

A Re-examination of the Double-Entry Bookkeeping Theory of Benedetto Cotrugli

By Yasuhiko Kataoka

I . Introduction

The world's first manuscript on double-entry bookkeeping was '**Libro dell' arte di mercutara**' (A Book on Mercantile Arts), written by raguseo Benedetto Cotrugli (Benedetto Cotrugli of Ragusa). He completed it on August 25th 1458. Unfortunately it was not published until 115 years later, in 1573, in Venice. The published version was entitled '**Della mercatura et del mercant perfetto**' (Commerce and the Perfect Merchant). It has been said that the importance of Cotrugli's book lies in the fact that it was written 36 years before Luca Pacioli's 'Summa', rather than the worth of its content.¹ However, some accounting historians in Europe have recently been taking a new look at Cotrugli's manuscript. The original manuscript written by Cotrugli has not been found, but 2 manuscripts of it were made. There are many differences between the content of these manuscripts and the published book of 1573. Much of the explanation of double-entry bookkeeping in the manuscripts does not appear in the book of 1573. It seems that the publisher changed the content considerably.

In this paper I re-examine Cotrugli's double-entry bookkeeping, based largely upon the content of a paper presented by Miroslav Buzadžić, Mladen Habek, and Vladimir Stpetić at the 21st Annual Congress of the European Accounting Association.² I have also received valuable material and beneficial advice from drs Postma and drs Helm of the Netherlands.³

Notes

1. For example Peragallo writes that the importance of Cotrugli's book lies not so much in its intrinsic worth as in the time when it was written, it antedates Paciolo's work by 36 years.

Peragallo, Edward, 'Origin and Evolution of Double Entry Bookkeeping', New York, 1938, p.55.

2. Miroslav Buzadžić, Mladen Habek and Vladimir Stpetić, 'Benedikt Kotruljević (Benedetto Cotrugli) of Dubrovnik on Double-Entry Bookkeeping, in the year 1458 - before L. Pacioli', The Paper for the 21st

Annual Congress of the European Accounting Association, Antwerp, April 6–8, 1998.

3. Johanna Postma & Anne J. von der Helm, Herenweg 97, 8435 WR Donkerbroek, the Netherlands.

II. The manuscript and the Publication

Benedetto Cotrugli completed '**Libro dell' arte di mercatura**' on August 25th 1458 in Castro Serpici, near Naples, but was unable to get it printed immediately. This was because printing had not yet reached Naples; Italy's first printing-house, at St. Scolastice on the outskirts of Rome, did not start up until 1465. It is not clear why Cotrugli did not have his manuscript published in 1465 when printing was introduced. At the age of 50, he was presumably still in good health.

Later his manuscript was kept by two merchants, Giovanni Guiseppi and Lvan Josipović, at their house in Dubrovnik. They took it to Venice in about 1570 and asked Francesco Patritius (1529–1597), the philosopher and publisher, to publish it. When he read the manuscript Francesco was deeply moved by its wonderful content, but he found places that he felt were mistaken or difficult to understand. He therefore corrected these and made it easier to read. In doing so, he omitted some sections and added his own opinions.¹ In other words he made significant changes to the content. The amended manuscript was published in 1573, and given the title '**Della mercatura et dell mercante perfetto**' (Commerce and the Perfect Merchant).

This book was extremely well received. In 1582 it was translated into French by Jean Boyron in Lyons with the title '**Traite de la merchandise et du parfait marchand**'. Also, in 1602 a second Italian edition was published in Brescia.

Cotrugli's original manuscript has still not been found, but it has recently been confirmed that two manuscripts were made. The first is kept in the Biblioteca Nazionale Centrale Firenze (Florence's National Central Library).² It was completed by a Florentine merchant, Giovanni Strozzi, on March 17th 1484. He transcribed it for himself and his family. Later he took it directly from the library in his house to the above-mentioned library.

The second manuscript was only discovered very recently. It is

currently kept in the National Library of Malta in Valletta.³ It was transcribed by a merchant in Dubrovnik, Marin Rafaeli or Marinus de Raphaeli, in 1475. The discovery of this second manuscript has shed new light on Cotrugli's bookkeeping theory, due to the significant differences between the content of this manuscript and the book of 1573. In other words, it has become clear that there were major differences between the book of 1573 and Cotrugli's manuscript.

Notes

1. Buzadžić, Habek, and Stpetić, op. cit., p.13.
2. For details see *Benedetto Kotoruri no 'Sekai Saisho no Fukushikiboki Bunken' ni tsuite* (The First Manuscript in the World on Double-Entry Bookkeeping written by Benedetto Kotorugli) by Kataoka, Yasuhiko, in *Kaikei* (Accounting), Vol. 150, No. 2 (August 1996 Issue), p.126.
3. On the home page of their website, Postma and Helm say that they discovered the third manuscript.

III. Cotrugli's Birthplace and Cotrugli the Man

1. His birthplace

Cotrugli was born in Dubrovnik around 1416.¹ In those days Dubrovnik was an independent city-state. It had been granted independence in a peace treaty between King Ludovicus I of Hungary, and Venice, signed at Zadar in 1358.² Hungary nominally ruled and protected Dubrovnik, and Dubrovnik paid Hungary 500 ducats a year for that protection. As a city-state, it actually enjoyed a considerable degree of independence. Dubrovnik also purchased land from feudal lords and rulers in neighbouring territories in order to increase its territory. It had its own laws (eg. Common Laws and Maritime Laws) and it flourished. However it did not have any armed forces, so it paid tributes to neighbouring rulers. In around 1440 Dubrovnik was ruled by 32 noble families, who established the Grand Council. The body that actually ran the city (the Consilium Rogatorum) was elected from and by the members of this Council, as was the head of state.³

The nobility were merchants, but they entrusted the running of their business to commoners. The city's agriculture was carried out by peasants working on land owned by the nobility, but they did not produce

enough for the needs of the city, so Dubrovnik relied on imports of food. It traded, not only with the countries on the Mediterranean, but also with the Balkan hinterland. Caravans arrived and departed from Dubrovnik almost daily. Hence a considerable proportion of the citizens were engaged in trade.

Seamanship was regarded as being particularly important because of the emphasis on trade. Both commoners and nobility owned ships, and it was usual for ownership of ships to be shared, to spread the risk.

Food for Dubrovnik, along with many other goods, was imported by land and sea. By land, neighbouring peasants brought flowers, fruit, chickens, eggs, pigs, hares etc., while farmers from further afield brought honey, boards, charcoal, furs, linen cloth, and animals for food. From the hinterland merchants brought gold, silver, lead, spices, wax etc.

Almost every day ships brought barley, lentils, oil, corn, millet, olives, nuts, apples, cheese, sugar, spices, smoked meat and fish, medicines, woollen cloth, flax, copper, glass, charcoal, salt and many other goods. From Greece and other regions came timber, bricks, nails, iron, coal, tiles etc.

At this time Dubrovnik was one of the wealthiest city-states, but not everybody in the city was well off. The nobility and the merchants were rich, but many citizens were poor, particularly workers in the city's food supply chain, seamen, and peasant farmers. The merchant classes believed that wealth brought happiness, and that virtue lay in greedily accumulating wealth. As a result they devoted their lives to their businesses, taught their sons about commerce, and were extremely keen for them to follow in their footsteps.

One of the foundations of Dubrovnik's wealth in the 15th century was cloth manufacturing. This industry started up in Dubrovnik in the 14th century, and during the 15th century it made a major contribution to the activities and financial resources of the city. The first cloth dye-works was founded in Dubrovnik in 1398. Coloured cloth sold at high prices, and the massive profits were a strong incentive for many merchants.

The city authorities also helped to support dyeing, and invited skilled foreign craftsmen to come and work in the industry. Most of them were Italian, but some were German. The city also had a large building constructed for textile workshops in 1419.

The second most important economic activity in the first half of the 15th century was the trade in silver and the manufacture of silverware / silver coins.⁴ At the time there was a shortage of gold and silver in Europe, and each country searched feverishly for deposits of gold and silver. This was certainly the case in the Balkan Peninsular, and important deposits were found and mined on the outskirts of Dubrovnik. The most important mine was in Brskovo (present day Montenegro) in the Dubrovnik hinterland, where deposits were found in 1254. Important silver mines were also developed in Serbia from around 1320.

Dubrovnik's merchants sold cloth, salt and other products to the Saxon miners in exchange for silver, which they exported to the countries on the Mediterranean. They made enormous profits because silver was much cheaper in Dubrovnik than in the Mediterranean region. Cotrugli's relatives were engaged in the silver trade.

2. Cotrugli – The Man

Benedetto Cotrugli's ancestors lived in Kotor⁵, but were attracted by the prosperity of Dubrovnik and moved there in around 1350. According to public records the family name was Kotrulj or Kotruljević in Croatian, Cotrugli or Cotruglia in Italian, and Cotrullis in Latin. Benedetto is Italian, in Croatian it is Benedikt. Hence in Italian his name was Benedetto Cotrugli.

The family were not nobility but did belong to a brotherhood of rich citizens. They were involved in many of the city's activities, and were well respected.⁶ Benedetto's father, Jakor or Jakša (1390–1443), was a reputable merchant, who traded with Bosnia, Serbia, Italy, Spain etc. He also had the lease of the Royal Saltworks in Apulia, exporting salt to the Levant in the East Mediterranean, and the lease to the Mint, from Naples. In 1417 and 1432 Jakša was sent on missions by the Hungarian King, as a special emissary of Dubrovnik. His objective was to find out whether / how Hungary could check the progress of the Turks into the Balkan Peninsular; they were becoming a danger to Hungary and to Dubrovnik.

Benedetto Cotrugli was born around 1416. His mother, who came from a family of Dubrovnik commoners, had 8 children, of which Benedetto was the third.

He received his first formal education in Dubrovnik's public school,

and later studied philosophy and law in Italy. However it appears that he was not able to complete his studies in Italy, because in 1436 he was already back in Dubrovnik.⁷

After his father's death he started trading, taking over his father's work. He progressed smoothly into this role and the business went very well, because he had been learning the family business from his childhood. Later, in a book he wrote that sons should learn the work of their parents, and that what they learnt from them was extremely beneficial.

To Cotrugli trading meant travel, carrying merchandise. Merchants went to the localities where there were goods for sale, assessed the quality, purchased them from the seller for a fair price, took them to another market and sold them. In his book he wrote the following:

'If someone wishes to earn a lot to achieve his goal, to which end is trading skill directed, it is necessary to – having abandoned the concern for other things – exert himself diligently to everything that can be in some way useful and help in that intention. It is sometimes necessary to invest maximum efforts day and night, to travel on foot, by horse, by sea or over land and exert oneself buying and selling, and following the sold or bought goods on horseback.'⁸

Archival documents reveal that Cotrugli travelled to Central Italy, Catalonia, Venice, Sicilia, the Balkan region, and as far as North Africa, trading. With his elder brother Michielle he brought large quantities of wool from Catalonia to Naples and the cities of the Adriatic. Cotrugli carried on a considerable part of his business in cooperation with other merchants.

According to records in the archives in Dubrovnik, Cotrugli was a distinguished, respectable citizen, and was mentioned in the Council as candidate for the position of Dubrovnik Consul to Genoa.

In the middle of the 15th century Cotrugli's trading activities were affected by changes in the woollen trade. At the beginning of the century Dubrovnik's weavers used coarse wool from the Dubrovnik hinterland (Herzegovina, Bosnia and Serbia). However cloth produced from this coarse wool lost its popularity and demand for it collapsed, as the people living on the Mediterranean came to prefer cloth spun from merino wool. The main producer of merino wool was in Catalonia. From 1446 onwards Cotrugli became a direct exporter of merino wool. At first he purchased it

from agents in Southern Italy (Naples and Foggia), but later imported it directly from Barcelona. Then, from 1444 to 1446 he stayed in Barcelona, where he gained the favour of Alfonso, the King of Aragonia and Naples. When he left Spain he maintained his trading connections in Catalonia, importing wool into Dubrovnik. Cotrugli also bought and sold silver. He purchased it in Serbia and Bosnia and sold it in Italy or Sicily, making very large profits.

From 1448 to 1453 Cotrugli travelled back and forth between Naples and Dubrovnik, carrying out trade between these two states. From 1453 until his death he lived with his family in Naples, only travelling to Dubrovnik when he was ordered to do so by the King of Naples.

King Alfonso appointed him Judge (auditorre della Ruatta), then Grand Judge (Giudice della cause). After Alfonso's death, his successor, King Ferdinand Ferrante, appointed Cotrugli as Royal Counsellor and Commissary. Cotrugli's judicial work in Naples drew him away from trade, but his trading activities were taken over by members of the Cotrugli family living in Dubrovnik and Italy. Cotrugli's work with the Mint in Naples was carried on by his son, Ivan Giacomo, after his death. Cotrugli was also entrusted with diplomatic work by the King of Naples. When Turkey invaded the Balkan Peninsular, King Ferdinand sent him to Bosnia as his ambassador. He was also sent there in 1466 by King Mathias Korvin of Hungary, as a royal ambassador.

Cotrugli was also involved in financial transactions from which he made a considerable profit. This work was not understood by other merchants of Dubrovnik, and it made him the object of their anger.

Cotrugli died in 1469, at the age of 56.⁹

Notes

1. The city was called Dubrovnik in the Slav tongue, Ragusa in Italian, and *Paovσlov* in the Byzantine language. As a result, to this day he has been known in Italian as **raguseo Benedetto Cotrugli**, Benedetto Cotrugli of Ragusa. Kheil, Carl Peter, *Benedetto Cotrugli Raguseo*, Wien, 1906, S. 18. a cura di Enrico Giusti, Carlo, Maccagni, Luca Pacioli, e la matematica del rinascimento, 1994, p.53.
2. Buzadžić, Habek, and Stpetić, op. cit., p.2
3. Buzadžić, Habek, and Stpetić, op. cit., p.3.

4. Buzadžić, Habek, and Stpetić, op. cit., p.7
5. A town located south–east of Dubrovnik.
6. Buzadžić, Habek, and Stpetić, op. cit., p.10.
7. It is also said that Cotrugli worked hard at his studies during his youth. Kheil, Carl Peter, a. a. O., S. 18.
8. Buzadžić, Habek, and Stpetić, op. cit., p.11.
9. Buzadžić, Habek, and Stpetić, op. cit., p.12.

IV. The Main Differences between the Manuscript of 1475 and the Book of 1573

Next I will explain the differences between the explanation of Cotrugli's bookkeeping theory in the transcription and the book of 1573.

(1) In the manuscript the Italian word used for the day book is **ricordanze** and the Italian word used for the ledger is **libro grande**. In the book these have been changed to **memoriale** and **quaderno**. I think that this is probably the result of the influence of Pacioli on the editor of the book. The Italian word used for the journal, **giornale**, is the same in both.

(2) In the manuscript the method of recording capital (**capitale**) is described in detail. In the book this description has been omitted.

(3) In the manuscript the method for recording sales of cloth (**pano**) is described in detail. In the book it has been omitted.

(4) In the manuscript there is a detailed explanation of the structure of double–entry bookkeeping, describing, for example, debits and credits. In the book there is only a brief explanation.

(5) The manuscript contains the following sentence: 'And if you are in the habit of using exchange rates, be sure to start double–entry bookkeeping (**dupple partite**)'. This sentence is not in the book.

(6) The manuscript contains the following explanation of the section of the accounts concerning currency: 'If you receive cash you should have a section in which you make calculations for the foreign currency you deal in. Also, you should have another section in which you always record currency transactions, based on the custom in your country, ' This explanation is not in the book.

(7) In the manuscript the Italian word used for profits is **avançi**, and the Italian word used for losses is **perde**. In the book these have been changed to **avazi** and **disavanzi**.

(8) In the manuscript the final section is linked by the following sentence: 'It is sufficient to write the rules briefly, so that it does not become long-winded. It is impossible to explain your business operations in detail.' In the book this has been changed to: 'If everything was written down in detail it would become long-winded. This is because (bookkeeping) must be explained verbally; it is difficult to learn it from a written text.'

Also sentences such as the following, which are not in the manuscript, have been added in the book: 'Actually you should employ an able, practical young bookkeeper. If you do not, your business will descend into chaos, and collapse like Babylon. Hence if you wish to protect your good name, take care.'

(9) In the manuscript Cotrugli gives a series of examples of what is included in the journal. These examples are not in the book.

V. The Characteristics of Cotrugli's Bookkeeping Theory

We can summarise the bookkeeping explained by Cotrugli in the manuscript as follows:

(1) He asserted that when merchants make transactions they should always make a written record of them, and not rely on their memory.

(2) He said that they should know how to organise their records.

(3) He explained that their official accounts should be made up of 3 books, the day book (**ricordanze**), the journal (**giornale**) and the ledger (**libro grande**).

(4) He said that the ledger should have an alphabetical index, so that particular accounts can be located quickly.

(5) He explained the terms used for debits and credits, saying that in the journal **per** should be used for debits and **A** for credits, while in the ledger **de (ve) dare** should be used for debits and **de (ve) avere** for credits.

(6) He gave examples of how records should be made in the journal and the ledger, and explained detail.

(7) He also gave many examples of additional sections in the journal that are not included in the main text.

(8) He explained in detail how to record and calculate profits and losses.

(9) He explained how to transfer the difference between the profit and loss to the capital account when the accounts are settled.

(10) He said that the accounts should be closed off each year.

- (11) He used the term double-entry bookkeeping (**dupple partite**).
- (12) He recommended that there should be a section for foreign currency in the accounts.
- (13) He explained the importance of correspondence.
- (14) He explained that it was impossible to explain the whole of the business operation in detail.
- (15) He explained Venetian bookkeeping.

VI. A Comparison with Pacioli's Bookkeeping Theory

The first work published concerning double-entry bookkeeping was Pacioli's 'Summa'. It was published in Venice in 1494. The first manuscript written about bookkeeping was 'A Book on Mercantile Arts' by Cotrugli. It was written in 1458. As I have already said, the original manuscript has still not been found, but a handwritten book of it was made 17 years after its completion.

The section concerning bookkeeping in this manuscript is brief; even with the examples it includes, it is less than 20 pages long. However, it does not lack quality. It is a satisfactory explanation of the basic structure of double-entry bookkeeping.

Next I will attempt to explain Cotrugli's bookkeeping theory through a comparison with that of Pacioli.

1. Similarities

- (1) Both Cotrugli and Pacioli argued that a system incorporating 3 books, the day book, the journal and the ledger, should be used for accounts.
- (2) Both said that in the journal **per'** should be used for debits and **A** for credits, while in the ledger **die (del, de, deve) dare** should be used for debits and **die (del, de, deve) avere** for credits.
- (3) They both explained the importance of merchants organising their records in an orderly manner.
- (4) They both explained that the ledger should have an alphabetical index.
- (5) They both described in detail how to make records in the journal and the ledger.
- (6) They both gave a detailed explanation of how to calculate the profit and loss records, and how to transfer them to the capital account.
- (7) They both described an accounting format comprising corresponding left/right columns for debits and credits.

(8) Cotrugli explained that the accounts should be closed off at the beginning of each year. Pacioli also said the accounts should be closed off each year. Both described the annual settling of the accounts.

(9) Both texts exhibit a religious influence throughout. This is to be expected of Pacioli because he was a Franciscan monk, but Cotrugli also mentions God and talks about praying.

(10) They both described Venetian bookkeeping.

Pacioli actually said 'We will use the Venetian method which among others is certainly to be recommended', while many of the terms used by Cotrugli (eg. **Utile e denno** in profit and loss accounting) were the same as those used in the accounts of Venetian merchants and are also used by Pacioli.

(11) They both stressed the importance of systematically organising correspondence.

2. Differences

(1) Pacioli's explanation of double-entry bookkeeping was wide-ranging and detailed, extending to 36 chapters. Cotrugli's explanation of bookkeeping was short and simple.

Cotrugli believed that it was impossible to make a detailed written explanation of business operations, whereas Pacioli tried to disseminate his ideas widely, by means of the printed word.

(2) Pacioli explained how to draw up inventory when starting up a business. Cotrugli did not.

(3) Pacioli asserted that when assets are valued they should be given a high value, Cotrugli did not mention this.

(4) Pacioli explained government accounting, company accounting and business trip accounting in detail. Cotrugli did not explain these things.

(5) Pacioli described the trial balance produced after closing off the ledger, Cotrugli did not.

(6) Cotrugli gave a series detailed examples of journal entries in the appendix at the end, whereas Pacioli gave examples of ledger entries that are potentially difficult to understand.

VI. In Conclusion

In the past there was considerable debate among accounting historians as to whether Cotrugli's bookkeeping theory covered double-entry bookkeeping. Among those who said it did were Bariola, Kheil, Besta,

Fogo and Peragallo, while Penndorf said that it did not.¹ However the situation is different for the evaluation of the content, nearly all accounting historians rate it as poor. They argue that the historical value of Cotrugli's manuscript lies in its age, the fact that it was written 36 years before Pacioli's bookkeeping theory, and not in its content. The main weaknesses of Cotrugli's work that influence their assessment of its content are the briefness and inadequacy of the explanation of double-entry bookkeeping, and the delay before it was published. Cotrugli remains in the shadow of 'the father of accounting', Pacioli.

However, as I have explained earlier, two transcriptions were made of Cotrugli's manuscript before Pacioli's bookkeeping theory was published, and they show that the book of 1573 is not a true representation of the content of Cotrugli's bookkeeping theory. Significant sections were rewritten by the editor.

For example, as I explained earlier, Cotrugli did not say that it is only possible to explain (bookkeeping) verbally nor did he say that you should employ an practical, able young bookkeeper. He only said 'it is impossible to explain business operations in detail.' He also explained the basic structure of double-entry bookkeeping, briefly but quite accurately. Firstly, he said that you should have a system based on 3 books, the day book, the journal and the ledger. He also explained the corresponding left/right debit/credit column accounting format used in the journal and the ledger.

The debit/credit terms that he said should be used were **per'** for debits and **A** for credits in the journal, and **de (ve) dare** for debits and **de (ve) avere** for credits in the ledger. These were very similar to those used in the accounts of the Venetian merchant Andrea Barbarigo.

Cotrugli explained and gave examples of various types of accounts: commodity accounts (for honey, textiles, pepper, soap etc.), personal debt and credit accounts, cash accounts, capital accounts, and profit and loss accounts. He also explained how to transfer items from profit and loss accounts to capital accounts. Furthermore, he advised that accounts should be closed off each year.

Cotrugli's bookkeeping theory was eventually published over a century after he wrote the manuscript. The editor changed the content, and his changes reduced its worth.

However, within 27 years of the manuscript being written, 2 manuscripts, and a copy of his appendix of bookkeeping examples, had been made. The bookkeeping theory exhibits a good knowledge of double-entry bookkeeping, and the examples should be accepted as the world's first examples of bookkeeping models.

The distinction of being the world's oldest manuscript concerning double-entry bookkeeping, albeit a transcription of the original manuscript, should be given to Benedetto Cotrugli.

Notes

(1) For details see '*Benedetto Cotrugli no 'Sekai Saisho no Fukushikiboki Bunken'* ni tuite (The First Manuscript in the World on Double-Entry Bookkeeping written by Benedetto Cotrugli) by Kataoka, Yasuhiko, p.134.

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