Reviews

Marin Rafaeli of Ragusa on Double-Entry Bookkeeping in 1475: a Recent Discovery by Anne J. van der Helm and Johanna Postma

An Italian edition of Benedikt Kotruljević’s *Il libro dell’arte di mercatura*, edited by Ugo Tucci (Venezia: Arsenale editrice, 1990) and based upon an unknown transcription of Kotruljević’s treatise from the end of the fifteenth century, has attracted considerable scholarly attention (see selected bibliography in the appendix). An international symposium on Kotruljević, a Croatian economist, was held in Dubrovnik under the auspices of the Croatian Academy of Sciences and Arts and the Croatian Accountants’ Association (papers were published in 1996 and 1997). His work is being examined not only by the historians dealing with economy and accounting, but also by specialists in the Mediterranean economy, trade, and business. Curiously, far more has been written on Kotruljević over the last ten years than in the former four centuries, since the first edition of his book.

Research on Kotruljević’s work has led to an interesting discovery. Guided by Paul Oskar Kristeller’s reference from 1989 on the location of the oldest transcription of Kotruljević’s *Il libro dell’arte di mercatura* in the National Library in La Valetta (Malta), two Dutch researchers, Anne J. van der Helm and Johanna Postma, have discovered an unknown manuscript of Marin Rafaeli (cited also as Marin de Rafael), a Ragusan, on double-entry bookkeeping. Their research was presented at the 8th World Congress of Accounting Historians held in Madrid in 2000. They discuss their findings in a study »La Riegola del Libro: Bookkeeping Instructions from the Mid-Fifteenth Century«, published in *Accounting and History*, the Proceedings of the Congress, an edition of the Asociación Española de Contabilidad y Administración de Empresas (pp. 147-178).

History of the discovery

In his catalogue, printed in 1989, Paul Oskar Kristeller listed the oldest known transcript of Kotruljević’s book, dated 1475. Housed at the National Library of Malta, the book was transcribed by the Ragusan Marin Rafaeli. Ugo Tucci’s critical edition, published in 1990, was not based upon this transcript because it was unknown to him. In Croatia, Žarko Muljačić has made reference to this discovery on several occasions, pointing out that the closing part of the transcript is supplemented with “financial notes”, which he attributes to the owner of the manuscript. T. Zanato (1993), a philologist, who has made a brilliant linguistic analysis and established a *stemma codicum* of all three known manuscripts of Kotruljević’s treatise, also tends to interpret the endnotes as mere “bookkeeping examples”.

In their extensive research of the Maltese transcript, A. van der Helm and J. Postma made a bold attempt to examine the “financial notes” as well. They have established that these are not the random bookkeeping notes made by Marin Rafaeli, but the oldest bookkeeping manual in the world. As the book itself bears no title, the authors refer to it as *La riegola del Libro*, after the initial words of the *incipit* which reads: *Questa si è la riegola del libro, la quale si è fondamento de ogni quardernier* (These are the log rules, the basis of every bookkeeping practice).

The authors have established that the transcript of Kotruljević’s *Il libro dell’arte di mercatura* and *La riegola del Libro* has been written by the same hand (in an Italian script...
known as *mercantesca*), that of the Ragusan Marin Rafaeli. Both texts have been written in *lingua franca* of the Mediterranean of that time, that is, in Italian with the exception of a single page of Rafaeli’s text in Latin. In 1475 they were already bound together, as evidenced by the consecutive pagination and identical handwriting. The manuscript was highly valued by its owners, as the initials are richly ornamented in four colours with golden leaf. It is assumed that both texts have been used by the same merchant family. The authors, however, cannot explain how the manuscript ended up in Malta, but they have established that the librarian, Ignatius Xaverio Mifsud, was familiar with the texts in 1756 and even wrote an essay on Benedikt Kotruļjević, dedicating it to the librarian of the Royal Library of Naples, convinced of Kotruļjević’s Neapolitan origin.

The book and its contents

The book consists of 36 pages with 50 lines of theoretical instructions concerning bookkeeping and 266 examples of how to enter trading transactions into the log and the general ledger. Rafaeli’s presentation of the examples is pedagogical: he sets off with simple examples, proceeds with more complex ones, rounding the book off with very specialised bookkeeping operations practised in the Mediterranean trade of the time. Thus Rafaeli divides the text into 13 parts. The first deals with elementary examples of double-entry bookkeeping; the second covers the methods used in sales and purchases; the third broadens the previous subject matter by describing commission purchases and sales; the fourth part analyses a commissioned journey to Beirut, while the fifth presents the transactions and recording of state bonds issued by some republics in order to accumulate funds for current expenditures. The sixth chapter elaborates a situation in which a merchant, accompanied by several others, travels to the Levant, makes a number of stop-overs on the way, sells some of his merchandise or exchanges it for the goods he finds in the transit ports, and enters all of his transactions in the books. The seventh chapter exemplifies the purchase and orderly recording of items pertaining to chartering a boat to Alexandria; the eighth part describes a joint investment in goods sent by ship freight, which would presumably make several stop-overs, the goods being exchanged for those which are cheaper in the transit ports; the ninth chapter details silk trade, from the purchase of the cocoons to spinning, weaving, and the sale of the finished product. The tenth chapter comprises examples of recording accounts pertaining to the construction of a palace (*palazzo*), renting a house, and the debit-credit procedure. It further contains detailed examples of entering bills of exchange and how they should be treated in case of protest, entry of ship charter and ship insurance, voyage organisation and balancing these activities in the general ledger.

All the examples provided by Rafaeli bear an exact date and full name of the merchant, seller or buyer, who participated in the transaction. As the records are real and not fictitious, this book serves as a rich source of economic history. The authors embarked upon the analysis of the names, revealing that only one of the men was from Naples, a certain Alvise /Luigi/ Coppola who operated in the maritime insurance business after 1452. The rest of the merchants were from Northern and Central Italy (Venice, Florence, Lucca, Siena), and even London and Constantinople. The Ragusans, needless to say, were among them too, including Rafaeli’s family.
In order to illustrate an entry into bookkeeping accounts, I have chosen Rafaeli’s example of a partnership:

Per: money amount A, in the partnership between me, Rafael de Marin, in person and gentlemen Anzolo Zon and Antonio Soranzo. I hereby invest 500 ducats as my share in loss and profit of the venture, I invest forthwith... 50 ducats.

This is the first entry into double-entry bookkeeping of a partnership in which Raphael de Marino was the bookkeeper. In the entries to follow he shows the quantity of merchandise his companions supplied him with to sell on the way, the value of the goods, the required sum of money he was to take with him for the forthcoming transactions which would help make his trade easier. The entries related to the merchandise differ: it is either merchandise purchased for the “joint business”, merchandise with no particular indication, anticipating the existence of a separate book in which transactions of each merchant travelling aboard with the goods are being recorded. As many as 53 entries have been made in the books during this joint undertaking and voyage. Such a specification helps the economic historian to reconstruct the activities of fifteenth-century Mediterranean commerce. There is an exact record of the quantity and price of the goods, its packaging and delivery on board. Rafaeli’s entry—*con tutte spese fin porto in galea*—would correspond to the modern FOB cost concept, as it includes the cost of transport, packaging and delivery on board, and naturally the price of the goods. The value of the goods is further increased by the sea freight charges (in this case to Alexandria), as well as insurance fees. Once in Alexandria, the goods are being sold by the agent at a certain price, which enables an accurate establishment of profit for every item of the transported goods and the enterprise on the whole. The profit is included in the gain on sale of the goods purchased in Alexandria and sold somewhere in Italy, as the ship would not sail back without cargo.

Rafaeli is well acquainted with the calculation of the production expenses as exemplified by the production of silk. Having purchased cocoons, a company (*It. botega*) proceeds with the production of silk yarn, from which raw and spun silk is obtained. The process includes dyeing and degumming, while the final phase of turning silk into a high quality product is carried out by the most skilled craftsmen. Rafaeli, the bookkeeper, suggests that a special record is to be kept of the entire procedure: the quantity of the purchased goods, all the production stages with a precise note of the payment made to each of the craftsmen for services rendered. Rafaeli’s book contains amazing references concerning the cost that did not escape the sharp bookkeeper’s eye even in that early period: the amount of the provision earned by the supplier of raw material, the exact payment made to those who measured the quantity of the purchased and delivered goods, the amounts paid to the dispatchers who delivered the goods to the craftsmen, etc. Here Rafaeli also counted the loss (or *kalo*, middle Italian!) and the amount he received for the waste products (for example, short silk threads which could not be woven into a cloth were sold to a cap maker *bereter*). Once the manufactured silk cloth was sold, it was recorded as a *botega* income and distributed among the partners after the production costs had been substracted.

In sum, it is through scores of seemingly dull figures and Rafaeli’s exhaustive examples of double-entry bookkeeping that we can actually grasp the true scope of the Mediterranean trade in mid-fifteenth century. We
have before us a gallery of masterly portrayals of merchants who make every effort to maximise their profit and minimise the risk, a practice resulting from long distance trade. It would be interesting to know how Rafaeli got hold of such a voluminous documentation, having in mind that business records were and still are considered confidential. The secrets of successful trading were selfishly guarded, the merchants not wanting to reveal the best deals in order not to help the competition which was far less pleasant in those days than it is at present. The Dutch authors thus argue that Rafaeli’s collection of examples originates in the main from other authors who at the time handed down their skills and techniques of double-entry bookkeeping to students. In their view, Rafaeli should be given credit for compiling, arranging and classifying a huge variety of accounting data in a logical way according to the type of activities. Rafaeli did it in such a masterly fashion, that nothing superior appeared in the literature during the following 50 years. Thus the contributions of other authors as well as Rafaeli of Ragusa have been saved from oblivion and brought to light after 425 years. According to the two Dutch authors, A. van der Helm and J. Postma, the discovery of this book is another corroboration of this fact.

**Scientific verification**

Instruction manuals of the kind are always subjected to scientific verification in order to establish whether the presented examples are authentic or hypothetical. Scientific verification is based on several parameters. First, it is necessary to establish whether the names are authentic or fictitious, whether the prices cited correspond to the values we already have in other sources, whether the cited operations pertaining to trade, insurance, and freight are identical with the available sources, etc. The Dutch authors have limited their verification to the personal names mentioned in Rafaeli’s book on the rules of bookkeeping, establishing that 31.8 per cent of the names he had cited could be traced to other sources. By comparison, in the famous book of G. A. Tagliente (*Considerando diversi mercanti*, Venezia, 1525) only 15.4 per cent of the names have been verified; in Manzoni’s *Quaderno doppio col suo giornale* (Venezia, 1540) only 12.7 per cent; in Casanova’s *Specchio lucidissimo* (Venezia, 1558) more than 20 per cent of the names could be found in other sources; a book which leads the way is M. Schwarz’s *Venezianischer Handel der Fugger Musterbuchhaltung* (Venezia, 1994) with as many as the impressive 50 per cent of the names traceable elsewhere.

Taking all the criteria into consideration, Rafaeli’s book is very reliable. Being the oldest known, it will become a principal source not only for the history of accounting, but for the history of the Mediterranean trade and that of Dubrovnik in particular. The reason why I specify “Mediterranean” is because Rafaeli’s examples are mainly related to the Venetian trade, on the basis of which the authors assume that Marin Rafaeli only put together his “basics of bookkeeping” in Naples, leaning on some older sources of the same kind. It is evident that the book was not intended to be used in the Kingdom of Naples, for the number of examples from Naples itself should have been greater.

The Dutch authors, A. van der Helm and J. Postma, strongly believe that this recent
The discovery of Marin Rafaeli’s book changes the entire history of bookkeeping. The latter has traditionally been divided into the early, so-called “documentary” period in which the double-entry bookkeeping was proved by rare examples of the preserved record books, the owners of which were individual merchants or institutions. It is Kotruljević’s (1458) and Pacioli’s (1494) works that mark the beginning of modern accounting and bookkeeping systems. The most recent discovery of Marin Rafaeli’s book shifts this demarcation line back in time, although we are not yet certain how far back. Namely, the part dealing with double-entry bookkeeping from around the year 1440 might not be the oldest, since the manuscript has not yet been completely examined.

Points at issue

The authors, A. van der Helm and J. Postma, are fully aware of the fact that in the current stage of research they are not able to provide the answers to all questions. In their own words, “the research of new material always poses more questions than it answers. That is why we believe that other authors will contribute to our research as well”.

One of the first open issues is the information we have about the author of the book. The Dutch researchers trace Marin de Rafael, and a few of his relatives, solely upon the basis of four entries cited in the book itself. Rafael de Nicolo, mentioned in the first part of the manuscript, is assumed to be born in Dubrovnik between 1405 and 1409. In 1465 he made a will (filed at the State Archives of Dubrovnik) from which we learn that at that time he was the father of six sons, all under the age of 24. Marin was his fifth son (Testamenta notariae, vol. 18, ff. 144v-145r). Could he be the author of the book? Another man by the name of Rafael de Marin is referred to in part six of the book, on the basis of bookkeeping records from 1439. This person is believed to be the executor of the will of Sigismund Rafaeli, together with Bartolo de Gozze who was staying in Naples at that time. The identity of Marin Rafaeli, who bears the same name as the author and transcriber of Kotruljević’s text, remains a puzzle. A genealogical reconstruction of Marin de Rafaeli’s family of Dubrovnik should provide us with more precise answers to this question and with more information on the author’s family background. An extensive analysis of the Ragusan archive sources could cast a much-welcomed light on this new name of Croatian economic literature.

It is the Dutch authors’ intent to publish a reprint of the book and accompany it with a most comprehensive analysis of not only the bookkeeping instructions, but of the Mediterranean trade as well (with a detailed study of the cited merchants, trade routes, cost and profit data, etc.). The authors undoubtedly deserve great credit for the work already completed, and that awaiting them. Hopefully, this project will draw the attention of other scholars interested in Rafaeli and thus contribute to the study of his life and work in the future.

Lastly, the analysis of the Dutch authors is an excellent example as to how modern research finds easier ways to overcome some old dilemmas and obscurities. To illustrate this, I shall point to yet another reference of this excellent study: Was Pacioli familiar with Kotruljević’s work and if so, to what extent?

At the beginning of the twentieth century, Kheil had reason to doubt the originality of Pacioli’s work (1906). According to Penndorf (1933), Pacioli merely amassed
and systematised all the data he could find on double-entry bookkeeping. Penndorf, however, tends to justify Pacioli’s attempt by stating that institutes such as authorship and intellectual ownership are of a fairly recent date and that in Pacioli’s day “it was customary to adopt whole texts of other authors and incorporate them into one’s own”. Pacioli was no exception as he himself “included the translation of Piero della Francesca’s Latin book into his own, failing to cite the source”. Following this example, Radičević (1985, p. 250) speculates on Pacioli’s reference to Kotruljević’s manuscript, which the former could have come across during his long stay in Zadar.

All the aforementioned assumptions on whether Pacioli was familiar with Kotruljević or not have been resolved by the work of the two Dutch researchers. In her analysis of Pacioli’s Tractatus mathematicus ad discipulos perusinos (written in 1478), Johanna Postma established that the first part of the chapter entitled Tariffa mercantesca is identical with Kotruljević’s text on the bill of exchange (Il libro dell’arte di mercatura, bk. I, chap. 11). The authors, A. van der Helm and J. Postma, rightly assert that “Pacioli did use an older transcript of Kotruljević’s book for his 1478 tract, as the ones published by Tucci date from 1484”. This proves an earlier assumption on Pacioli being acquainted with Kotruljević’s work, although the Dutch authors are careful in their assertion according to which “both authors may have drawn on an even older text”.

This, however, seems perfectly plausible. What we do know with certainty is that Luca Pacioli was in possession of and well-acquainted with the text of Benedikt Kotruljević long before he published his Summa (1494). Thanks to the recent discovery of the Dutch scholars, we can say that Benedikt Kotruljević undoubtedly deserves the credit for pioneering and developing the double-entry bookkeeping system.

Selected bibliography


This private correspondence has been preserved among the manuscripts of Ulisse Aldrovandi (1522-1605), a renowned Italian natural historian, professor and founder of the Museum of Natural History in Bologna. His scientific methodology included field research, observation and collection of natural specimens from different geographical areas. He collaborated with numerous scholars throughout his long career. The authors shed particular light on his connections with Dubrovnik. He was in touch with Federigo Ogeri, the apothecary, Guglielmo Dondino, chancellor of the Republic of Dubrovnik, and especially with the nobleman Jakov Sorkočević, an amateur-scientist. There is ground to believe that Aldrovandi’s acquaintance with Sorkočević was arranged by the former’s secretary, Antonio Gigante. Namely, Gigante was familiar with the Ragusan intellectual circles as he had previously been a secretary to the theologian Lodovico Beccadelli, who, while he was the bishop of Dubrovnik, frequently entertained the intellectual and scientific elite in his summer residence.

In the years 1580 and 1584, Jakov Sorkočević (1534-1604) held the office of the count of Ston. While for most patricians, the small town of Ston was usually a most undesirable destination, partly because of the unhealthy climate in this swampy area, for a nature-lover such as Sorkočević, the years spent in Ston helped him gain a deeper understanding of the marine life of the Bay of Mali Ston.

The correspondence of Aldrovandi and Sorkočević consists of 25 letters, accompanied by very faithful watercolour illustrations of fish and other marine organisms, commissioned by Aldrovandi after Sorkočević’s accurate descriptions, labelled with Ragusan common names. Sorkočević provided Aldrovandi with detailed and documented information on the distinguishing features of the fish and mollusks, their reproduction and life patterns, shape, anatomy and behaviour. The descriptions are strikingly lively and very realistic. Sorkočević had an extensive knowledge of the variety of marine life in the Ston waters, which he used to observe and also catch, and he did not hesitate to supplement it with the experience of the local fishermen. Although an amateur natural scientist, Sorkočević did not hesitate to express his opinions to an authority such as Aldrovandi. On certain points, he even persuaded the Ital-
ian scientist to reject some of his views based on the late medieval authors and adopt his which were founded on individual observation of the natural phenomena. In addition to the letters containing descriptions and direct observations, Sorkočević supplied his Italian friend with fish scales, fish bones, and even live fish, along with other marine samples which he considered to be of benefit to Aldrovandi’s scientific pursuit.

Sorkočević deserves particular credit for his descriptions of early cultivation methods of oysters and mussels in the Bay of Mali Ston. This bay with many coves, sandy and clear sea bottom, rich in underwater fresh water sources, sheltered from strong waves, blessed with mild temperature and low salinity, was a perfect location for the natural distribution but also cultivation of oysters and mussels known since antiquity. We are indebted to Sorkočević for the first report on the cultivation procedure of these mollusks in that area, almost two hundred years before the description by P. Nutrizio-Grisogono.

The authors of this book have brought to light an invaluable segment of both natural (zoological) and cultural history of sixteenth-century Dubrovnik. The correspondence of Ulisse Aldrovandi and Jakov Sorkočević points to strong intellectual contacts between the two shores of the Adriatic.

Slavica Stojan


In the 1770s a new interest in the Balkans was awakened in the European public, resulting in a series of French travel accounts at the turn of the century, as well as German travel diaries in the first half of the nineteenth century. The travelogue under review was written somewhat later, in the latter half of the nineteenth century, when French enthusiasm for travelling across the continent and discovering remote places had already diminished. Its author is Charles Yriarte (1832-1898), a late Romantic, who, without any political ambition, ideological or commercial reasons set out on a trip through the Balkans, with the aim to study the people and their historical and cultural heritage. The account reveals seemingly insignificant details of everyday life which are a valuable contribution to understanding the social circumstances prevailing along the Croatian coast in the mid-nineteenth century.

Yriarte travelled through the Croatian coastal area, crossed the Strait of Otranto, and continued along the Italian coast as far as Venice, his ultimate destination. The journey was preceded by most serious preparations, which included the study of maps, published records and diaries of earlier travellers and writers (Xavier Marmier, Prosper Mérimée, Alberto Fortis).

Apart from the introduction, in which he explains the itinerary and the main reasons of his travel, the book contains one chapter each dealing with Istria, the Bay of Kvarner and its islands and Dalmatia. In the chapter on Dalmatia, the author dedicated a lot of space to Dubrovnik, which at the time of his visit, led a quiet provincial life on the fringes
of the Habsburg Monarchy.

“Once acquainted with its history, you step into Dubrovnik imbued with respect”, says the author, referring to the city’s centuries-long independence, its magnificent achievements in trade, crafts and art. Yriarte’s stay in Dubrovnik is documented in detail from the moment he disembarked in the Port of Gruž, where he admired the summer palaces surrounded with lush Mediterranean vegetation. The book reveals his consuming interest in the architectural features of Dubrovnik, from deep trenches and towering fortifications, crenellated walls, protruding guard posts, statues of St. Blaise, balconies and stone-paved streets, passionately absorbing the stories and legends woven into the city’s past. Yriarte made a note of every historical sight within the walls. He started his historical route with Stradun, the high street, which bedazzled him as he made his entrance through the west city gate. His attention was caught by the exterior of the Sponza Palace, once a customs house, a paragon of proportion and harmony. He closely examined the architectural details and inscriptions on the walls or above doors. Yriarte finds striking similarities between the Rector’s Palace and that of the Doge in Venice. He describes the Cathedral and its rich treasury. Yriarte is impressed by the multitude of churches distributed across such a small area. He is disappointed to find that the interiors of these architectural achievements “do not render the idea of the original condition” because of past devastation. Yriarte shows admiration for the Ragusans who, in spite of constant danger, continue to live in the City and its surroundings. As a Romantic, Yriarte admits that Dubrovnik’s rich past truly stirs one’s imagination. Although a part of his account includes legends and oral tradition transmitted by the Ragusan patricians, he was familiar with the historical sources, especially the chronicles, and constructed his own interpretation on the basis of documents available to him from the Archives of the French Foreign Office. In addition, Yriarte writes about the long, drawn-out rivalry between Dubrovnik and Venice, but also about the relations between the Republic of Dubrovnik and its neighbours in the hinterland, stressing the fact that this small Republic was the first in Europe to have an agreement with the Ottoman Empire. His historical interest reaches back to the legendary deeds of Stojko, the priest, who, aided by St. Blaise, saved the Republic. He provides the reader with a detailed account of all the sieges Dubrovnik survived, all of which fortunately ended to the benefit of the city-state.

The travelogue is supplemented with geographical maps and a number of very successful illustrations made by the author. They show realistic portraits (those of young women are exceptional), sketches of events and landscapes, elements of the Croatian cultural heritage—such as pieces of jewellery, celebrated episodes from the period of the Croatian Revival in Dubrovnik and Dalmatia, etc. The text is infused with Romantic historicism and the author’s inquisitive delight, with a strong sense of atmosphere and detail. Although the account harbours historical and geographical inaccuracies, Yriarte’s description of the Croatian coast serves as a useful source of ethnological and anthropological information about the area.

Slavica Stojan