‘improved the calculation of cost of goods sold and earning determination’, although he also says (p. 118)

2015b; see also Chiapello & Ding, 2005) and in the 1716-26 recommendations of the Paris brothers for French government accounting, where its main value would lie in its power to continuously and systematically integrate information originated from multiple and diverse lower-level sources of record-keeping (Lemarchand, 1999; Soll, 2014; cf. Hoskin & Macve, 2016).

that amongst its weaknesses were ‘lack of distinctive separation between capitals vs. liabilities, and capitals vs. earning’. So even those making the strongest claims for the indigenous emergence of CDEB are guarded about claiming significant economic consequences: there has not been an equivalent of Sombart for China (cf. Yamey, 1949).⁵⁷

Moreover, in looking at the recently rediscovered archive of the extensive TTS business account books that survive from 1798-1850, Yuan *et al.* 2016 have been unable to find any of the features claimed to have constituted CDEB apart from the necessary ‘functional duality’ in accounts for customers showing what they had purchased (equivalent to ‘Dr’ in DEB) and what they had paid (equivalent to ‘Cr’ in DEB) for reckoning any balance still owed.⁵⁸ As noted, the earliest examples of anything approaching ‘full’ DEB have not yet been found from before the later 19th / early 20th century, by when (and probably earlier) DEB itself, imported from the West, would have been increasingly familiar in China.

In summary it is helpful to compare the situation in the East and the West before either adopted DEB. All accounting systems have tracked movements and balances⁵⁹ of what they ‘named and counted’ and all were capable of supporting at least pre-industrial manufacture, trade and banking. In particular, it is important to note, in relation to our discussion in Section 4 below of the distinguishing features of Renaissance Italian DEB, that even if there was no fully integrated system corresponding to DEB, Chinese ‘merchant-bankers’ (like TTS) kept current accounts for customers similar to those in the West, albeit in bivertical form instead of bilateral form given the different method of reading Chinese text (e.g. see Picture 4 in Yuan *et al.*, 2016).

A distinctive feature (shared by both Eastern and Western systems before the triumph of Arabic numerals) was the role of the abacus. In the West its gradual displacement by ‘algorism’ (written numerical calculation aided by the place values of Arabic numerals, as in their positioning in the columns of DEB ledgers), would produce a different conception of the ‘account book’ as a complete, visually integrated, record of transactions and their summation and resolution into summary financial statements—‘profit and loss’ and ‘balance sheet’ (e.g. Macve, 1996). In Chinese account books the potential for rapid calculation and recalculation

⁵⁶ The development of modern, consistent conventions (what we now call ‘accounting principles’) in the West was also a piecemeal process (e.g. Gardella, 1992, following Yamey, e.g. 1977; Macve, 2015).

⁵⁷ i.e. these authors appear to favour proposition (b)(ii) of those we outline in the Introduction.

⁵⁸ And in respect of trading business often without the amounts due for goods purchased (just their quantities and prices) so that calculating and totalling the money amounts due would have required further working out (which would be very rapid) on an abacus.

⁵⁹ So it is impossible to accept Poovey’s (1998) argument that DEB ‘invented the balance’ in an account and this was the crucial origin of ‘the modern fact’. See further Anon** (2015a).

with the abacus allowed the retention of Chinese numeral characters⁶⁰ while much of the content could remain ‘outside the books’.⁶¹ This was a significant divergence between the forms of later Chinese and Western accounting. But this does not mean that it had any significance in itself for the range and scale of business activities that could be undertaken using either system (e.g. Yuan *et al.* 2016).

We next need to consider further why the Chinese ‘modernizers’ of the 1930s would have regarded DEB as the icon of the kind of accounting needed to promote China’s economic advance with which their own reforms would need to compete. How had it become such a powerful institutionalised rational myth?

4. How did the genesis and significance of Western DEB differ from Chinese accounting developments up to c.1850?

Much analysis of DEB, from Weber and Sombart on, has focussed around its ‘economic virtues’ or has framed the issue of its provenance and significance in economic or political economic terms. Such dynamics continue to the extent that, despite Yamey’s longstanding opposition (e.g. 1949),⁶² Waymire and Basu (2007) have once again drawn together a range of sources to renew support for the Sombartian and Weberian arguments for the importance of DEB, both for the economic development of Western capitalism and its business organizations, and for wider social and cultural influences in the West (cf. Yamey, 2005).⁶³ This kind of framing of DEB and its significance has a role to play, so long as the virtues of DEB are not overinterpreted incautiously.⁶⁴ DEB has acquired a status that is now so surrounded by myth that it is hard to disentangle the surviving evidence and gauge how far it has been either a sufficient or necessary response to meeting the information-processing demands for decision-making and control within a new economic and social order, or a

⁶⁰ Complemented by the specialist *Sūzhōu mǎzì* [苏州码字] numeral system which assisted abacus calculation (see Yuan *et al.* 2016, Appendix II).

⁶¹ As suggested by the artist’s impression in Macve (2012).

⁶² Confusingly, Auyeung *et al.* (2005) cite Yamey as a supporter of Sombart’s claim, as apparently does Waymire (2015).

⁶³ Waymire and Basu do not include Bryer’s (e.g. 2005, 2006) claimed Marxist restatement of DEB’s Sombartian significance (cf. the critiques of Bryer e.g. by Macve, 1999; Toms, 2010); or the arguments subsequently advanced by Edwards *et al.* (2009) for DEB’s significance based on the ‘prospectuses’ of authors of accounting treatises. See also Chapman *et al.*, 2009 (Introduction).

⁶⁴ For example, many (including Waymire and Basu, 2007) have cited Goethe as saying ‘It is among the finest inventions of the human mind’. But Goethe puts these words into the mouth of Werner in *Wilhelm Meisters Lehrjahre* (I.10). Werner is an anti-hero so we need to respect the distinction between what fictional characters say and what their author believes (Macve, 1996).

sufficient or necessary instrument in creating that order—or indeed how far it exhibits both characteristics in a ‘positive feedback system’.⁶⁵

While Miller & Napier (1993) long ago deplored its excessive elevation to being the keystone of accounting, fascination with the phenomenon of DEB, and with Pacioli’s first printed exposition of it in 1494, continually re-emerges as does belief in its economic significance (e.g. Bryer, 2005, 2006; McCarthy *et al.*, 2008; Sangster *et al.*, 2008; Edwards *et al.*, 2009; Padgett & Powell, 2012; Gleeson-White, 2013, Soll, 2014, Dean *et al.* 2014; cf. Toms, 2010; Yamey, 2010b; Robertson & Funnell, 2012; Goldthwaite, 2015; Matringe, 2016).⁶⁶

As noted, in exploring the development of Chinese bookkeeping and accounting over the corresponding centuries preceding the 1949 Communist transformation of economic and social forces and relations, it has been characteristic for researchers to take one of two approaches. The first is to take the Sombartian-style approach and see Chinese ‘failure’ to develop, or import, full Western DEB until relatively recently as at least a symptom, if not a cause, of its ‘failure’ to embrace modern industrialisation on any scale until the first half of the 20th century, some 150 years or more after the conventional dating of the start of the British Industrial Revolution (BIR). Alternatively, a more sceptical view of the significance of DEB in Western economic development has been taken (e.g. Gardella, 1992, Goody, 1996, following *inter alia* Yamey’s work) and consistent with Coase’s (1973) theoretical arguments for the irrelevance of accounting’s conventions to business decision-making.

⁶⁵ The non-existent presence of DEB beyond bounded or potentially centripetal entities (the merchant business, the family bank, then the houses and head offices of individual religious orders) but not for the state (even in the ways of thinking and acting of Colbert and the Paris brothers, cf. Soll, 2014; Hoskin & Macve, 2016), nor for the Roman Catholic Church as a whole (cf. Quattrone, 2004) needs factoring in, insofar as ‘pure’ business activity beyond state is in general a relatively small sphere of activity. ‘Big money’ (in trade and finance) is cross-state activity (entailing business-state/states diplomacy) or state-supported activity (e.g. the Dutch (VOC) and British East India Companies) transforming funding, ‘going concern’ and ‘influence’ prospects. Different versions of the same issues arise under the managerial revolution and subsequent oligopoly/state relations (e.g. Hoskin & Macve, 2000) as well of course in modern states such as China (e.g. Ramanna, 2013; Deng & Macve, 2016).

⁶⁶ The major issues are reviewed in Macve (1985; 1996; 2002). As argued by Yamey (e.g. 1994) scepticism about how essential was DEB as a tool of capitalism’s advance would suggest first the need to distinguish carefully between any reading of DEB as a cultural ‘symbol’ of capitalism’s rationality and morality and an empirical, historical identification of the nature and extent of its use in practice by capitalists; and second a related need to distinguish claims made by those advocating its use (such as the writers of accounting treatises and teachers of DEB) and its actual advantages in practice, given how new ‘information technologies’ have been and are still rhetorically ‘oversold’ as essential to business success and/or organisational efficiency. Even if the authors of treatises and their publishers (Tomlin, 2014) were convinced themselves (Edwards *et al.*, 2009), they wanted to sell their books and/or attract pupils to their classes, so that, as with those who evangelise management techniques today, they had incentives and, under the traditional rhetorical commitment to presenting the good cause eloquently, justification for overselling the vaunted business efficacy of DEB. With the advent of the late 19th century professionalization of accounting, the need for a hallmark of their (contestable) distinctive professional knowledge (Abbott, 1988) would have given another boost to the propensity of auditors and other

Evaluating the historical merit of these respective positions and their resulting understanding of Chinese development is complicated by the continuing debate on both the origins of DEB and its significance in relation to Western post-medieval and modern economic development. Did it originate outside of or before late 13th century Italy? Was it integral (and if so how?) to Renaissance or Reformation capitalism and the subsequent centuries of development of commerce, trade and industry (and if so how are its relations to state rule and government activity to be factored in and analysed or understood)? Was it subsequently integral to promoting the capital formation needed for the constitution of—and then measuring and managing the results of—firms of ever increasing scale, starting with the BIR in the 18th century? Or was it a technology of only limited and patchy adoption and import until it became an integral constitutive feature of the nineteenth-century US ‘managerial revolution’ when it discovered the power and significance it manifestly holds today (e.g. Hoskin & Macve, 1988; 2000)?

We do not explore these questions in depth here but will look in a subsequent paper (based on Anon***2015a) more fully at the significance of the knowledge developments in medieval and Renaissance Europe and how these were exemplified in the invention of DEB. But for comparison with China we shall need to undertake here at least some ‘archaeology and genealogy’ (e.g. Foucault, 1977, 2009; Hoskin & Macve, 2016; cf. Power, 2011) of the respective practices through which *writing-based* instruments (such as forms of accounting, paper money and management texts) were articulated and implemented in the respective literate cultures.

Such a form of analysis needs to respect differences in such necessary vehicles of knowledge as (A) textual layouts, (B) sign systems and (C) forms and institutions of teaching and learning. While both the West and China had paper and printing techniques by the time of Pacioli (the Chinese inventions having begun at least 1300 years earlier), Chinese modes of writing—characters and layout—are strikingly different from those of Western alphanumeric systems (Robinson, 2009).

Building from Goody's starting point (e.g. 2006; 2009) of the importance of forms of literacy and communication, two linked conceptual provisos are now needed to guard against Occidentalism. The first is not to start from a naive *graphocentrism* (where *writing* as such is transformative, cf. Ong, 1982, Harris 2000) by noting that accounting was doing its naming and counting long before writing and having transformative effects (e.g. Damerow, 1999;

accountants to recommend adoption of DEB to replace traditional ‘charge and discharge’ accounting, whatever the disputed technical merits of the alternative systems (e.g. Baxter, 1980; Jones, 1992).

Ezzamel & Hoskin, 2002). The second is not to start from a naive *alphabet-centrism*: doing written accounting within alphabetic cultures before the 12th century may be less effective than in non-alphabetic cultures like the Chinese precisely because in the latter the characters within which the accounting is done are not tied to one spoken language⁶⁷ (so for trade and exchange this may be beneficial and there is no greater effectiveness discernible in older alphabetic culture accounting (cf. Macve, 2002)).

This then changes in the West from the 12th century because alphabetisation finally moves beyond *phonocentrism*, with differing alphabets representing different languages, to having one alphabet across a range of vernacular languages in addition to Latin, together with the development of *alphanumericism* (ultimately incorporating Arabic numerals). But this also enables a new mode of ‘making sense’ across multiple texts, within and beyond any given ‘language’: indeed commercially there emerged a new ‘language’, the so-called *lingua franca*, developed in the context of the circulation of goods and currencies in medieval fairs and then through merchant houses—some of which became ‘merchant banks’—across the western European states.

There is therefore a new textual-linguistic horizon for engaging in a whole range of knowledge fields, including both scholarly fields such as theology and law, and practical fields such as commerce and banking. Indeed Foucault suggests in ‘Truth and Juridical Forms’ (the 1974 lectures that foreshadow *Discipline and Punish* (1977)) that there is a new ‘form of knowledge’ that comes into play in this European knowledge world, which he designates as *enquête* or ‘inquiry’ (Foucault, 2001), and which he describes as constituting a new form of thinking and acting, which dominates Western frames of thought and action until around 1800, when it is superseded by a new form of knowledge, ‘examination’.⁶⁸

In the context of this paper this is significant for raising in a new way the possibility that DEB differs from modes of Chinese accounting before the 19th century, insofar as it exemplifies not just a new way of engaging with sign systems (the alphanumeric move) and textual formats (the cross-referencing move), but also a way of thinking and acting, through

⁶⁷ The Chinese characters are still mutually intelligible whether the spoken language is Mandarin, Cantonese, Hokkien etc. or even (partially) Japanese. Until the 20th century the traditional characters and their meanings were also shared in Korea and Vietnam https://en.wikipedia.org/wiki/Classical_Chinese; https://en.wikipedia.org/wiki/Written_vernacular_Chinese; <http://www.ancientscripts.com/korean.html> (all accessed 30.7.2015).

⁶⁸ Although delivered in 1974, these lectures were not widely available for over 20 years. Yet their specification of ‘inquiry’ as the dominant ‘form of knowledge’ up to 1800 suggests that the claim made in Hoskin and Macve (1986), that DEB is a product of *examination* is misplaced (cf. Hoskin and Macve, 2016). Analysis needs instead to be directed to the genesis of *inquisitio* (‘inquiry’) as new ‘form of knowledge’, as Foucault characterizes it, which generates a new mode of thinking and acting, one of the precipitates of which is DEB.

'inquiry' as form of knowledge, which develops in the West in a way that is not found elsewhere down to the nineteenth century, except insofar as it is internalised beyond the European world through contact with, and adoption of, inquiry based forms of knowledge.⁶⁹

Foucault's new 'form of knowledge' found in Europe from around the 1100s can be characterised as a way of knowing (and of thinking and acting) which is predicated on a new principle of 'synoptic graphocentrism'. This is arguably a new kind of 'truth game': 'graphocentric' on the one hand (since *everything* for consideration and analysis is now first turned into writing), but on the other hand also 'synoptic', in terms of the form of viewing at once of all the multiple texts now assembled together.

We take up this possibility here to try to differentiate between the kinds of accounting undertaken in western Europe from the thirteenth century, particularly in the form of DEB, and the kinds of accounting undertaken both in Europe before the shift to DEB and globally. Insofar as this is a reading, writing and textual shift which constructs a new subject position for the 'knower' (the position which we have labelled as 'synoptic graphocentrism') this is arguably a possible point of differentiation between Western accounting and Chinese accounting from this time going forward: but it is not just a differentiation at the level of technique (as regards the practices for making entries and for keeping sets of books); it is also a differentiation in emergent 'forms of knowledge' in the West, and in associated ways of thinking and acting.

In short, under this analysis, the West discovers what can be called 'graphocentric synopticism'.⁷⁰ So, following Goody, DEB 'makes sense' as an accounting that adopts this principle and incorporates Arabic numerals into the graphocentric statements that it makes,

⁶⁹ It is now suggested (e.g. Hoskin & Macve, 2016) that 'inquiry' as specified by Foucault is less a transformation in a legal or juridical form and more a consequence of inquiry becoming the form of scholarly reading articulated around 1130 AD by Abelard in his *Sic et Non*, as the way of resolving contradictions in biblical commentaries. This requires gathering together all the sources with doubtful or ambiguous passages on a given theological problem, so constructing a 'population' of texts, and then subjecting all to a critical reading where all are compared and the contradictions resolved. But this therefore entails a textual apparatus of breaking each text in the population into chapters and verses and then developing marks to enable a cross-referencing of each and every passage that needs to be 'resolved'. On the one hand this is precisely the textual set-up employed by DEB, on the other it constructs a new 'subject position' for the reader of such texts: a 'synoptic' position where all the texts can be compared, contrasted, analysed and resolved to produce a textual 'truth' that cannot be generated in any other way.

⁷⁰ We recognise however that it is possible that Chinese science already had its version of this to be so successful as science, and perhaps Chinese accounting did too, beginning in the Imperial state administration (see Section 3). Brandt *et al.* (2014, p.93) comment that the structure of Chinese national and local government under Mao still 'resembled an M-form, with a large number of relatively self-sufficient provinces and prefectures'. Elman (2005; cf. 2006) gives examples of how the visual representation of scientific illustrations brought by Western missionaries was given very different forms in the Chinese treatises that incorporated them.

and so is unlike other (including earlier Western) accounting systems, whether inscribed in alphabetic or ideographic sign systems.

Given this, an ‘analytics’ of accounting needs to consider how and how far this may have affected the conditions of possibility for the emergence in China, first of Western-style DEB and, much later, of modes of exercising knowledge-based power of the calculation-centred kind that developed in Europe and the US by the mid 19th century and have been labelled ‘grammatocentric’ and ‘panoptic’ (e.g. Thompson, 1991, 1998; Hoskin & Macve, 2000; Anon***2015b).⁷¹

This does not mean that if CDEB was to be seen as in some sense ‘fully matching’ Western DEB we would need to find similar sufficient conditions in China. However, we suggest that it is helpful to take into consideration, in beginning an analytics of these two systems, conditions such as the differences in (A) textual presentation and (B) sign system (including the traditional writing of Chinese number characters), plus (C) the different institutional arrangements for education and examination at the highest level, where we perceive a significant change in Europe (in particular in its universities) from the twelfth century, a change that was not matched in the Chinese context, where its educational peak—the traditional Confucian Civil Service Examination—was abolished only in 1905, nearly at the end of Imperial rule (Elman, 2000)).

Here our argument is that, once DEB had arisen in Europe, its practice (and so its power to define accounting) was gradually disseminated over subsequent centuries by becoming embedded in a range of institutions. Pacioli’s *Summa* in 1494 began a succession of printed treatises that spread throughout Europe (including England and Scotland). Certainly, their authors and especially the teachers in commercial schools such as those in London (Edwards

⁷¹ Here we draw on the analyses made by Thompson of the introduction, particularly from the 18th century, of ‘visual techniques’ such as graphs, charts, and tables to supplement European accounting’s primary texts, the books kept in DEB format (and also those kept in stewardship charge/discharge formats). This is no longer a pure ‘grapho-centrism’ since the words and numbers of conventional accounts are supplemented through ‘visualisms’, which remake our thinking and acting yet again. Such visualisms also arguably make possible a new general translatability of accounting and economic ‘information’ beyond alphabetic contexts (whether monolingual or multilingual), thus making the development of a Chinese form of ‘Western’ accounting more feasible, particularly at the levels of a shared or similar ‘thinking and acting’. We suggest that the move beyond the alphanumeric frame, both through the new visuals and the ‘escape’ from alphabetic signifiers, means that this should be understood as a ‘grammato-centric’ rather than a ‘grapho-centric’ engagement with constructing ‘truth statements’. Furthermore we suggest that this can no longer be a ‘synoptic’ truth game, since that implies that everyone can occupy one and the same position for reading the texts that are for ‘critical reading’. This is instead a ‘panoptic’ truth game, since multiple positions can be taken up, focussing on different multiple sets of texts, as the accounting ‘truth game’ is prosecuted. This is what might be seen as taking place increasingly in the Chinese context since the 1980s ‘reform and opening’ initiated under Deng Xiaoping. But for the period of our concern here, synoptic graphocentrism (or the forms of panoptic grammatocentrism that follow it) is a way of thinking and acting that constitutes a difference that makes a difference between the accounting practised in the West and in China.

et al., 2009; Edwards, 2009) and Antwerp (e.g. Soll, 2014) had a commercial interest in rhetorically arguing for its merits, but this was a distinctively different way of doing accounting and of thinking and acting through it. So, while ‘trade’ was typically still sneered at by the gentry, nevertheless the growing economic and political power of the middle classes in Europe (and perhaps especially England and the Netherlands) provided an environment in which financial, business and accounting skills acquired respectability as a ‘useful’ form of knowledge (Edwards, 2009; cf. McCloskey, 2010), even if its utility was not necessarily that assumed for accounting in a general, ahistorical way—‘outside time’—today.

Apart from its practical utility, DEB gained an intellectual cachet in Europe and its colonies. Books in DEB and the successful merchants who used it both became a subject for artists (Yamey, 1989; Soll, 2014). In France it was proposed in the early-18th century for reforming the state accounts and accountability (Lemarchand, 1999; Hoskin & Macve, 2016). By the mid-19th century the emergent accounting professional bodies (on both sides of the Atlantic) adopted DEB as a badge of their distinctive knowledge.⁷² And respected economists and sociologists such as Sombart and Weber were further elevating its discursive status by asserting it to have been a key factor in the development of Western economic reason.⁷³ Such encomia to accounting are not encountered in China; but in Europe their cumulative effect has arguably been to elevate the supposed powers of DEB to the status of institutionalised rational myth (e.g. Macve, 2015).

In contrast, it is at this point difficult to find any comparable significant institutional or intellectual developments in Imperial Chinese economy and society that could have similarly reinforced the status and visibility of its indigenous commercial accounting. Instead its accounting appears to have remained essentially a set of textually and abacus based techniques for simple processing of transactions (with little evidence of how far there was systematic abstraction of information into higher-level accounts or analyses)—techniques that were individually developed and /or simply passed on informally from one practitioner to another within a lowly regarded stratum of society, or with local improvements perhaps often regarded as business secrets. While there were increasingly wealthy merchant guilds where information could be exchanged (e.g. Brandt *et al.*, 2014), there was no ‘epistemic community’ (Huff, 2003; Cross, 2013) comparable to that to be found in the economic, civil and educational institutions of the West. Likewise, there were no comparable professional

⁷² We shall explore the development of industrial capitalism and modern managerial and financial capitalism and its consequences for Chinese accounting and management further in Anon*** (2015b).

accounting bodies or associations until the early 20th century when they were established in major urban centres under Western influence (e.g. Deng and Macve, 2016).

The focus of this paper remains primarily on Chinese developments rather than on DEB as such (cf. Anon ***2015a). But in this section we have perhaps developed a case for seeing DEB as not just differing in technical aspects from Chinese accounting before the late nineteenth century, but also as a manifestation of a way of thinking and acting which begins from the twelfth century to differentiate Western ‘reason’—and the textual forms through which it is expressed—from forms of rational knowledge in other highly developed literate civilizations. In this way, this analysis follows an argument made by Goody (e.g. 2006, 2009), about the importance of paying attention to the forms of literacy and pedagogy through which a given literate elite is formed. Its thesis is that DEB ‘makes sense’ as an accounting that is the outcome of a way of thinking which operates under the principle of ‘graphocentric synopticism’, a principle which is not one adopted as the major way of thinking in the Chinese world until after the later nineteenth century.

In the light of such a reformulated interpretation of the textual and institutional ‘conditions of possibility’ for DEB, we consider that any case that DEB emerged solely as a response to new commercial and economic conditions, and in turn catalysed and accelerated their further development, continues to be misplaced. One collateral outcome of this interpretation is that Sombartian-type arguments that such a change in the *form* of accounting must have had major economic consequences remain unsubstantiated. Moreover, the objections developed e.g. by Yamey (see Macve, 1996), that its *content* could not have been the spur for Europe’s commercial and economic development, whether in the Renaissance or subsequently, gain credence the more, as noted above, the evidence for the uses made of DEB before the modern business revolution is analysed without a presumption that merchant or banking practice ‘must’ have been essentially modern.

So if the supposed power of DEB as rational economic device is more an institutionalized rational myth than a defensible historical thesis, then it becomes increasingly incumbent (as argued in Section 3 above) to maintain a healthy scepticism over the supposed efficacy of a presumed ‘CDEB’, and to emphasize the probability that this construct was in turn articulated as a ‘counter-myth’ during a period, in the 1930s particularly, when certain Chinese scholars were seeking to promote the adoption of a Western accounting approach (perhaps in a form of ‘Occidentalism’), but without departing too far from earlier Chinese

⁷³ For doubts about claims that Marx shared these views, see Macve 1999; Fleischman & Toms, 2015 (cf. Chapman *et al.*, 2009).

accounting practice. So if they could claim there was an indigenous CDEB, and one which could be argued to have played a significant role in China's pre-Divergence mercantile economic success, then their case could be strengthened for building on this CDEB to constitute a new form of DEB 'with Chinese characteristics', rather than adopting the Western form of DEB as such. Thereby the Western model of 'modernization' might be adopted but in an appropriately Chinese form.

5. Evaluation of the historical significance of Chinese accounting

The Chinese history that has been reported in Western literature to date has, with minor exceptions, followed a common pattern as set out in Section 3 above (and the Appendix). We therefore conclude by commenting both on the bookkeeping developments and on the accounting principles that have been revealed, in the light of our main questions about the purported economic significance of CDEB, and correspondingly of DEB, in their respective economic hemispheres, and about possible transfers between the two.

It is clearly necessary to avoid terms such as 'relative sophistication' in seeking to understand and evaluate CDEB and Western DEB. However we have enough to support efforts (e.g. Hoskin & Macve, 2000; Macve, 2015) to continue to question the traditional view of accounting as adopted by many economic historians, including here Gardella (1992: 320; see also 1982: 62), who argues that 'technical changes in accounting practices have followed, rather than anticipated or determined, changes in the structure of Western economies... In this respect, at least, late imperial China and the West up to the mid-1800s appear to have shared common ground.'

We have argued first that Western developments cannot be *simply* understood as rational adjustments of technique to changing business and economic conditions. Yamey (e.g. 1949) has long ago warned us that Renaissance capitalism and its successors did not rely on rigorously kept DEB accounts for their success: it may have been useful but it was far from universally used (e.g. Robertson & Funnell, 2012) so clearly was not essential (e.g. Macve, 1985) and there was more accounting being done than was needed for economic and business efficiency (Goldthwaite, 2015). This has led to our support for the argument that its genesis needs to continue to be sought outside the wholly commercial sphere, and instead focus on conditions of possibility which affect in a more general way how humans think and act (and in the case of literate cultures write and read) in particular historical settings.

Second we have argued that the purported development of CDEB, as expounded by previous authors in Western literature, still leaves many details unclear and is unsupported by clear archival evidence. The ‘four column’ balancing attributed to the Táng and Sòng dynasties (early 7th to late 13th centuries AD) seems no more technically advanced than that found in ancient Greek and Roman records and, while the claimed tripartite processing from a ‘waste book’, through a ‘journal’ to a ‘ledger’ would parallel DEB, in the absence of identification and clear reproduction of what original documents have been found it is hard to envisage precisely how the *Cǎo Liú*, *Xì Liú* and *Zǒng Qīng* were interrelated in a set of ‘account books’, and how the *Hóng Zhàng* ([红账] = ‘red account’) was prepared from them as a summary financial statement. The descriptions available in English of even the most developed form of the CDEB *Lóngmén* system (the *Tiān Dì Hé* system) leave it unclear how far there was full integration and articulation of equity and correspondingly a profit and loss account and balance sheet that were an output of the system rather than a supplement to it.⁷⁴ Moreover the ‘accounting principles’ deployed for determining profits also appear to have remained confused and underdeveloped (although this was true in the West also until the rise of the joint stock company and the growth of external passive investment requiring financial reports on directors’ stewardship and business performance spurred efforts to rationalize and ultimately standardize them (Yamey, 1977; cf. Macve, 2015)).

While there has been speculation by previous authors as to Chinese accounting’s uses for management decision making and control, there is little positive evidence for this given the absence of (i) supporting management correspondence, ‘minutes’ etc., and (ii) the lack of treatises or professional guidance to provide illustrations. Moreover, there appears to be no evidence of any Chinese business entities combining some kind of staff office structure with the constant processing of accounting and statistical information that Chandler (1977) sees as necessary to enact the kind of ‘administrative coordination’ that distinguishes the modern Western business enterprise from any predecessor entities, beginning in the US in the first

⁷⁴ See e.g. Yuan *et al.* 2016 and Li, 2012 (*in Chinese*) for examples of summary statements of results. Without seeing the original documents it is not possible for us to know the nature of any ‘equity’ accounts that other authors refer to and whether any ‘owners’ equity’ there may have been was equivalent to equity/capital in Italian DEB accounting (what in Mattessich’s (2000) view is the essential hallmark of DEB). Yuan *et al.* (2016) have not identified equity accounts as such in the 18th-19th century TTS account books (see also Yuan, 2010, *in Chinese*). Guo *et al.* 2011 identify ‘equity’ accounts but not until the Guāngxù period (1875-1908) late in the Qīng dynasty, by which time practices ‘had converged with Western bookkeeping’. We shall analyse and discuss further the later (20th century) accounts of the Zīgòng salt-mines (brine-wells) as reported by Auyeung *et al.*, 2005, and comparisons with Japanese developments in the Meiji period, in Anon***2015b.

half of the 19th century (Hoskin & Macve, 2000).⁷⁵ The potential for combined work by Chinese and English-language accounting experts on original Chinese records as they become available remains largely untapped here also.

Third, while we have not attempted to explore the possibility of any historical transfer from China underlying the creation of Western DEB, we have also challenged the general acceptance by previous authors in Western literature that ‘full’ CDEB was a wholly indigenous development, as the evidence supporting its appearance is to be dated only to the late 19th or even early 20th centuries.

However we suggest that our most important contribution in this paper has been to unravel how the previously claimed indigenous emergence of CDEB about the middle of the seventeenth century is itself an unwarranted transposition back in time. The Chinese literary evidence now offers an understanding of how the supposed invention then of CDEB is itself a later projection back from the conditions of the 1930s in order to bolster the arguments for ‘adapting’ and modernising traditional Chinese accounting practices rather than replacing them with the, by then familiar, ‘Western’ DEB. Faced with the institutionalized rational myth of the economic significance of DEB a counter-myth—indigenous CDEB—was seen as needed to offer a viable alternative that could help explain China’s pre-Divergence economic success and could empower it again in China’s early 20th century modernization.

In the light of the first-hand evidence now emerging (e.g. Yuan *et al.*, 2016), the stage of development actually achieved by earlier Chinese bookkeeping appears to have contained only as much ‘duality’ in processing transactions as was needed for the kinds of business being carried out. Bankers (in the West and the East) need to be able to record transfers in and out of customers’ accounts, and traders buying or selling on credit similarly need to record the effect of purchases and sales, and then the offsetting payments and receipts in due course, in order to keep track of what they owe to suppliers or are owed by customers. Any recording of inventory acquisition and use needs similar dual (or ‘doubled’) recording. But while traditional Chinese bookkeeping clearly contained this level of ‘natural’ or ‘functional’ doubled entries, as currently understood it relied on use of the abacus as part of the accounting system and did not in any clear way go beyond this to a full integration and internal cross-linking of the Western DEB type. There was no ‘double-entry’.

While we remain open to being convinced by the discovery of further evidence from original records (or more expert interpretation of the existing evidence), our current view, on

⁷⁵ Developments in China after 1850, and the possibility of interactions with US developments, are to be discussed further in Anon***2015b.

the basis of what the archive shows—but also does not show—is that such evidence/interpretation is unlikely to be forthcoming and there was no ‘CDEB’ before the later 19th / early 20th century when it was most probably an adaptation to ‘Chinese characteristics’ of the DEB that was by then becoming increasingly familiar.

So finally how do we see Chinese bookkeeping and accounting’s role in Chinese economic development? And how does that affect our understanding of the role of accounting, and in particular of DEB in the West during this period? For the period up to 1850 there is evidence now increasingly recognised by economic historians that the Chinese economy had had an active mercantile and banking sector, with some links to overseas trade, and probably a comparable standard of living to Europe in certain aspects. The bookkeeping and accounting systems that were developed (albeit that we have argued they did not constitute a CDEB) were clearly sufficient, if not to promote, at least not to inhibit the growth of that activity.⁷⁶

Controversies over the extent of the marketisation of the Imperial Chinese economy seem likely to continue, as they have over the ‘embeddedness’ of the Ancient Greek and Roman economies (Macve, 2002). But just as in those earlier cases it does not seem reasonable to believe that the absence of DEB was a significant brake on what market-oriented activity was developed then (Macve, 1985), neither does it in the case of China. This is consistent with Yamey’s sceptical view of the significance of DEB for capitalism’s development in the Renaissance, and therefore also consistent with our view that the origins of DEB lay outside commercial needs, albeit that its precipitates included some favourable influence over those developments so that gradually it became itself so embedded an institution that ultimately (as is the situation today), it became almost impossible to imagine ‘non-DEB’ commercial accounting.⁷⁷

While on balance, of the logical possibilities outlined in the Introduction, we therefore favour proposition (b)(i) [that China’s lack of DEB (or an equivalent CDEB) was no handicap to its economic development],⁷⁸ we may as yet have prompted more questions than offered definitive answers. But the emerging archival evidence lends no support to the conventional exposition of China’s development of an indigenous CDEB.

⁷⁶ We shall consider further the issues relating to Chinese industrialisation and the advent of modern management in the early 20th century, and the reasons for the ‘takeover’ then by Western DEB, further in Anon*** 2015b.

⁷⁷ Or, increasingly, non-DEB public sector accounting (e.g. Hoskin & Macve, 2016).

⁷⁸ and (c)(i) [that the accounting developments in China before CDEB were indigenous].

Given our problematizations of the developments in both economic hemispheres, we have argued that any assessment of the institutional significance of the developments in the role of bookkeeping and accounting in pre-modern China needs to reflect the particular characteristics and history of Chinese political, social and economic organisation—and in particular its modes of visual representation of words and numbers as compared to the Western forms that developed from the 12th century.

So the ultimate acknowledgement in China of Western DEB as ‘superior’ during the developments after 1850 (at least until the Communist era, and revived again after Deng Xiaoping’s 1978 reforms) reflect as much changing power-relations and the rhetorics of ‘modernization’ (as undertaken in the West as well as within China itself) as any inherent technical superiority of DEB.

6. Concluding remarks

A major handicap until recently has been the lack of access by English-speaking researchers to significant original archives of Chinese accounting records.⁷⁹ But these are now being rediscovered in increasing numbers so there is now an urgent need for continuing collaborative research between Western and Chinese accounting scholars and historians to share and further debate understandings, insights and interpretations of what those archives may reveal and thereby bring more illumination to the arguments we have rehearsed here.

Our primary aim here has been to clear the ground by sweeping away the tangled undergrowth of misconceptions that have accumulated in the existing literature and to indicate what we believe are the more important questions that should in future guide Western and Chinese researchers, preferably working collaboratively, in approaching the original Chinese archive material that is now opening up. There is a need to further test the arguments, developed both here and in wider existing research literatures, about the historical roles of the microtechnologies of accounting (e.g. Woolgar & Neyland, 2013) in constituting significant domains of economic activity and of organizational and social structure in both the East and in the West.

As cross-cultural interpretations of China's past change, one can only speculate on what a fuller understanding of these Chinese institutional traditions (e.g. Brandt *et al.*, 2014) may imply, for example, for the nature and success of the current and ongoing 'translation' of the modern Western-based apparatus of international accounting and auditing standards (e.g. Mennicken, 2008, 2010; Kettunen, 2011; Macve, 2015) for adoption in modern China, in a context where China is increasingly gaining confidence in promoting its own agenda for developing an 'international' accounting and auditing profession with 'Chinese characteristics' (Deng & Macve, 2016). In turn, this reformulation may have potentially significant implications for the future path of globalisation (Chiapello and Ding, 2005) and in particular, now that China has joined the global standard setters,⁸⁰ for the worldwide project for internationalisation of accounting and auditing standards.

Our exploration here has been focussed primarily on accounting but in a certain respect it follows a wider form of analysis consistent with that which Needham himself developed, as he became convinced that differences between the West and China in the use and diffusion of scientific and technological innovations were explicable more in terms of differences in

⁷⁹ Combined with what is generally a minimal understanding of Chinese language and writing among those of Western upbringing and education.

⁸⁰ See e.g. Ramanna, 2013.

political, economic, social, religious and educational organisation and practice than in any differences in scientific or technical ability *per se* (e.g. Needham in Temple, 2007: 10-11): they were primarily socially constructed (e.g. Hacking, 2000). It also respects approaches that have focussed on possible factors, whether structural or contingent, that could have produced the developments in the West that led to the Renaissance and then to the Scientific Revolution there (e.g. Sivin, 2005); and it resonates with the work of Goody (e.g. 1996; 2006; 2009) which has challenged Occidental assumptions, where we have also shown how Occidentalism has historically not only affected Western attitudes to the East but also reciprocally Eastern attitudes to the West—attitudes that may be changing again as China pursues its own form of ‘hegemony’ vis a vis the Western neoliberal ‘Washington consensus’ (e.g. Reich and Lebow, 2014).

APPENDIX: CONVENTIONAL HISTORIES OF THE STAGES IN THE DEVELOPMENT OF CHINESE BOOKKEEPING

An outline of the detailed stages that have been set out by the researchers writing in English, as summarised in Section 3, is as follows:

1. While the early Chinese beginnings of written accounting share similarities with those in Mesopotamia (Macve, 1993),⁸¹ the first bookkeeping, found from the Western Zhōu dynasty (1100-771BC)—where government accounting was far more advanced than any non-government accounting—was single-entry and used a kind of rough memorandum/waste book, the *Cǎo Liú* to jot down transactions (in quantities not money) as they occurred for subsequent classification in a set of accounts, the *Zǒng Qīng*, under various transaction categories of receipt (*Rù* [入]: ‘in’) and disbursement (*Chū* [出]: ‘out’). The difference between *Rù* and *Chū* gave the balance of the account (this was called the ‘Three Column’ or ‘Three Pillar’ balancing method),⁸² as in all Chinese accounting records, the writing, written from top to bottom, was in columns arranged from right to left. Aiken and Lu (1993) and Li (2007) [an ‘official’ history] describe the hierarchy of government officials, the organization of the government accounting system and the kinds of taxes and tributes collected and how their collection and disbursement were recorded and audited.⁸³
2. Following the writing and currency standardisation under the first Qín emperor (Qín Shǐhuáng [秦始皇], who ruled 221-210BC) accounts could also be kept in money terms. Despite Confucian distaste for activities aimed at profit (*lì* [利]) and legal discrimination

⁸¹ However, Robinson (2009: 7) summarises the archaeological case against Schmandt-Besserat’s argument that the external marks on the clay *bullae* that contained tokens counting sheep, bushels of grain etc. ‘were a step towards the marking of clay tablets with more complex signs, and the consequent emergence of writing’. It may be noted that Mattessich (1994) is cited by Lu and Aiken (2004) in support of the view ‘that the ancient Sumerians practiced a kind of double-entry record keeping some 5000 years ago’. Mattessich’s argument here is unconvincing. Arguments like this for ‘ancient’ examples of DEB unjustifiably extrapolate from the basic functional duality of asset (inventory) movement accounting, reciprocal debtor/creditor accounting and summarisation of detail, which are found (both with and without monetary amounts) in many cultures and also form basic elements of—but do not in themselves constitute—the full DEB system. They may also obscure other intriguing features of early accounting tablets such as the combination of hypothetical entries (amounts of beer or bread to be produced) with actual ones (amounts of raw materials inventoried), noted by Nissen *et al.* (e.g. 1993: 34-35; 46-49) as a distinctive feature of certain tablets dateable back to Uruk. Ancient Western accounting could also reach a high degree of complexity in interlocking accounting systems, e.g. for the multiple sub-entities of a large estate in 3rd century AD Roman Egypt (Rathbone, 1994; Macve, 2002).

⁸² *Sānzhù jiésuàn* [三柱結算]. According to Lin (1992: 106-7; 2003: 85) the balance was called *Yú* [余] and the accounts also included ‘net worth’. However, it is not clear how ‘net worth’ could be calculated if only physical quantities were being recorded. If there were inventory-type or liability-type accounts as well as receipt and payment accounts, it is also unclear how opening balances would have been dealt with at this stage in order to check the accounting accuracy.

⁸³ Presumably all in kind, including any silver and other precious metal as ‘bullion’, although cowrie shells (*bèi* [貝]), which have also been so used in many other cultures (Davies, 1994: 36), were already in use as a form of currency. Metal currency objects did not appear before the Eastern Zhōu dynasty (770-256 BC) and coins not before the Qín dynasty (221-210BC): http://primaltrek.com/chinesecoins.html#Introduction_and_History (accessed 02.09.2011).

against merchants, non-government accounting for commercial activity grew and used the terms *Shōu* [收] for receipt and *Fù* [付] for disbursement. Apparently accounts receivable and payable classifications also appeared.⁸⁴

3. As discussed in Section 3, by the end of the Eastern Hàn dynasty (25-221AD) paper was used and the abacus had become popular. According to Lin (1992: 106), followed by Solas and Ayhan (2007: 164), the concept of ‘profit’ (but not yet a process for determining it) had appeared in Chinese literature.
4. During the Táng and Sòng dynasties (618-907; 960-1279AD), when commerce became less restricted, both government and non-government units now used either the terms *Rù* and *Chū* or *Shōu*⁸⁵ and *Fù* for income and outgo. Accounting reports were required at regular periods and (as discussed in Section 3) were now in a regular, usually ‘Four Column’ (or ‘Four Pillar’), form showing a) Opening Balance, b) New Receipts, c) New Disbursements, and d) Closing Balance. Commercial activities and credit expanded and paper money appeared (Lin, 1992: 106-7).⁸⁶ Trade reached the Mediterranean and then Continental Europe (Aiken and Lu, 1993: 178)—although we presume this was through intermediary traders—where by the end of the thirteenth century researchers have argued the earliest examples of Italian DEB have been identified (e.g. Macve, 1996).
5. During the Míng and Qīng dynasties (1368-1644; 1644-1911AD, i.e. until the end of Imperial rule) commerce expanded yet further⁸⁷ and it is claimed that CDEB emerged, although single-entry bookkeeping still dominated. But there has up till now been no first-hand evidence for the claims made.⁸⁸ By now, in between the *Cǎo Liú* and the *Zǒng Qīng*, it

⁸⁴ Zhao (1987: 168-9) dates debtor/creditor contracts to the preceding centuries, including the use of *Qì* and *Quàn*, inscribed on bamboo or wood, with one part held by the debtor and the other by the creditor as evidence of the contract (in a similar manner to tallies, e.g. Baxter, 1994). Bound together such *Qìquàn* [契券] became a ‘ledger’ of accounts receivable and payable.

⁸⁵ Confusingly, Aiken and Lu, 1998 sometimes use ‘*Shou*’ and sometimes ‘*Sou*’ (which has no relevant meaning in modern Chinese).

⁸⁶ This paper currency (as described by Marco Polo (1958)) was used alongside more traditional exchanges made in coin, precious metals, grain etc. While accounting for ‘cash’ transactions is discussed and illustrated by various authors (see below), it remains unclear to us both the extent to which economic transactions would have been monetized at different periods, and how any transactions involving paper money/drafts would be recorded, i.e. whether as a ‘cash’ or form of ‘credit’ transaction.

⁸⁷ Zhao (1987: 181) describes a very large grocery for delicacies in Sūzhōu that lasted for over three hundred years. It had six departments, with defined managerial responsibilities under the general manager, and used what was to become a common system of internal control worldwide, i.e. that customers made payment only to the ‘cashier’ in exchange for a warrant to collect the goods from the department(s) where they had purchased them.

⁸⁸ Prof. Cao Shuji of Shanghai Jiaotong University has shown us account books from a Qīng dynasty iron mill in Shichang village (so far only published in *Chinese*) which mainly comprise daily financial records with periodic aggregations of only physical output quantities. Some photographs of a bank draft, and of transfer and deposit records from the famous *Rìshēngchāng* bank in Shānxī province in the 19th century are given by Morck and Yang (2010); and Gardella (1992: 325) gives a photograph of a sample page from the general account book of a Shānxī bank in Beijing dated 1842-44. Gardella (1982) describes and gives some photographs of simple business

has been argued there was the *Xì Liú*.⁸⁹ The *Xì Liú* organized the account entries from the *Cǎo Liú*, still chronologically (*liúshuǐ zhàng* [流水账]: ‘running water recording’—Lin 1992: 105), into a ‘top’ and ‘bottom’ layout for their *Shōu* and *Fù* aspects respectively. It was usually updated from the *Cǎo Liú* daily, and totalled every ten days (*xún* [旬]: one third of a lunar month), every (lunar) month (*yuè* [月]) and every year (*sù* [岁]).⁹⁰ From it ‘postings’ were made to the *Zǒng Qīng* (although—as discussed in Section 3—these ‘postings’ actually appear to have involved writing out the original entries in full yet again, but now marshalled under the *Zǒng Qīng* ‘ledger’ account headings).

6. With increasing commercial and credit activities, financial statements—*Hóng Zhàng* ([红账] = ‘red account’)—calculating ‘cost, profit and loss’⁹¹ were prepared from the accounts in the *Zǒng Qīng*, normally for making distributions at Chinese New Year.

7. An intermediate framework, before ‘full’ CDEB emerged, is labelled as the ‘Three Feet’ (or ‘Tripod’, ‘Three Leg’, or ‘Lame’ bookkeeping system—*Sānjiǎoshū* [三脚书] or *Bǒjiǎo zhàng* [跛脚账]).⁹² Auyeung and Ivory (2003:10) and Lin (1992: 109) date this to the mid-fifteenth century. While it still used single-entry for cash (*Yín* [银]: ‘silver’) transactions, it developed a form of doubled entry for non-cash transactions. Moreover, according to Aiken and Lu (1998: 150) the latter were apparently treated ‘as if’ the transaction had first involved a receipt/payment of (the notional) cash for the item and then a settlement in (the notional) cash.⁹³ The actual cash movements were recorded in one or more cash day-

records—the earliest from 1842—held in Columbia University’s library. Guo *et al.* (2011) give photographs of a ‘silver receipts and payments’ annual report from a pawnshop in the Wǎnli period of the Míng dynasty (1563-1620) and a ‘Red Account’ from a Shanghai private bank from the Guāngxù period of the Qīng dynasty (1875-1908) but they are too small to read and no translation is provided. (we have subsequently been shown the larger copies that Prof. Guo has and which appear in his Chinese writings. Li (2012 *in Chinese*) gives multiple illustrations of accounting records of Shānxī banks mostly from the late 19th century / early 20th century. Surviving Korean records of the Mun Clan Association from 1741-1883 are discussed and illustrated by Jun and Lewis (2006). (Some records of Chinese and Japanese accounting in the late-19th century will be discussed in Anon***, 2015b.)

⁸⁹ All three ‘books’ had several alternative names (Gardella, 1992: 324-6; Lin, 1992: 107; Aiken and Lu, 1998: 147). Aiken and Lu (1998: 148) explain how the paper was pleated in the case of *Cǎo Liú*, and ruled in the case of *Xì Liú* and *Zǒng Qīng*, to give the necessary columns and, in the case of *Xì Liú* and *Zǒng Qīng*, to show receipt entries in the top portion of the page and payment entries in the bottom portion (but they give no illustrations of original documents).

⁹⁰ These Chinese terms are given by Guo (1988b: 2).

⁹¹ Without seeing original accounts it is not possible for us to know whether ‘profit’ here meant any more than a surplus of receipts over payments, and *vice versa* for ‘loss’.

⁹² We use ‘Three Feet’ (and correspondingly ‘Four Feet’ for the later full CDEB system) as the translation for this bookkeeping system, to avoid confusion with the ‘Three Column’ and ‘Four Column’ methods for calculating the balances on individual accounts.

⁹³ See Yuan *et al.* 2016 Appendix III for a critique of this suggestion.

books/journals⁹⁴ from which, using the pre-existing ‘Four Column’ method, the actual cash balance could be obtained.

8. Lin (1992: 110) comments that under the Three Feet system profit and loss calculations ‘were either ignored or calculated by the very crude method of “Total of receipts (inflow) compared against total of disbursements (outflow)”’. He labels these (2003: 86) *Lái Zhàng* [来账] and *Qù Zhàng* [去账] (‘come to account’ and ‘go to account’)—which terms appear respectively within the individual entries classified under *Shōu* [收] and *Fù* [付] in the example given by Aiken and Lu (1998: 152) of the later full CDEB *Lóngmén* system.

9. About the middle of the seventeenth century (late Míng / early Qīng dynasties) the most significant commercial bookkeeping development is claimed to have appeared—the *Lóngmén* (‘dragon’s gate’)⁹⁵ CDEB system. As discussed in Section 3 the legend was that it

⁹⁴ According to Lin (1992: 109) and Auyeung and Ivory (2003: 10), there were two such cash journals, the *huoqing bù* (cash sales and purchases journal) and the *yinqing bù* (cash journal); while a third journal, the *wanlai bù* was the ‘personal account and transfer journal’. It seems natural that the last would have to reflect a doubled entry for the transactions, as at TTS (see Yuan *et al.* 2016) and as in Western accounts for debtors and creditors (and especially banks) before full DEB (e.g. Lee, 1994). Without access to the original documents for these claimed procedures, it is not clear to us whether ‘sales and purchases’ were focussed on the revenue/cost aspects (‘nominal’ accounts in DEB, pending transfer to the profit and loss account) or on the outflow and inflow of inventory aspects (‘real’ accounts in DEB which remain in the balance sheet). Gardella (1992: 326) refers to a ‘stock ledger that listed the quantities and values of incoming merchandise’ at the famous *Ruifuxiang* [瑞蚨祥] department store chain (sometime from the end of the nineteenth century onwards) and observes (p.326) that ‘accounts were customarily kept in permanent (“real”) rather than temporary (“nominal”) terms’. Inventory accounting in DEB also is not straightforward and can be ‘continuous’ or ‘periodic’: Stoner (2011) comments on the method of ‘continuous inventory accounting’ used in some merchants’ DEB accounts which credited sales at sales price to each merchandise inventory account, yielding the profit when all the inventory had been sold but causing difficulties for profit and balance sheet measurement when items still remained in inventory at the accounting date (cf. Yamey’s comments in von Gebsattel, 1994, at p. 119; Edwards *et al.* 2009). Nowadays this problem is solved by having a nominal account for ‘sales’ and either making transfers out of the inventory account to a nominal ‘cost of sales’ account as sales take place (‘continuous’) or entering the cost of closing inventory at the accounting date as the closing inventory balance, leaving the residual ‘cost of sales’ to be transferred to the trading and profit and loss account.

⁹⁵ The etymology is obscure. Although Zhao (1987: 181) does not translate it, *Lóngmén* is translated as ‘dragon’s gate’ by Gardella (1992: 324), Chen (1998: 77), Huang and Ma (2001: 8) and Solas and Ayhan (2007: 164); and Aiken and Lu (1998) give the corresponding simplified characters [龙门] in their example at p. 152, as does Yuan (2010 *in Chinese*), while Zhao (1987: 191) and Gardella (1992: 335) give the equivalent ‘traditional character’ form. However Lin (1992: 111) translates it as ‘embankment’, as balancing the accounts was *Hé Lóngmén* (‘close the embankment/bridge’, by analogy with bringing together the two ends of an embankment/bridge that was being built from each end, cf. our ‘make the two ends meet’). (Arguably this analogy could reflect the ideas of *Fēng Shuǐ* (e.g. Gao and Handley-Schlacher, 2003: 54; Solas and Ayhan, 2007: 160.) However in conversation Dr. Yuan Weipeng has suggested it may refer to the kind of traditional accounting office desks he has seen (in a commercial building museum in the Huīzhōu [徽州] region of Ānhuī province) where two separate semi-oval desks used by different clerks are brought together at the new-year Spring Festival (*Chūnjié* [春节]) to make one oval desk when the accounts need balancing. *Hélóng* [合龙] (despite using the ‘dragon’ character) has the same meaning of ‘join together the embankment/bridge’ in modern Chinese (although the stand-alone character for an embanked path is *lǒng* [垄]). However, Chen (1998: 77) translates it as ‘close the Dragon Gate’. *Héjì* [合计] (which also appears in the Aiken and Lu (1998: 152) example) means ‘to total’, while another character, *lǒng* [拢], is also used in modern Chinese to mean ‘sum up (accounts)’. Auyeung and Ivory (2003: 10-11) use both translations at different points. The examples in Aiken and Lu, 1998: 152-6 of the *Lóngmén* system and the later ‘Four Feet Bookkeeping System’ appear to be illustrative not actual records; in the former (as in Zhao, 1987: 191; Gardella, 1992: 334-5) the character 帐 for *zhàng* (now meaning ‘curtain/tent’) is repeatedly

was invented by Fu Shan, a merchant from Tàiyuán, the capital of Shānxī Province in northern China.⁹⁶ (How far there may have been any foreign influences at work is unclear.)⁹⁷ While it retained the three kinds of existing records (*Cǎo Liú*, *Xì Liú* and *Zǒng Qīng*) it added the rule that every *Shōu* must appear with an equal *Fù*; and it classified the account titles into four categories: Receipt, Payment, Keeping, and Owing (each with sub-categories). The examples given by Aiken and Lu (1998: 151-154) illustrate its supposed

used instead of the normal 帳 for *zhàng* ('account'), which is used by Yuan and Ma (2010 *in Chinese*) and by the actual 18th / 19th TTS records (Yuan *et al.* 2016), and which incorporates the 'phonetic derivative' of 貝 for *bèi* ('cowrie [shell]')—i.e. the original medium of currency in antiquity—in order to provide the 'radical', i.e. the representation of the meaning. Dr. Yuan Weipeng has suggested that the use of 帳 may reflect the writing of early accounts on material such as silk and, in discussion with Professor Guo Daoyang, he has explained that in earlier times 帳 was the character used as its incorporation of the sign for 'tent' is believed to represent the tents of the Emperors' travelling tax collectors. Aiken & Lu (1998) use this character presumably to reinforce the 'antiquity' of their (printed) example although the kind of mill in their example is actually an industrial mill of the type that only appeared in the late 19th / early 20th century.

⁹⁶ His name is given as Fu Shen by Aiken and Lu (1998: 150, fn.8), but alternatively as Fu Shang by Lin (2003: 96, fn.1) and Song (2011: 324) or Fu Shan by Auyeung and Ivory (2003: 10) and Auyeung *et al.* (2005: 88)—who describe him (without giving a source) as 'both a merchant and a scholar of philosophy, literature and medicine'—as well as by Chen (1998: 77). See our discussion in Section 3. Morck and Yang (2010), who note that earlier dates than 1823 have also been suggested for foundation by Li Daquan of the *Rishēngchāng* (which they name as the 'Sunrise Provident Bank'), suggest that as the tea trade of Shānxī merchants ultimately reached St. Petersburg (via the border trading post with Russia of Kyakhta, that was opened to private merchants in 1762), 'a strong case can be made that Western banking diffused into Shanxi via Russia' (in which case we would suggest that their bookkeeping practices may have been introduced from Russia too: although we do not know how far DEB had been adopted in Russia by then—Sokolov & Sokolov (2011: 813) indicate that 'the double-entry accounting system came into our lives during the 18th century reforms' [i.e. of Peter the Great]). Ji (2003: 75) comments that during the Qīng dynasty 'Accounting in private lending shops (*JianZhuang*)...in private exchange shops (*Piaohao*), and ...in Pawn shops (*Diandong*) all advanced and were well organized' However Lin (1992: 109; 2003: 86) dates the emergence of 'Credit unions' (*Qianzhuang*), 'Pawnshops' (*Danpu*) and 'Banks' (*Piaofen*), alongside early 'capitalist' mining and manufacturing ventures, to the Míng dynasty around the fifteenth century, thereby contributing to the evolution of the *Lóngmén* CDEB system which (by also classifying the 'Three Feet' (or 'Lame') bookkeeping as an early stage of *this* system, rather than a precursor) he now dates to the late 15th century (i.e. contemporaneous with Pacioli), whereas previously (1992: 111) he also accepted the late Míng/ early Qīng dating for the *Lóngmén* system given by other scholars, i.e. broadly late 16th to 17th century. Song (2011: 324) also now follows this late 15th century dating. According to Auyeung *et al.* (2005: 85), Guo's book (*in Chinese*) argues that 'the growth in interregional trade and commercial banks, called *qianpu* or *qianzhuang*, during the Ming dynasty was the impetus behind the invention of double-entry accounting'. However, Guo (1988b: 7-8, in English) dates the emergence of CDEB and the *Lóngmén* system to 'the end of the Ming dynasty and the beginning of the Qing dynasty' (about 1644 A.D.) As discussed in Section 3 these conventional datings of all these developments are not supported by any first-hand evidence, although Guo *et al.* (2011) do give an example of a 'silver receipts and payments' annual report from a pawnshop in the Wǎnlǐ period (1563-1620, i.e. towards the end of the Míng dynasty).

⁹⁷ Even if this earlier dating were valid, over the long period of the Míng and Qīng dynasties (mid-14th to early 20th centuries AD), given some international (especially from Guangdong province via Guangzhou [Canton]) and extensive internal trade (especially originating from the lower Yangzi region) there could have been a hand-to-hand spreading among merchants and bankers of Western influences prior to the watershed of the Opium Wars in the 1840s, perhaps from the Jesuits. The Jesuits, who were active in China in the 16th and 17th centuries (beginning with the Italian Fr. Matteo Ricci's mission of 1582) and brought with them examples of 'Western' inventions (some of which had originally been Chinese but long forgotten there) were probably familiar with DEB. After the Procurator of the Sicilian Province, Ludovico Flori, wrote a treatise on DEB for its use in the Jesuits' Sicilian Colleges in 1636, it was then recommended for use throughout the Colleges of the Italian Assistance (Quattrone, 2004: 664). The famed Silk Road land trading route across Central Asia could have been another way in. We concede however that no such international influences have yet been positively identified so it remains unclear what, if any, influences of this kind lay behind the earlier Chinese developments.

basic principles (as discussed in Section 3) for recording some transactions.⁹⁸ A feature of the *Zǒng Qīng* is that its classification of accounts gives the equivalent of what would be ‘credit balances’ in DEB for *Jīn lèi* (Receipt type) and *Gāi lèi* (Owing type), all headed *Shōu*, at the top of the ‘page’; and of ‘debit balances’ in DEB for *Jiǎo lèi* (Payment type) and *Cún lèi* (Keeping type), all headed *Fù*, at the bottom. However, according to Aiken and Lu (1998: 156), the accounts ‘classification is based on the results of activities, not on the transaction contents’. So *Cún* and *Gāi* are not strictly equivalent to ‘asset’ and ‘liability’ accounts as a cash payment (transaction #3 in their example) results in a closing ‘Owing account’ for the *yín gù* (‘silver cupboard’ / ‘safe’).⁹⁹ Indeed they appear to us more like modern ‘Uses’ and ‘Sources’ of Funds accounts¹⁰⁰ and Lin (2003: 96) notes that the somewhat similar ‘increase-decrease’ system introduced in PR China in the 1960s to 1980s (which we discuss further in Anon***, 2015b; see also Ji & Lu, 2013) ‘is a continuing innovation of the traditional Chinese-style bookkeeping’. However Lin (1992: 111ff.) clearly regards the accounts for *Cún* and *Gāi* as equivalent to asset and liability/equity accounts in DEB.

10. The *Zǒng Qīng* account categories contained both the individual transaction entries—apparently repeated in full, rather than merely with the amounts cross-referenced to the *Xī Liú* (as we discuss in Section 3)—and totals for each category (Aiken & Lu, 1998: 152). It was therefore visually unlike a DEB ledger where the entries are often simply cross-referenced to the journal and indicate the *reciprocal* ledger account (e.g. Yamey, 2010a; cf. Sangster, 2015a).

11. Checking that the accounts ‘balanced’—*Hé Lóngmén*—was accomplished by checking that the total of (Receipt-Payment types) = the total of (Keeping-Owing types).¹⁰¹ It is not

⁹⁸ Lin (1992: 112-3) also illustrates some transactions but, while Exhibit 1 on p.113 is correct, his description of transaction #2 on p.112 has reversed the correct positioning of the entries on the page.

⁹⁹ *Cún* is used in modern Chinese for a deposit (as in a bank deposit account)—Yamey (2010a: 171) reminds us that Pacioli insisted that the cash account can never have a credit balance (see also Goldthwaite, 2015). *Gāi* is used to mean ‘owe’. Aiken and Lu (1998: 148) initially translate *Cún* as ‘assets’ and *Gāi* as ‘liabilities/owners’ equity’, as do Lin, 1992: 111-12 and Auyeung and Ivory, 2003: 10-11, but none of these authors give any examples of an ‘equity’ account.

¹⁰⁰ However, as there is only one entry to any one account in Aiken and Lu’s (1998) example it is not clear how net balances would appear; and as entries from only one period are illustrated it is not clear how ‘opening’ and ‘closing balances’ were handled in ‘closing (and reopening) the books’ (cf. Yamey, 1994).

¹⁰¹ It is not obvious why the arrangement on the page of the *Zǒng Qīng*, as illustrated by Aiken and Lu (1998: 152), does not put the *Jīn lèi* above the *Jiǎo lèi* (and similarly the *Gāi lèi* above the *Cún lèi*), which would make this reconciliation of the balances more visually obvious, but instead places them diagonally opposite each other. We conjecture this may possibly have been to preserve the ‘right to left’ reading order of the *Shōu* and *Fù* entries in the original *Cǎo Liú*. (Unfortunately Aiken and Lu present the English transcription of their Chinese example in Western DEB’s ‘left-right’ layout—albeit with the equivalents of ‘Credit’ on the left and of ‘Debit’ on the right—rather than in the original CDEB ‘top-bottom’ layout, so readers have to make their own mental transpositions.) Aiken and Lu’s diagram of ‘the accounting circle (*sic*) under the *Lóngmén* system’ in Figure 3

clear whether any ‘profit and loss’ accounts were derived automatically from the system or calculated as a separate exercise. However, Lin (1992: 113-4), who gives two alternative equations for calculating profit (Total *Jin* - total *Jiǎo*, or equivalently total *Cún* - total *Gāi*),¹⁰² argues, presumably again following Guo’s (1988) book (*in Chinese*), that ‘merchants calculated the cost of goods sold before closing the books at the end of each period’ by one of two methods. The first was by appraising closing inventory and then deducting the closing balance from (total purchases + beginning balances). However Lin (who himself here mistakenly reverses the signs, as also do Solas and Ayhan, 2007: 159) does not say how the closing inventory was valued for this purpose. The second method was by valuing the units of goods sold using the highest price paid for purchasing merchandise during the period. Like modern-day LIFO in a period of rising prices, this would increase the amount for cost of goods sold and lower the profit and ending ‘balance sheet’ value. Lin says this ‘conservatism’ apparently benefited merchants and this method was the most popular, although he does not explain what the benefits were perceived to be (for example, it is not clear what, if any, taxation or contracting consequences might follow, although the example of the secret reserve accounting at the famous *Ruifúxiáng* [瑞蚨祥] department store chain, sometime from the end of the 19th century, indicates that owners may have lowered reported profits to minimise the amounts to be paid to managerial staff under profit-sharing agreements (Gardella, 1992: 330)).¹⁰³

(1998: 154) ends with a ‘Positive ledger’ but no Chinese term is given and no explanation of what it represents or its function. Practice may have varied: Lin (1992: 114) had previously described the trial-balancing as involving transcription of all the ledger entries (apparently individually yet again) into a special ‘Trial Balance of Totals’ book called *Lóngmén Bù*, again with all *Shōu* entries in the upper section (organized by *Jin* and *Gāi* accounts) and all *Fù* entries in the bottom section (organized by *Jiǎo* and *Cún* accounts), so that balancing (*Hé Lóngmén*) similarly required that the total of (Receipt-Payment types) = the total of (Keeping-Owing types). (Again, it is unclear how opening balances were dealt with to achieve this equation.)

¹⁰² In which case here *Gāi* must mean only ‘liabilities’—albeit presumably plus any *previous* equity—if the difference is to equal an increase in equity representing profit (see also Ji & Lu, 2013). Huang and Ma (2001: 8), who refer only to asset and liability movements within the accounts, merely say: ‘This balancing method of calculating the profit for the year was described as “settling *Longmen*”.’ Gardella (1992: 324) equates *Gāi* with liabilities and says that ‘at the end of the year, the profit or loss from subtracting expenses from income had to tally with that obtained by deducting liabilities from assets’, which leaves the same lacuna about accounting for the opening balance of equity. The same problem remains in the exposition by Guo *et al.* (2011).

¹⁰³ Aiken and Lu (1998: 148-9) had previously said, in relation to what they called the earlier ‘single-entry’ system, on the one hand, that *Shōu* and *Fù* only represented cash flows, and on the other that if ‘the amount of *Cún* exceeded *Gāi* a profit was made’ (in which case here again *Gāi* must mean only ‘liabilities’—presumably plus any *previous* equity—if the difference is to equal an increase in equity representing profit). They give no information on how *Cún* and *Gāi* were valued. Auyeung and Ivory (2003: 11) are similarly ambiguous about how profit was determined through the balancing in the *Lóngmén* system. Neither of these papers comments on Lin’s (1992) exposition, and nor does Lin (2003). Lin (1992: 115) concludes his discussion of the *Lóngmén* system by observing that there was a ‘lack of an integrated account system. Particularly, the links between nominal and real accounts were indistinct and the use of nominal accounts was not fully understood. Also the limited number of general ledgers in use seemed insufficient for a comprehensive accounting of financial positions and operating results.’ However, he does not expand on these brief comments or give any examples

12. The form of accounts, and methods of creating ‘columns’ on the ‘page’ of paper, varied between the various records but in all cases (except in the memorandum *Cǎo Liú*) the *Shōu* items appeared in the top section and *Fù* items in the bottom section of the page, with Chinese characters being used (i.e. the numbers and the descriptions were written in the same textual format).¹⁰⁴ As noted above, according to the illustrative example given by Aiken and Lu (1998: 152), transferring entries through each stage of books actually involved writing out the original entries in full each time, finally marshalled under the *Zōng Qīng* ‘ledger’ account headings (so in a different manner to that used in DEB, which was based on *cross-referencing*).¹⁰⁵

from original records. Gardella (1992: 325-6) summarising what ‘was a mundane, pragmatically evolved tradition’ notes in similar terms: ‘Calculations of profits and losses, as opposed to periodic balances, were usually done by larger firms. If the profit/loss figure did not jibe with the balance, the discrepancy might be naïvely indicated as such (*bùfú* [不符]) or as a “surplus” (*yíngyú* [盈余])! Accounts tended to be weakly integrated with one another, and the proliferation of similar account subclassifications could lead to a junglelike undergrowth, unnecessarily complicating ordinary business operations.’

¹⁰⁴ Solas and Ayhan 2007: 164, following Auyeung and Ivory (2003: 9-10) who give no source, distinguish three kinds of ‘number’ characters as being used during the Míng-Qīng period (1368-1911): *cǎomǎ*, the commercial forms; *hàntǐ*, the standard forms, and *kuàijì tǐ*, the accounting forms: used in the *Cǎo Liú*, *Xì Liú*, and *Zōng Qīng* respectively. However, the example given by Aiken and Lu (1998: 152) shows just the two forms normally recognised to this day, i.e. the simpler characters in the *Cǎo Liú* and *Xì Liú* (e.g. 二 for èr (two)) and the traditional more complicated characters (e.g. 貳 for èr) in the *Zōng Qīng*—characters that are still used nowadays when writing cheques etc. as a precaution against fraudulent alteration. Auyeung *et al.* (2005: 82-3) observe the *cǎomǎ* in the surviving *Cǎo Liú* from the early 20th century AD Zìgòng accounts: but as *cǎo* [草] is also the term used to describe the rapid, cursive style of handwriting, the distinction they make between *cǎomǎ* and *hàntǐ* forms may represent no more than that between ‘rough’ and ‘fair-copy’ handwriting of the Chinese characters (which is not visible in Aiken and Lu’s example as all the entries there are printed). Gardella (1992: 326) also identifies three different types of numerals: ‘ordinary’, ‘shorthand’ (to facilitate calculation) and ‘great’ (used to avoid fraud) but again does not give illustrative examples. Yuan *et al.* (2016, Appendix II) discuss the special shorthand ‘*Sūzhōu mǎzì*’ [苏州码字] characters being used in the late 18th and early 19th century TTS merchant account books they have examined, written in ink with a writing-brush (*máobǐ* [毛笔]). These would have been easier to relate to the positions on the abacus. Accountants also used variants of normal numerals (which can be hard to decipher to the untutored eye), e.g. to prevent fraudulent alteration a ‘curved tail’ can be added to the horizontal character for *yī* [一], i.e. 1; or *líng* [〇], i.e. zero, can be written more like a triangle. Chinese character systems lack the ‘place value’ of Arabic numerals (although the latter are nowadays generally adopted in writing ‘practical’ Chinese too), so that they are equivalent in English to writing out the words for the numbers (e.g. ‘five thousand three hundred and twenty seven’ not ‘5327’), which may also reflect an older tradition of ‘reading aloud’ of the accounts. However in writing the *Sūzhōu mǎzì* the Arabic layout is used, e.g. *yī líng líng* (‘one zero zero’) for one hundred instead of *yī bǎi* (‘one hundred’). Pending access to further original examples, Dr. Yuan suggests we tentatively identify the *Sūzhōu mǎzì* with the *kuàijì tǐ* and with Gardella’s ‘shorthand’ forms.

¹⁰⁵ And possibly yet again into an additional *Lóngmén Bù* for trial-balancing (Lin, 1992: 114). Necessarily, as the example given in Aiken and Lu (1998: 152) is printed rather than a facsimile, it cannot show that the handwriting in the *Cǎo Liú*, being written as transactions occurred, would presumably have been very rough while the *Xì Liú* and *Zōng Qīng* would presumably be in a fair copy hand (Auyeung and Ivory, 2003: 9). The example necessarily also illustrates the processing of only a few entries, so it is not clear from this what the physical form of the account ‘books’ of actual enterprises handling many transactions of different kinds over many periods would have been nor whether/when any printing was used (e.g. for account headings). Contrast the detail with which researchers have been able to reconstruct both complex ancient Western accounting systems (e.g. Rathbone, 1994) and early Italian DEB systems (e.g. Yamey, 1994) from surviving original records.

13. A final development,¹⁰⁶ claimed to have been around the middle of the eighteenth century, was the ‘Four Feet (or Leg) Bookkeeping System’ (also known as the ‘Heaven and Earth Matching’ account system *Tiān Dì Hé Zhàng* [天地合账]), which was apparently widely used in the far south-western Yúnnán [云南] Province.¹⁰⁷ The examples given by Aiken and Lu (1998: 154-6) illustrate its principles. It utilized the same threefold sequence of account ‘books’ for processing, while in practice for cash transactions it could either use what is claimed to be full CDEB (‘Four Feet’), or alternatively could still use the older ‘Three Feet’ system.¹⁰⁸ Distinguishing the precise ‘stages’ and extent of the supposed series of developments is therefore not straightforward (cf. Lin, 1992: 118, fn.3).¹⁰⁹
14. The main innovation claimed for the *Tiān Dì Hé Zhàng* system appears to have been that the period’s profit (or loss) was calculated in a statement called *Cai Xian Jie Ce*, showing the various ‘Receipt’ accounts (*Jìn*) together with any balancing loss in the top part, and the various ‘Payment’ accounts (*Jiǎo*) together with any balancing profit in the bottom part. A kind of ‘balance sheet’ report called *Cun Chu Jie Ce*¹¹⁰ was also prepared with the Owing accounts (*Gāi*) together with any balancing profit in the top part (called *Tiān Fāng* = Heaven) and the Keeping accounts (*Cún*) together with any balancing loss in the bottom part (called *Dì Fāng* = Earth). The process of balancing the two parts was called *Tiān Dì Hé* (‘Matching the Heaven with the Earth’), terminology which may again reflect *Fēng Shuǐ*

¹⁰⁶ However Lin (2003: 86-7), who now places Fu Shang’s supposed invention of the *Lóngmén* system in the late fifteenth century (i.e. approximately contemporary with Pacioli) rather than in the seventeenth century as others do (and as he did in Lin, 1992: 111) now sees *Tiān Dì Hé Zhàng* as a refined version belonging to the beginning of the early seventeenth century, with a further evolution of the system taking place in the nineteenth century into what he calls *Shōu-Fù* bookkeeping, which required ‘dual-recording of each transaction in two accounts simultaneously’ and continued ‘in certain sectors of the economy (e.g. banks, government institutions and small businesses) through to the early 1990s’. As he does not cite any original records or even earlier researchers, and as this description is hard to distinguish from that of the pre-existing ‘Four Feet’ system, his divergences on chronology from previous the English-language literature (on which he does not comment) are hard to interpret and evaluate. He is now followed by Song (2011). As we discuss in Section 3, there is no first-hand evidence to support any of these datings before the 19th century.

¹⁰⁷ Although nowadays one of the poorer provinces (but famous for supplying its varieties of edible wild mushrooms, as well as Pu’er tea and now coffee), the main natural resource in Yúnnán is mineral deposits for mining. Authors who wish to stress the indigenous development of CDEB see it as remote and isolated, but like other ‘remote’ Chinese regions it may have been open to outside and even to foreign influences. ‘Because of its geographic location [bordering Burma, Laos and Vietnam] the province has comparative advantages in regional and border trade with countries in southeast Asia’. <http://en.wikipedia.org/wiki/Yunnan> (accessed 02.09.11). The ancient ‘Southern Silk Route’ to India (which was to be reopened as the ‘Burma Road’ in the 20th century) passed through it: so it would surely have had merchants passing through, trading and exchanging information.

¹⁰⁸ However, Auyeung and Ivory (2003: 11) describe the system as using ‘double-entry’ throughout.

¹⁰⁹ Again, as we discuss in Section 3, there is no first-hand evidence to support any of these datings before the later 19th / early 20th century.

¹¹⁰ The etymology is not clear to us but *Chū* could here refer to ‘source’ accounts.

principles relating to the harmony of *Yīn* and *Yáng* (e.g. Gao and Handley-Schlacher, 2003: 54; Solas and Ayhan, 2007: 160).¹¹¹

15. After the first Opium War of 1839-42 the Western DEB system was gradually introduced through the new European concessions that were using it (Aiken and Lu, 1998: 141). Even after the Communist takeover in 1949 DEB continued to be used for many years—until the Sino-Soviet split in the early 1960s (Lin, 2003: 92)—as it was merely adapted to the Soviet bookkeeping system, which itself continued to use DEB, albeit now for accounting under state production planning rather than for capitalist ‘profit’ accounting (cf. Ezzamel *et al.*, 2007; Ji & Lu, 2013). (This later period is to be discussed further in Anon***, 2015b).
16. All the above stages relate primarily to bookkeeping developments possibly complemented by some ‘financial reporting’ of financial results and financial position, primarily for owner-managers, family or clan members, or absentee investor-partners. As for ‘management accounting’, Ji (2003) explores concepts of cost and profit that appear in scattered places within Chinese agricultural treatises (*Nóngshū* [农书]) from the first century BC to the 17th century AD. These include examples of calculations of projected profits from various activities, normally based on direct incremental out-of-pocket costs compared with sales revenues for some quantities of outputs. Ji identifies (p.76-7) the appearance of an ‘opportunity cost’ based calculation, and (p.78) the implied estimate of a return on investment. However these calculations do not appear as sophisticated as even the (notoriously careless) calculations by the Roman agronomist Columella in the first century AD, who compared the prospective annual return from investing in viticulture to lending the

¹¹¹ It is not clear from the illustrative example in Aiken and Lu, 1998: 154-6 at what point the ‘profit’ or ‘loss’ became part of the ‘ledger’ account balances themselves, i.e. how ‘brought forward’ balances were dealt with and how the ‘ledger’ (the *Zōng Qīng*) was ‘closed’ and ‘reopened’ in a real-world multiperiod setting. However, Lin (1992: 117) gives an English version of Guo’s (1988 *in Chinese*) schematic representation of the system, showing the *Cai Xian Jie Ce* and *Cun Chu Jie Ce* reports as the end products of the system but this is not referred to in Guo *et al.* (2011). Within the ledger (*Zōng Qīng Bù*) there are subdivisions including ‘Receivables’ and ‘Payables’ ledgers, and also ‘Purchases’ and ‘Sales’ ledgers (the *pīnyīn* Chinese is presumably *Jīnhuò Zōng* (‘goods-in ledger’) and *Xiāohuò Zōng* (‘goods-sold ledger’)). If these are inventory accounts it is not clear where in the *Zōng Qīng Bù* the ‘nominal’ accounts for purchases/sales/profit/loss appear (cf. Stoner, 2011). Alternatively, if they are nominal accounts, where are the ‘real’ inventory accounts? Lin (1992: 118) says the final balancing revealed the earnings of the period, as ‘*Cún* (stocks) = *Gāi* (claims) + Earning (profit or loss)’. As we have already noted in respect of earlier systems, here *Gāi* must mean only ‘liabilities’—albeit presumably plus any *previous* equity—if the difference is to equal an increase in equity representing profit (cf. Guo *et al.*, 2011). Lin does appear to interpret the procedure this way as he says that thereby ‘merchants and bankers recognized that the earning accounts were only temporary and that they must be closed and transferred into the Summary of Stocks and Claims (real accounts) to reflect the net changes of stocks (assets) of the period’. However no evidence is given for how this closing of the current period’s books, and re-opening for the subsequent period, was effected. Huang and Ma (2001: 9) say similarly (referring to a 1997 paper by Huang and Chang but without citing any original evidence) that in the *Cun Chu Jie Ce* ‘capital and liabilities were recorded in the top half of the statement and assets were recorded in the bottom half. A profit (given by the income

money out at 6% (simple) interest per annum (Macve, 1985).¹¹² Despite the advances that have been claimed as made in CDEB, Ji considers that accounting progress in China stagnated after the seventeenth century due to the self-sufficiency of most family units in the feudal (*sic*) economy, the absence of textbooks in accounting to replace oral tradition and apprenticeship, the lack of significant opportunities to develop capitalist enterprise within the rigid political and social structure, and the restrictive policy of the Míng and Qīng emperors with regard to overseas trade which cut Chinese accounting off from Western developments. While economic historians now recognise that there was actually considerable economic activity in bringing agricultural surpluses and by-products (such as cloth) to market and that in the 18th century Chinese prosperity may well have still matched or exceeded that in Europe (e.g. Richardson, 1999; Brandt *et al.* 2014), similar factors may have played an important role with regard to the potential for industrialisation (which we consider further in Anon***, 2015b).

statement) would be recorded in the top half of this balance sheet and a loss in the bottom half' so that then the two halves could be matched.

¹¹² It is not clear to us why the conclusion from the calculation described at Ji, 2003: 76-7 indicates that hiring a long-term labourer is loss-making, given that the revenue from his working of the mulberry trees (for silk production) has not been included.

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