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### Accounting evolution to 1400: how to explain the emergence of new accounting techniques?

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## REVIEW ESSAY

# Accounting evolution to 1400: how to explain the emergence of new accounting techniques?

**Zur Eigendynamik des Schriftgebrauchs in der kaufmännischen Buchführung am Beispiel der Datini/di Berto-Handelsgesellschaft in Avignon (1367–1373)**, by Franz-Josef Arlinghaus, Frankfurt (Main)/Berlin/Bern/Bruxelles/New York/Oxford/Wien, Peter Lang, 2000 (Gesellschaft, Kultur und Schrift. Mediävistische Beiträge 8), 531 pp., £74/€92/\$121 (softcover), ISBN 978-3-631-35256-4

**Die Autonomie der Routine: Wie im 12. Jahrhundert das englische Schatzamt entstand**, by Ulla Kypta, Göttingen, Vandenhoeck & Ruprecht, 2014 (Historische Semantik 21), 357 pp., €55 (hardcover), ISBN 978-3-525-36723-0

How can one explain the emergence of new accounting techniques? This question has been discussed from the early days of accounting history, particularly with respect to the ‘invention’ of double-entry bookkeeping in medieval Europe. Sombart famously suggested that one consider double-entry the realisation of ‘economic rationality’ and as such one of the grand ‘creations of the human mind’ ([1902] 1919, 119). Basil S. Yamey famously refuted this explanation by showing that little evidence exists of mercantile profit-seeking by means of calculation in the period when double-entry took root.<sup>1</sup> However, the elimination of the merchant’s mentality as a causal factor made it more, rather than less, difficult to explain how something as complex as double-entry bookkeeping emerged in the first place: if the merchants who first used it were not particularly interested in profit calculations, why did they bother to invent such a complicated and time-consuming accounting system?

The two publications discussed in this review offer an original and comprehensive explanation for the emergence of (complex) accounting techniques by adopting an evolutionary approach. The word ‘evolution’ had been used by Littleton as early as 1933 to suggest that twentieth-century bookkeeping was ‘the result of a long evolution’ in which men [*sic*] ‘were able to adapt and modify known ideas and methods to the new needs of their day’; due to the ‘meager historical materials’ from ancient and medieval times, however, he felt unable to elucidate ‘how and when’ this process unfolded (1933, 22). Unlike Littleton, the authors of the present studies make use of very extensive collections of medieval manuscripts, do not equate evolution with progress, and – perhaps the most interesting feature of their work – they do not necessarily need resourceful ‘men’ to explain change.

Prompted by the problem that Yamey's refutation of Sombart had brought upon accounting history, the study by Franz-Josef Arlinghaus seeks to answer the following question about late-medieval Italian bookkeeping: 'In what way were these elaborate forms of accounting established and what were the motives for producing them?' (463).<sup>2</sup> Unlike most studies in accounting history, the author does not compare different accounting systems to trace the development of techniques across time. Instead, he conducts a very detailed analysis of the di Berto/Datini company, whose financial records have survived almost in their entirety. The company was based in Avignon, active between 1367 and 1373, and had been set up by Toro di Berto and Francesco Datini, merchants from Florence and Prato in Tuscany. Of its financial documentation, 35 books have survived, containing over 10,000 pages of text and 100,000 individual entries. Arlinghaus argues convincingly that the original purpose of the books was to enhance the merchant's biological memory. The necessity to keep track of many transactions, involving many people and objects, and of outstanding payments in particular, made it useful to write things down, 'since losing track of a credit resulted in financial loss' (Arlinghaus 2006, 53).<sup>3</sup> However, the way in which the information was stored, as entries on pages in bound volumes, was relatively inflexible. This fact proved problematic as it was in the nature of trade that new information about already recorded items kept trickling in. (Imagine the second purchase by a customer who still has to pay for her previous purchase). This information was stored in a new entry which had to be associated somehow to the record of the previous transaction which was found in a different physical location in the account book. In other words, the solution of di Berto and Datini to the limitations of their memory created the problem that the 'high degree of flexibility demanded by the necessary act of data storage came into conflict with the relatively fixed nature of the recording medium' (57). The resolution of this problem again lay in the systematic replication of entries into another book, which was the only way to re-arrange information fixed on the pages of a book without destroying the source book and hence the original order.

By this reasoning, Arlinghaus can explain the existence, and layout, of each of the various book types used by the company. Importantly, this model does not have to assume that the merchants had a blueprint of the entire bookkeeping system before they started recording. The great complexity of this accounting system is explained mainly as a reaction to external pressures, such as the necessity to not forget outstanding debts, the large number of transactions and the strictures of the medium. 'The thesis is that the combination of the large volume of data and the inflexible storage media triggered off a self-propelled process, which ultimately led to the creation of structured forms of book-keeping' (54). The merchant's agency is thus de-emphasised. The only choice that he had was either 'to use a completely different storage medium – but which one would have been more suitable?' or 'to follow the path of recording and transcribing which was set by the medium of writing itself' (2000, 369).<sup>4</sup> This argument does not deny that complex bookkeeping systems such as those of di Berti and Datini provided an overview of their business which could not be had otherwise. Once the system had emerged, it 'offered additional unintended possibilities' (Arlinghaus 2006, 59) such as complex balancing across many accounts and the calculation of profits, losses and capital returns, but importantly, this potential was only fully utilised in a later period.

Ulla Kypta's question is different from the one posed by Arlinghaus. She is interested not in the emergence of accounting routines but in that of an accounting organisation – the English exchequer: 'How could something as persistent as the exchequer come into existence in the twelfth century that would produce a Pipe Roll each year, continually for 700 years'? Most historians are prompt to attribute the emergence of medieval administrations to 'outstanding individuals and their far-sighted planning' but, as she contends, such intentionalist explanations

must appear adventurous given the unlikelihood that a twelfth-century plan would have been able to foresee all eventualities of a 700-years' long future (12).<sup>5</sup> In a move that is similar to Arlinghaus's description of 'self-propelled processes', she shifts the focus from kings and administrators to the way in which the pipe rolls were produced. These documents, connected vellum sheets rolled up for storage, were used to account for payments to or from the king on an 'occasion' that took place once a year around Michaelmas. After each audit, the scribes immediately started to prepare the roll for the following year by creating the recurring entries (e.g. for the sheriffs) and by copying out those payments which had not yet been fully settled. Necessarily, the new roll always inherited some elements from the previous one. Unlike Arlinghaus, who uses 'evolution' only occasionally (e.g. 2000, 276) and explains the emergence of patterns mainly in terms of a less general *Eigendynamik des Schriftgebrauchs* (inherent dynamism of writing), Kypta opts for a fully fledged evolution-theoretical model in which features are varied, selected and stabilised. The evolving system that she describes is the *Fachsprache* (technical language) employed by scribes to write the rolls. This very specific *Gruppensprache* (group language, 176) existed in a sort of symbiosis with the scribes. The scribes were able to constitute themselves as a group by excluding those who did not master it; conversely, the language depended on them as its only users. Variation occurred when an existing roll was used to draw up a new one. Individual scribes created variants on all levels of language: layout (columns and rows), syntax (specifying clauses), lexemes (competing words), sememes (disambiguation of word meanings) and graphemes (abbreviations). Kypta defines the 'unconscious' selecting agent – nature in Darwinism – as the *diachrone Schreiberkollektiv* (diachronic collective of scribes, 210), that is, the group of all scribes across generations whose behaviour can only be observed in retrospect. A particular variation of one scribe was selected if more scribes replicated it in subsequent rolls. Only if this selection did not disappear again, can one speak of stabilisation.

In retrospect, Kypta can identify three selection criteria: the *Exaktheit* (exactitude) with which terms refer to other terms within the rolls, the *Präzision* (precision) with which they refer to entities outside the rolls, and their *Abschreibbarkeit* (transcribability), or the easiness with which an element could be copied out (256–264). For example, she observes that the advantage of headings in small letters was probably 'that they were faster to write and that they saved space. Accordingly, more and more headings in small letters were transcribed in the next roll' (188f).<sup>6</sup> Her main thesis is that the technical language of the pipe rolls, like any self-reproducing system, wanted to survive and that it adapted in such a way to its environment that survival was ensured. Each pipe roll 'created its own future', independently of whether the king and his administrators were planning a future of their own (261).<sup>7</sup> In retrospect, the historian has no choice but to register that the selected variations were functional because as a matter of fact, the pipe rolls survived until 1833. Had their adaptation not been successful, they would have disappeared long before. The emergence of the exchequer can be considered almost a side-product of the self-reproducing language of the rolls: As a group language, it defined the boundaries of the emerging organisation; its successful adaptation to changing environmental demands legitimised the emerging organisation. When towards the end of the twelfth century the exchequer started to be addressed as such, it seemed that it had always been there. In fact, and that is Kypta's answer to her initial question, it had emerged from the writing routines of the pipe roll without anyone noticing or planning it (280–282).

Kypta cites Arlinghaus occasionally, but for no explicit or obvious reason, she does not systematically relate her results to his. Given the similarity of their results in very different historical settings, a parallel reading of both books can tease out further questions about their general approach. The first set of questions concerns the role of humans as the variation-producing

agents. Arlinghaus did not construe an evolutionary model but nonetheless envisages a ‘self-propelled process’ in which the accountant reacted to pressures from outside. Due to the nature of his source material, Arlinghaus has to reverse-engineer a complex accounting system by logical inference and can explain most of its shape in terms of functionality: the system ensures its survival (in this case, the preservation of the company’s liquidity) in the most parsimonious way. But how exactly did they end up there? By semi-intentional variation and unconscious selection as in Kypta’s model? Or does Littleton’s slightly old-fashioned idea hold that ‘men, under the dictates of self-interest, were able to adapt and modify known ideas and methods to the new needs of their day’ (1933, 22)? In that case, the individual human agent makes a forceful re-entry in Arlinghaus’s model, not as the deviser of a ‘grand creation’ but as the intelligent designer of small solutions that contributed to the overall viability of the system.

Kypta’s model, too, raises a number of questions about the accountant’s role in an otherwise blind process. Her approach rests on the distinction between the individual scribe and the scribal collective, and the fact that seemingly useful innovations of individual scribes were not selected in the long run supports this idea. Yet, there is a conspicuous partial overlap between the criteria by which the collective selected (precision, exactitude, transcribability) and the apparent motivations of individual scribes to invent a variation in the first place. This point begs the question of how the selections of the collective were being fed back into decisions of individual scribes. Unlike most animals who do not have an understanding of belonging to a species and make their mating decisions without conscious reference to it, the individual scribe understood himself as part of a collective (one of Kypta’s points about the ‘group language’), which could have fed back into his decision to vary or retain an element. The fact that some elements did stabilise may be the result of such a feedback loop: how else would the individual scribe have ‘known’ which linguistic elements could still be varied at will and without consequence, and which ones should be retained to preserve the language’s state of adaptation? The perspective of the scribes as intelligent observers must, therefore, be better integrated into this model of otherwise unconscious adaptation.

The second set of questions concerns the environmental stimuli. It seems that both authors operate with the strong and largely unexplained assumption that time, attention and money were scarce on the part of the accountants, or their principals. In Arlinghaus’s story, the time and effort used for bookkeeping is a crucial ingredient. It is something that the accounting systems seeks to appropriate, and something that the merchant seeks to keep to a minimum (e.g. 369f.). One of Kypta’s criteria for functionality, transcribability, is also, in ill-defined terms, connected to the time and effort that the scribes invested. An element can appear as more transcribable if it took less time, effort and material to transcribe it (see the example quoted above). So somehow, the scribe responded to an environmental stimulus to economise on time, effort and material, which could be his stiff and tired writing hand, or the king concerned about the amount of vellum used in his administration, or something else. That merchants generally strove to reduce the time, effort and materials when keeping books may be a common-sense assumption. However, in keeping with the evolutionary spirit of the two works discussed here, one could easily imagine that it may be different in an accounting organisation like the English exchequer. If the primary goal of a self-reproducing system is self-reproduction, economies of time and effort would be secondary goals in the environment, to be ignored as long as convenient. Working time may thus be filled rather than economised, a budget exhausted rather than abandoned, and material wasted rather than sent back unused, lest the organisation appear underworked, overstaffed or redundant altogether.

The exact ways in which environments shape a self-reproducing accounting system is of particular importance once handbooks and professional accounting education become widespread

after 1400. Assuming that evolution then stopped (as Arlinghaus, 43–46, suggests) would be short-sighted as accounting methods were rarely simply executed once they became available. Therefore, it would be interesting to see how existing accounting systems responded to the stimulus of professionalism; and conversely, how accounts, which were set up according to this or that method, developed a life of their own with perhaps surprising effects. The studies by Arlinghaus and Kypta are reminders that the specific piece of accounting that one encounters in historical research is the result of a fundamentally contingent situation. It is the historian's task then to explain why it took this exact form if another would have been possible, and perhaps even more probable. The existence of accounting manuals and statutory regulation may add more factors to a situation but it does not take away that contingency. Therefore, I strongly believe that these two books on European medieval accounting offer much food for thought to medievalists, but also to historians who focus on later periods or on other parts of the world, as I do myself. The 'anti-humanist' approach taken by Arlinghaus and Kypta may lead to some irritations for the reader, but irritations, I hope, that will prove productive for the field.

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## Notes

1. For a recent summary of the debate, see Chiapello (2007).
2. Quoting from the English summary.
3. Arlinghaus (2006) reiterates the argument of the reviewed book.
4. 'Die Zwangsläufigkeit, mit der dieser Prozeß ablief, drängte die Entscheidungsfreiheit der an dem Prozeß Beteiligten fast gänzlich in den Hintergrund. Der Kaufmann hatte nur die Wahl, sich entweder einem ganz anderen Speichermedium zuzuwenden – aber welches wäre geeigneter gewesen? – oder aber dem von der Schrift vorgezeichneten Weg des Schreibens und Abschreibens bzw. Transkribierens zu folgen.'
5. 'Wie konnte im 12. Jahrhundert etwas so Beständiges wie der Exchequer entstehen, der in den folgenden 700 Jahren kontinuierlich Jahr für Jahr eine Pipe Rolle produzierte? Die vorliegende Arbeit argumentiert, dass die Routine den Grundstein dafür legte. Sie beantwortet die Frage nicht mit dem Verweis auf herausragende Individuen und ihren weitsichtigen Planungen.'  
In spite of the topic, the book does not contain an English summary.
6. 'Der Vorteil der Überschriften ohne großen Buchstaben lag deshalb wahrscheinlich darin, dass sie schneller zu schreiben waren und Platz sparten. Entsprechend wurden immer mehr Überschriften in kleinen Buchstaben in die nächste Rolle übertragen'.
7. 'Die Rechnungsabhör funktionierte nicht nur ohne den König, sie reproduzierte sich zudem fortwährend selbst. Sie schuf sich ihre eigene Zukunft'.

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