

THE SECRET OF DOUBLE-ENTRY BOOKKEEPING: PERSONIFICATION OF ACCOUNTS

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Abstract

Investigation is done on the personification of accounts and its use in the first printed works on double-entry bookkeeping. Examples of accounting entries, given in these books, are considered. Special attention is paid to medieval terminology and its relationship with the modern conceptual apparatus of accounting. It turns out which words and expressions can serve as modern equivalents for the Old Italian terms used by Luca Pacioli. The historical role of personification, as well as the personalization of accounts in the development of accounting, is studied. The hypothesis of this research is that the personalization of accounts was already known at the time of Pacioli and did not arise in the 18th century as it is usually assumed, and in his work, the great scientist, knowing about the personalization of accounts, made a conscious choice in favor of personification of accounts.

Keywords: double-entry bookkeeping, Luca Pacioli, personification of accounts, personalization of accounts

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Introduction

The modern accounting is quite an intricate information system. However, its basic principles were laid many centuries ago. It is impossible not to agree with the statement of Hendriksen and Van Breda (1992, p. 51): “In the 500 years since Pacioli wrote his book, accounting itself has remained virtually constant”. These scientists also made a bold assumption: “Pacioli would feel remarkably comfortable with the accounting systems that he would encounter today. There would be a variety of financial instruments that would puzzle him, no doubt, but once it was explained that these were simply new forms of credit to be entered on the right side of the balance sheet, he would have no difficulty”.

There is no doubt about the abilities of the great mathematician. Quite to the contrary, the question arises whether we, living in the 21st century, could understand the rules of accounting for the Renaissance epoch with the same speed with which Luca Pacioli would be able to understand the existing standards. To have a better idea of what accounting was like more than five centuries ago is possible thanks to a treatise called “*Particularis de computis et scripturis*” (hereinafter referred to as *Treatise*). However, it contains some indications, for the performance of which it is necessary to have a fairly developed imagination.

For instance, in Chapter 23 “In what manner the accounts of a store should be kept...” Pacioli calls for (here and hereafter we used the classic English translation performed by J.B. Geijsbeek): “... you must imagine that this store is just like a person who should be your debtor for all the things that you may give (*dai*) it or spend for it for any reason. And so on the contrary you shall credit it with all that you take out of it and receive from it (*cavi e recevi*) as if it were a debtor who would pay you gradually” (Geijsbeek, 1914, p. 61).

The principle used here became known in the accounting theory as “the personification of

accounts”. It is so important that there is a separate article dedicated to it in an international encyclopedia “The History of Accounting”. It explains in detail the reasons why the authors of the first accounting manuals resorted to this style of narration: “Both the desire to rationalize bookkeeping instruction and the search for general rules of debit and credit caused textbook writers to attribute human qualities to ledger accounts. Account personification had many precedents. The oldest organized ledgers described nothing but debtor-creditor relationships between individuals. ... Later, the double entry system simply extended the use of the terms ‘debtor’ and ‘creditor,’ first to impersonal accounts such as cash and inventory, then to abstract expense accounts. Pacioli resorted to personification in describing a merchant’s relationship to his capital” (Chatfield, 1996, p. 459 – 460).

Jackson (1956, p. 295) previously conceived a similar idea: “...there is little doubt that the first ledger accounts were those showing personal debt relationships between merchants. With the development of the double-entry system, the terms ‘debtor’ and ‘creditor’ were extended first to accounts of objects (real accounts) and later to abstract classifications (nominal accounts). It therefore became the practice to extend the meanings of the terms ‘debit’ and ‘credit’ beyond their original personal connotation and to apply them to inanimate objects and abstract conceptions and by that very process a ready-made teaching device was forged”.

Russian researchers M.I. Kuter and Ya.V. Sokolov also note the enormous influence of this principle on the formation of the accounting system: “Personification of accounts allowed to combine real (live) and nominal (inanimate) accounts in one information array, i.e. not only real persons, but also some things became debtors and creditors” (Pacioli, 2009, p. 133).

Scientists from different countries are unanimous in their opinion that, at a certain period, the personification of accounts really had a substantial significance for the accounting procedure. It was an integral part of the so-called “Venetian” method of double-entry bookkeeping, described by Pacioli. However, the question of whether further study of this principle can be useful for improving the modern accounting theory remains disputable and actual, because when the International Accounting Day is celebrated on November 10, Luca Pacioli is remembered by accountants all over the world as this is the date when his great work was first published. But Ya.V. Sokolov states: “The interest of Russian society in the Treatise is not strong enough, and we hope that accountants of the XXI century will give more attention to the study of this book and will reveal the secrets that neither we nor our predecessors have been able to discover” (Pacioli, 2009, p. 246). This is true not only for Russians, but also for representatives of other states. Even some famous scientists believe that the Treatise is hopelessly outdated and does not correspond to modern realities. Regrettably, the more time passes, the more stable and widespread this belief becomes.

Perhaps, the personification of accounts interferes with the evaluation of the Treatise. After all, when Pacioli asks to imagine that a store and other items are living persons, the whole text begins to resemble a fairy tale. Thus, many readers consider it to be somehow frivolous; therefore, it is not worthy of special attention. Nevertheless, the Great Russian poet A.S. Pushkin described in “*Tale of the Golden Cockerel*” (trans. by B. Deutsch): “Fairy-tales, though far from true, teach good lads a thing or two”. In order to learn the lesson, it is necessary to take the hint hidden behind the personification of accounts. To do so, for starters, it is necessary to stop treating some fragments of the Treatise flippantly.

Sangster et al. (2014) report a very successful attempt to overcome the difficulties, which arise in the initial stages of accounting education, by using the Treatise as the principal textbook on a 20-hour component of the introductory financial accounting course in an undergraduate accounting degree program. This experience shows that the application of Pacioli’s work in the modern

educational process can bring positive results. At the same time, efficiency largely depends on how clearly certain features of the Treatise (such as the personification of accounts) are interpreted.

In this regard, a number of important issues are being discussed in this article. *How is the personification of accounts demonstrated in the Treatise? What is the correlation between the terminology used by Pacioli, and the modern conceptual apparatus of accounting? Can the interpretation of the terms mentioned in Chapter 11 help to explain examples of accounting entries in the Journal without the necessity to imagine that cash, goods, and other objects are persons (i.e. living debtors and creditors)? Why did Pacioli resort to the personification of accounts? Did he know about the personalization of accounts at all?*

This article does not intend to unravel all secrets of Treatise, but the goal is to find out which lesson can be learned from the “fairy tale” narrated by the “father of accounting”.

The personification of accounts in Treatise

The personification of accounts is manifested in the fact that Pacioli’s “debtors” and “creditors” are not only persons, but also things and abstract concepts (for example, capital). In Chapter 12, he writes: “... capital must always be placed as creditor (*creditore*) in all the principal mercantile Ledgers and Journals and the cash always debtor” (Geijsbeek, 1914, p. 43). To distinguish between the debtors and creditors, two special terms are used, which are described in Chapter 11: “... there are two expressions (*termini*) used in the said Journal; the one is called ‘per’, and the other is called ‘a’, each of which has a meaning of its own. ‘Per’ indicates the debtor (*debitore*) one or more as the case may be, and ‘a’, creditor (*creditore*), one or more as the case may be. Never is any item entered in the Journal which also is to be entered in the Ledger, without preceding it by one of the two expressions” (ibid.). These terms are further used in the general rule for the formation of accounting entries in the Journal: “At the beginning of each entry, we always provide ‘per’, because, first, the debtor must be given, and immediately after the creditor, the one separated from the other by two little slanting parallels (*virgolette*)...” (ibid.).

The words “Per” and “A” are well known due to the Latin saying “*Per aspera ad astra*” (it is believed that it belongs to the Roman philosopher Seneca), meaning “Through the thorns to the stars”, which is very popular (for example, it became the motto of America’s space agency “NASA”). However, the connection of these terms with debtors and creditors seems not at all obvious.

When the system of double entry bookkeeping began to spread around the world, Pacioli had followers from other countries who tried to find the equivalents to Italian terms in the language they were writing. For example, Schweicker (1549) used the German words “Für” and “An” instead of “Per” and “A”. Chapter 11 of his book “Zwifach Buchhalten” (“Double-entry bookkeeping”) has an intriguing name “Von dem rechten grundt der kunst des Puchhaltens” (“About the right ground of art of bookkeeping”). It states “Der grundt dieser kunst Puchhaltens ligt gar an den vorgemelten zwo sylben / Für vnd An / ...” (“The ground of this art of bookkeeping lies wholly in the pre-parsed two syllables / ‘Für’ and ‘An’ / ...”). There is an opinion that Wolfgang Schweicker and many other authors literally translated the text of Pacioli word-for-word without thinking. However, the Treatise does not have an analogue for Chapter 11 of the above-mentioned work called “Zwifach Buchhalten”. Hence, Schweicker wrote it completely independently, i.e. he clearly realized that the words “Für” and “An” are the key to understanding the double entry accounting.

That is why an adequate interpretation of the terms “Per” and “A” is of fundamental importance. Geijsbeek (1914, p. 10) noted that in English they correspond to the words “By” and “To”: “... the terms ‘A’ (our ‘To’) and ‘Per’ (our ‘By’) ...”. Further, he doubted whether this correspondence was sufficiently accurate: “It is difficult to say whether we can translate the Italian

‘Per’ into our ‘By’ and the Italian ‘A’ into our ‘To’, as these two expressions or words can be translated in many different ways according to the noun or verb following or preceding it, together with the consideration of the tense and case used” (ibid., p. 14). Therefore, in his translation of the Treatise, the terms “Per” and “A” are retained in the original, and for example the entry by which the amount of cash is transferred from the Inventory to the Journal looks like this: “Per cash // A Capital of myself so and so, etc.” (ibid., p. 45). Here comes the question: why is this so?

To answer this question, it is needed to remember what the capital is in the Treatise. In Chapter 12, Pacioli explains that “by capital is understood the entire amount of what you now possess” (ibid., p. 43). Let us cite this fragment in Old Italian: “Per lo caudale se intende tutto el tuo monte e corpo de faculta pnte” (“pnte” – abbreviation for “presente”). Apparently, instead of the term “capital”, the word “caudale” from the Venetian language (the Italian dialect prevalent mainly in Venice) is used. In this definition, the key word is “monte”, it is usually translated into English as “mountain” or “mount”, from which the noun “amount”, used by Geijsbeek, stems.

Naturally, this “entire amount” is non-uniform and includes separate constituent items. Therefore, the first entries in the Journal are designed to demonstrate all the things from which it is composed. This thought is suggested by information from “Cassel’s New Latin Dictionary” that the word “per” is used to denote “the means or instrument by which anything is done” (Simpson, 1968, p. 432). In this case “per” matches the words “through” and “by”. The word “a” is intended, among other things, to indicate “direction” (ibid., p. 1).

An extremely important conclusion to be made here is that the objects called in the Treatise as “debtors” (and related to the term “per”) are *the means by which the entire amount of what merchant possesses is formed*. The results of these simple linguistic studies allow us to look at the entries in the Journal from a different perspective. For example, when writing “Per cash // A Capital”, the merchant has in mind: “By the cash I can add this sum *to* the entire amount of what I now possess”.

Unfortunately, Pacioli does not provide a holistic sample of the Journal, but it is found in the book of his faithful follower Manzoni (1564). Let us consider the entry in which the person being the debtor is mentioned: “Per Cristoforo da Sebinico // A Caudal”. It means “By the debt of Cristoforo da Sebinico, it is possible to add this sum to the entire amount of my possession”. The obligation of the merchant before Michiel Quirini is written in reverse: “Per Caudal detto // A Michiel Quirini”. The question is natural: why is capital here recorded with the term “Per”? To understand this, it is necessary to pay attention to the fact that capital may mean only what the merchant owns. In the definition of Pacioli, it is said about “tuo monte”, i.e. only about “your amount”, but not about the whole amount. Geijsbeek (1914, p. 14) clarifies: “Capital, which is mentioned in Italian as ‘Cavidale’, comes from the old Latin ‘capitalis’, which means ‘chief’ or ‘head’, and also from the Latin ‘capitali’, which means property. Thus capital would mean ‘the property of the chief’, i. e., proprietorship”. The old Latin maxim explains what amount can be considered as “yours”: “Id solum nostrum quod debitis deductis nostrum est”. According to the dictionary (Black, 1910, p. 587), it means: “That only is ours which remains to us after deduction of debts”.

Hence, in order to correctly calculate the capital, it is necessary to deduct the sums of money to be sent to creditors from the amount of property. This is the requirement that determined the form of the entries by which the debts of the merchant were registered in the Journal. In them, capital is no longer a “creditor”, but a “debtor”, i.e. it becomes an instrument, a means by which the merchant can repay debts. When writing down the amount, the merchant means: “By the entire amount of my possession I should give this sum of money to my creditor Michiel Quirini”. Thus, the entries in the Journal with the participation of capital in general form look like this: “By Debtor

(person or thing) to Capital” and “By Capital to Creditor (person or thing)”. Obviously, in the first case, the sums should be added to the entire amount of what the chief possesses, and in the second case, they should be subtracted from it.

Hendriksen and Van Breda (1992, p. 43) suggested why medieval merchants needed such a mechanism for accounting: “Why all the complex machinery? The curious fact is that, although the inventors of accounting had concepts like money, equity, and expense with which to work, they had no negative numbers at their disposal! Negative numbers were known to occur but as late as 1544, mathematicians like the German Michael Stifel thought of them as absurd and fictitious. In fact, they were not used in mathematics until the 17th century. The T account was developed, therefore, to show increases on one side and decreases on the other”.

It is interesting that the parties of the T account were not named by Pacioli as “Debet” and “Credit”, as one might imagine, but “Dare” and “Avere”. Geijsbeek (1914, p. 14) uses the wordings “shall give” and “shall receive” instead of these terms and explains in detail the translation nuances: “If, however, we take a literal translation of the Italian ledger heading used for our debit, or ‘*dee dare*’, we come to ‘shall give’. Putting this into a sentence read from a ledger we have as at the present time, ‘John Doe debit to Richard Roe’ and in the old Italian, ‘John Doe *dee dare* (shall give) A (To) Richard Roe’, and as to the credit, we have in our present day ‘Richard Roe credit by John Doe’, and in the old Italian, ‘Richard Doe *dee havere* (shall have or receive) Per (by the hand of) John Doe’”. Sangster (2016) interprets expressions “*die dare*” and “*die avere*” as “should give” and “should have” or “should receive”. The words “dare” and “avere”, just like “per” and “a”, are used to refer to debtors and creditors, not in the Journal, but in the Ledger, so these terms are interrelated. The choice of the names of the parties to the account is not accidental, because the debtor is the one who *should give*, and the creditor is the one who *should receive* the amount of the debt.

Because of the personification of accounts in the Treatise, these terms are used not only for people, but also for things and abstract concepts that are often combined within a single entry, which leads to the formation of combinations that may seem absurd at first glance. For example, Chapter 18 details how to register in the Journal and Ledger the purchase of Palermo sugar from Zuan Antonio (Geijsbeek, 1914, p. 55): “You will make the entry in the Journal as follows: ... per Palermo sugar // A Mr. Zuan Antonio, of Messina...

In the Ledger you shall write down as follows:

Palermo sugar debit (*dee dare* – shall give) on such and such a day of November, per Zuan Antonio of Messina ...

These items shall be entered in the credit column as follows:

Mr. Zuan Antonio of Messina, credit (*dee havere* – shall have), per Palermo sugar ...”.

It seems that goods have to settle up with a supplier. Even if we imagine that Palermo sugar is “just like a person” (such as the store from the Chapter 23), it still remains unclear how to do that. There is no explanation in Treatise, but the Chapter 1 contains a reference about some characteristics of business practices in Italy which can be taken as a hint.

Pacioli writes: “For, as we know, there are three things needed by any one who wishes to carry on business carefully. The most important of these is cash or any equivalent, according to that saying, *Unum aliquid necessarium est substantia*. Without this, business can hardly be carried on.

It has happened that many without capital of their own but whose credit was good, carried on big transactions and by means of their credit, which they faithfully kept, became very wealthy. We became acquainted with many of these throughout Italy. In the great republics nothing was

considered superior to the word of the good merchant, and oaths were taken on the word of a good merchant” (Geijsbeek, 1914, p. 33).

Consequently, not always a merchant had money to buy goods from a supplier, that’s why he borrowed them. And a supplier had to believe the merchant’s promises of payback, when the goods will be sold. Geijsbeek (1914, p. 14) comments: “Our word credit is put in Italian as ‘*credito*’, coming from the old Latin word ‘*credo*’, which means ‘trust or believe’, as in business our creditors were ‘believers’ in the integrity of the proprietor, and therefore loaned or gave him something”.

When a merchant had no start-up capital, goods have become a *means* by which he could get the money from a customer, which subsequently allowed him to settle up with a supplier. Therefore, the notation “by Palermo sugar // to Mr. Zuan Antonio” is not at all contrary to common sense.

Let’s imagine that an inventory checking had been taken after acquisition of goods. During this process it will be found out that the merchant has a new thing by which it is possible to replenish the capital. In Journal, this will be shown by the entry: “By goods // to capital”. On the other hand he also has a debt. Due sum should be taken from the entire amount of merchant’s property (i.e. from capital) and sent to the creditor. At the same time it is needed to make an entry: “By capital // to creditor”. As the value of the goods is equal to the size of the debt, the capital should be increased and simultaneously it should be decreased by the same amount. It can be assumed that the accountants of past centuries decided that in the Journal for brevity, instead of two entries, it is possible to do one: “*By goods // to capital*”; “*By capital // to creditor*” → “*By goods // to creditor*”.

In case when the merchant originally had money, he settled up with a supplier immediately. Then the accountant wrote in the Journal: “Per Palermo sugar // A cash”. As already mentioned, for the merchant the goods served as a means by which he could get the cash. The merchant issued the cash to the supplier in order to purchase the goods. After the sale of them in the future the money should be received again. The circulation of cash flow is done in this way. If this mechanism is broken, the cash may not return. According to Pacioli, inexperienced merchants may have this problem: “Therefore the proverb: If you are in business and do not know all about it, your money will go like flies. That is, you will lose it” (Geijsbeek, 1914, p. 63). It is impossible to allow the loss of money. They should not fly away forever like flies, but return back like postal pigeons.

So, writing “By goods // to cash”, the merchant means: “By goods, I have to get the sum of money from the buyer and add it to the whole amount of my cash”. Due to the fact that cash is recorded along with the term “A”, it seems that it is a “creditor”. However, in Chapter 12, Pacioli warns: “Never at any time in the management of your business may cash be creditor, but only debtor unless it balances” (Geijsbeek, 1914, p. 43). Therefore, for cash and other property, everything that is written about the store in Chapter 23 is true: “... you shall credit it with all that you take out of it and receive from it (*cavi e recevi*) as if it were a debtor who would pay you gradually” (Geijsbeek 1914, p. 61). So, if it’s cash, then the term “creditor” means “debtor who would pay you gradually”. Here it is not meant that cash “should receive”, but that it “should not give” the amount that was given to purchase the goods.

Reading the text of the Treatise and analyzing the examples given in it, one can come to the conclusion that in the personification of accounts there is really nothing magical and surprising. To see this, let us consider how the terms used by Pacioli correspond to the current methodology of accounting.

The connection of ancient terms with the modern conceptual accounting apparatus

Words “by” and “to” allow us to accurately convey the essence of the terms “per” and “a”. In 1994, Professor J. Cripps used them in his translation of the Treatise, but he linked “by” with “creditors”, and “to” with “debtors”: “... ‘To’ prefixes debit entries. ‘By’ prefixes credit entries” (Pacioli, 1994, p. 20). The comments specify: “... ‘Per,’ that is, ‘To’. ... ‘A,’ that is, ‘By’. ...” (ibid.). Therefore, the entry “Per Cassa // A Cauedal” from the Treatise is translated as follows (Pacioli, 1994, p. 21): “To: Cash By: Capital”.

It is obvious that Cripps interprets the text of Treatise from the perspective of modern accounting theory, in which it is assumed that capital (owner’s equity) is one of the sources of the funds that are invested in the assets. This treatment of the balance sheet was called “Sources and Uses of Funds View” (Anthony and Reece, 1989, p. 35). According to this view, the owner’s equity is the source of the cash and other property. However, Sokolov (1996, p. 271) rightly observes: “The source is a term that has been universally recognized, but not devoid of ambiguity, for example, the cashbox is a source of cash”. In Treatise, the accounting procedure begins with an inventory, during which merchant’s possession (including cash) is counted. It is quite clear that the more money will be revealed during this process, the greater sum will be added to the capital eventually. Hence, the entire amount of merchant’s possession depends on the sum of cash and other property. Therefore, we dare say that in Treatise, not capital is a source of cash, but, conversely, cash is a source of funds for the formation of capital. Such a source, in our opinion, is better called a “resource”. It is noteworthy that in English the word “resources” differs from “source” only by the particle “re-”, which, nevertheless, gives an important semantic hue, denoting the repetition of an action or process. It means, in some sense, resources can be treated as sources, but not worked out and worn-out, but those that can be used again.

Pacioli considers goods, cash and other things as “debtors”. These objects are now known as “assets”. According to the definition given in the text of IFRS: “An asset is a resource controlled by the enterprise as a result of past events and from which future economic benefits are expected to flow to the enterprise”. If we use the term “*dee dare*”, i.e. “shall give” or “should give”, it can be said that assets (Pacioli’s “debtors”) *should give* economic benefits to the enterprise. As is known, “the future economic benefits embodied in an asset may flow to the enterprise in a number of ways”. For example, an asset may be used to settle a liability or distribute to the owners of the enterprise. This means that the creditor or owner should receive or should have (*dee avere*) this resource. The modern definition of the term “equity” (i.e. “capital”) looks like this: “Equity is the residual interest in the assets of the enterprise after deducting all its liabilities”. It fully corresponds to the ancient wisdom cited earlier: “That only is ours which remains to us after deduction of debts”.

It becomes clear that the text of Treatise is much closer to the content of the newest manuals for accountants than one would expect. But this similarity can be detected only if the original meaning of the terms “Per” and “A” is preserved. It can’t be accepted that “Per” is “To” and “A” is “By”. Let’s take the liberty of asserting that this thesis contradicts Pacioli’s ideas. So, the inaccuracy was admitted in 1893 by the Russian translator of Treatise E.G. Valdenberg, who compared “Per” with the creditor, and “A” – with the debtor. This fact was established by the authoritative Russian expert in the field of accounting history Bauer (1911, p. 155): “In the Russian translation of the work of Pacioli ... the terms ‘A’ and ‘Per’ are misunderstood ... In reality, these terms have the opposite meaning”.

In 2009, Professor M.I. Kuter prepared a translation of Treatise, executed directly from the Old Italian language, which allowed a fresh look at the traditional postulates of Pacioli (Kuter and Kuter, 2007). In this edition, Valdenberg’s error was finally corrected, the text of Chapter 11 is translated as follows: “The debtor or debtors are always designated by the term ‘from whom’, and

the creditor or creditors – by the term ‘to whom’ ” (Pacioli, 2009, p. 43). Indeed, the debtor is the one *from whom* the merchant should receive something. Contrariwise, the creditor is the one *to whom* he should give the money or another property.

While studying the Treatise, one can not disagree with the statement of Hendriksen and Van Breda (1992, p. 36): “Debits, credits, journal entries, ledgers, accounts, trial balances, balance sheets, and income statements all date back to the Renaissance. Accounting, therefore, can claim as noble a lineage as many of the liberal arts. Accounting students can take pride in their heritage. Part of this heritage is a rich vocabulary, almost all of which dates back to this period and much of which is fascinating in its origin”. There is a hope that a careful study of this vocabulary, including the terms “*Debet*”, “*Credit*”, “*Dare*”, “*Avere*”, “*Per*”, “*A*” and others, will help all accountants to move successfully *per aspera ad astra*.

Surely, the Treatise will prove to be extremely useful for everyone who wants to understand the history of accounting development; however, it should be recognized that it is impossible to find answers to all the questions only by reading Pacioli’s text. Therefore, it is necessary to use additional sources of information, which include the old accounting books kept in the archives.

For instance, it is well-known that it was Pacioli who first told the general public about the accounting statements named the “*bilancio del libro*” and “*summa summarum*”. However, their description, presented in the Treatise, had been causing controversy among specialists for many years. Some important peculiarities of the formation of real “*bilancio del libro*” were found out thanks to the long work conducted in the archives, where the earliest known example of such a document was discovered. Here is what Kuter et al. (2017, p. 24) told about the achieved results: “The research method used in this study was logical and analytical modeling, involving the construction of a complete set of flowcharts of the relationships in all transactions according to the account books for a specific period of time (accounting cycle). The model we developed confirmed the entries in the balance statements (*bilancio del libro* and *summa summarum*) and profit and loss accounts of the Datini companies described in this study.

Our analysis of this early accounting practice has made it possible to rationalize some of the more controversial aspects of Luca Pacioli’s (1494) treatise concerning the purpose, structure, and content of balance statements, whereby he described both the *summa summarum* and the *bilancio del libro*”.

It can be concluded that the study of the Treatise brings the greatest effect only in combination with the analysis of archival documents. Nevertheless, many scientists consider the work in the archives as not very promising, arguing that many pages in the books were lost or damaged. This serious problem can be resolved with the help of the method of logical-analytical modeling, as mentioned above. This approach makes it possible to restore the contents of records made on lost fragments. It has already proved its effectiveness in various cases (see Kuter et al., 2018). Therefore, from now on, the absence of any pages in old accounting books should not be considered as an insurmountable obstacle to conducting research in archives. Thus, quite favorable conditions have been formed by now for all the secrets, associated with the Treatise, to be solved.

Conclusion

The personification of accounts has both positive and negative sides. The main drawback is that because of its use, accounting entries have created the impression that things live their own lives. In the early 20th century this was ironically criticized by the Russian author of the bookkeeping manuals Yavorsky (1909, p. 8): “... in accounting, pepper, for example, not just pepper, but ‘Mr. Pepper’, who can buy himself, sell to anyone ...”. It is not surprising that such “self-will” of pepper and other objects gradually began to irritate everyone. It was then, according

to Sokolov (1996, p. 204), the transformation of accounting into scientific discipline began: “Science begins with the criticism of myths, with the debunking of magical rites. The first scientists-accountants showed naivety of personification and insufficiency of forms which are used, they first began to design and comprehend accounting categories, what makes science a science”.

These scientists started to develop the so-called “personalistic” theories, based on an approach that became known as “personalization of accounts”. Mattessich (2008, p. 25–26) emphasizes that “the ‘personalization’ made the accounts more plausible by identifying them with people, usually with those administering the accounts”. Sokolov and Sokolov (2009, p. 68) see this as a change in the stages of the evolution of accounting thought: “The comprehension of the double entry was aimed at the transition of the personification from which Pacioli proceeded (humanization of account – attributing the human characteristics to the thing) to the beginning of personalization of accounts. In this case, the object of accounting is not the things, but persons, not the cash, but the cashier, not the goods, but the storekeeper, etc.”. It seems that use of the personalization of accounts started only from the end of the 18th century, when the works of E. Degrange Sr and his followers began to be published. However, there is evidence that this is far from the case.

Researches conducted in the archives of Italy by Kuter, Gurskaya and Sidiropulo (2013, p. 217), showed that the Genoese Massari’s ledger of 1340 has the special feature: “There is no cash (cassa) account or income money and expense money account, as it would be called at the beginning of the 14th century in the system. One or two Massaris (as a rule, Paschalis de Furneto or Dominico de Garibaldo) collect and distribute cash. Thus, it is not the cash that is reflected in the account but the receivables of cashier for the commune”.

Thus, described practice took place even a century and a half before the publication of the first printed work on accounting. It can be assumed that Pacioli simply was not familiar with this variant, so he had to resort to the personification of accounts. However, the text of Chapter 23 testifies that he knew about such way, but considered it not completely correct: “There are many who in their books charge everything to the manager of the store. This, however, can not be done properly without the consent of that person, because you can never enter in your books as a debtor any person without his knowing it, nor put him as a creditor under certain conditions without his consent. If you should do these things, it would not be right and your books would be considered wrong” (Geijsbeek, 1914, p. 63). Consequently, Pacioli believes that it is easier to imagine that the store (or cashbox and another thing) is “just like a person” than to negotiate with store manager or cashier and other persons, trying to explain that they are now debtors and creditors. In addition, it must be remembered that during the Pacioli’s times, many enterprises were family businesses. In this regard, the establishment of debt relations between relatives, probably, seemed unacceptable. Only much later, with the advent of large companies in which contracts of liability began to be concluded with employees, the necessary prerequisites for the personalization of accounts were formed.

At the present time, the belief is held that the personalization of accounts became the result of improving of the personification of accounts and arose much later. However, the facts cited above suggest that the concept of personification was used not because accountants couldn’t come up with anything else, but due to the fact that in the conditions that were at that time it looked more suitable. It must be also mentioned that in the era of Renaissance, when “father of accounting” lived, the anthropocentric ideas (that began to emerge back in Ancient Greece when Protagoras proclaimed: “The human being is the measure of all things”) dominated. Most likely, the author of Treatise was aware of both personification and personalization, but still tended to the first option.

Obviously, personification of accounts is a very significant feature of the Venetian method described by Luca Pacioli. Like the personalization of accounts, it played the great role in the genesis of accounting. It will be no exaggeration to say that in many ways, mostly due to the introduction of personification and personalization of accounts, accounting has become such as we all know it.

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