

LUCA PACIOLI 1447 TO 1517 – THE FATHER OF ACCOUNTING

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In June it will be five hundred years since the death of Fra Luca Pacioli, whose treatise on double entry revolutionized the trading world. We should not let such a significant anniversary pass us by, uncelebrated.

Pacioli really achieved two significant things for the accounting profession; he gave us the foundation on which all financial work is based, and he made it so confusing to laymen as to assure our employment for evermore!

Why do I say this? Well, we debit one account and increase it, and we debit another and decrease it. Also, banks send us statements that, if we owe the bank money, they show debit balances, but if they owe us money, they show credit ones. It is easy to see why we like to see the word 'credit' and we even use the word as a commendation; "He is a credit to his family" for example. Instead of being purely locational instructions they take on connotations of being good or bad.

I once asked my correspondence tutor, many years ago, why double entry works as it does "Don't ask stupid questions, learn the rules, and follow them," was the reply.

It was in 1494 the Pacioli wrote his treatise describing the double entry system that was being used by the merchants in Venice; He called it the 'Venetian Method' and included it as an appendix in his 'Summa', a compendium of all that was known of mathematics at that time. As a respected mathematician I feel sure that he would not have done so unless he was sure that it was itself a mathematical system. After reading his treatise many, many, times I believe that his thinking developed along the following lines:

- 1 Think of a business as being a separate entity from its owners, so, from its point of view, the owners' equity is a liability.
- 2 The business is entrusted with things to use by its owners and by suppliers, to whom it owes them. Thus the basic equality is

ASSETS = LIABILITES

- 3 If the business makes a profit it will owe this to its owners; it is like a slave, working tirelessly for its owners, hence:

$$\text{ASSETS} = \text{LIABILITIES} + \text{PROFIT.}$$

- 4 But $\text{PROFIT} = \text{REVENUES} - \text{EXPENSES}$, hence:

$$\text{ASSETS} + \text{EXPENSES} = \text{LIABILITIES} + \text{REVENUES.}$$

That is why assets and expenses are treated in the same way in double entry. Also, assets are, in effect, expenses waiting to happen; some over time through depreciation; some immediately consumed, like a payment to a porter. (Pacioli did not consider depreciation, but he did write off the whole ship if it was shipwrecked!)

- 5 There is no equation in the Venetian Method. This is how it was eliminated: instead of:

$$\text{ASSETS} + \text{EXPENSES} = \text{LIABILITIES} + \text{REVENUES}$$

This was written as:

$$\text{ASSETS} + \text{EXPENSES} - \text{LIABILITIES} - \text{REVENUES} = 0$$

and it then proceeded to ignore the zero and the signs attached to the column headings.

- 6 This is a 'signed numbers in unsigned column system' Equality would be preserved by always making two entries under two headings of the type $+ - (= 0)$. This is a double entry system, but it would have these two drawbacks:

a) Mixing plus and minus items together in single columns would make it difficult for the merchant to see the cumulative effects of all the plus items on their own and similarly for all the minus ones. Knowing, for example, how much cash came in and how much went out in a period, is essential information in a business.

b) The concept of minus was not well understood in the general population (In 1494)

- 7 So the Venetian Method introduced two columns under each heading, one for plus numbers and one for minus ones, instead of:

ASSETS	EXPENSES	LIABILITIES	REVENUES	(=0)
- 2	+ 2			
+10		-10		

it wrote:

ASSETS	EXPENSES	LIABILITIES	REVENUES	(=0)
+ -	+ -	+ -	+ -	
2	2			
10		10		

Now the columns were signed; the numbers entered into them were not. It was an 'Enter on the left and also enter the same number on the right' system.

That could have been the rule for the clerks and merchants to follow, but the Venetian Method already used the terms Debit and Credit (DR and CR). instead of '+' and '-'. These fitted into Pacioli's original logic very well, because 'Debere' meant 'what is owed' and "Credere" meant 'to be entrusted with'. So we have:

ASSETS	EXPENSES	LIABILITIES	REVENUES	(=0)
DR CR	DR CR	DR CR	DR CR	

Each heading became a page in a ledger and the mathematical logic, though still there, is hidden from view: no equation, no plus or minus signs in sight and never any need to use subtraction! (Balances were carried down using addition only.)

To ensure that the accounts were correct two conditions were required:

- a) That the total of the debit entries was equal to the total of the credit ones. This is the 'necessary condition' in mathematical terms, and
- b) That the entries were checked back to the original journal entries to ensure they were entered correctly. This is the 'sufficient' condition in mathematical terms.

So Pacioli concluded that his treatise on double entry should be included in his mathematical book, 'The Summa', because it was mathematically based.

He probably decided not to include the mathematical steps explained above, because the merchants or their clerks would not understand them and they

might detract from the adoption of the Venetian Method, which he considered to be an essential tool in business.

He went so far as to say: 'If you are in business and do not know all about it, your money will go like flies'

A modern poet has expressed it this way:

That money talks

I'll not deny

I heard it once

It said 'Goodbye'

Since Pacioli's time a branch of mathematics called 'group theory' has been recognized and David Ellerman, a distinguished professor in mathematics, realized that the Venetian Method was an early example of such a group; he called it the 'Pacioli group' in Pacioli's honour: if only Pacioli could be made aware of that.

Pacioli gave us a system that was already in a form to be computerized, as indeed it has been, and I am sure that when we go to the stars we will take the Venetian Method with us!

So let's all lift a glass, in his honour "Cheers, Pacioli!"

(A more detailed version of this note is available for you to download (free) from my website: understandaccounting.com)