



Luca Pacioli, 1445-1517

What is this stern looking Franciscan Friar trying to tell us in this painting by Jacopo de' Barbari (presumed to be the artist's self-portrait on the right)? He's obviously scanning a text with one hand while pointing to a diagram with the other, with a compass and dodecahedron model on the table, accompanied by a glass rhombicuboctahedron (or polyhedron) half filled with water hanging from the ceiling on the left. If that doesn't impress you, nothing will!

Meet Luca Pacioli, Master Mathematician, student of Pythagoras (as indicated in the diagram on the table), as well as Archimedes (the rhombicuboctahedron), and Euclid ("The Golden Ratio"), friend of Leonardo da Vinci, who drew the diagrams for some of his polyhedra, (including the one hanging from the ceiling), dabbler in chess and other mathematical games, otherwise known as "The Father of Double-Entry Bookkeeping and/or Accounting."

Whether he personally invented double-entry bookkeeping is doubtful. But with the advent of Guttenberg's printing press, his *De Computis et Scripturis (Of Reckonings and Writings)*, written as he said, so that the "subjects of the most gracious Duke of Urbino may have complete instructions in the conduct of business," became the first text to be published on the subject (1494), and thus dominated the field throughout the 16th century and beyond. In fact, in 1994 accountants from around the world gathered in the small town of San Sepulcro in Tuscany, his birthplace, to celebrate the 500th anniversary of its publication.

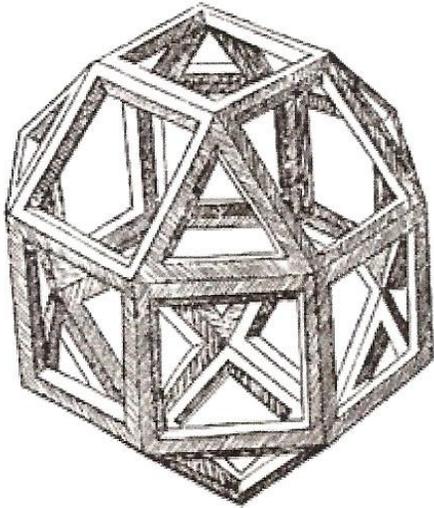
His treatise on bookkeeping was originally just one of five topics included in a digest entitled: *Summa de Arithmetica, Geometria, Proportioni et Proportionalita (Everything about Arithmetic, Geometry and Proportions)*. His accounting work is said to have simply described the methods used by Venetian merchants in their daily business practice, urging that "a person should not go to sleep at night until his debits equaled his credits!"

His ledgers had accounts for assets, liabilities, capital, income, expenses, and year-end closing entries, and his topics included everything from cost accounting to accounting ethics. He taught at several major Italian Universities in his lifetime: Perugia, Rome, Naples, Pisa and Venice, and was invited to lecture on these and all topics mathematical, in Milan and Florence as well.

Of all those predecessors in the field of mathematical theory who influenced Luca the most, one can reasonably conclude that it was Leonardo of Pisa, otherwise known as Fibonacci (1170-1250), the first European to convert mathematical notation from Roman Numerals to Hindu-Arabic, thus making it possible to do computations starting with a zero instead of a one. This simple change made calculations in percentages and fractions easier and added enormously to the convenience, accuracy and rapidity of engaging in business transactions and the development of other mathematical theories and sciences, including physics, relativity, and such speculations as "Is God a Mathematician?"

Needless to say, Luca, Venice and all of Western Europe (and eventually the Americas) benefitted immensely from this work—especially Luca Pacioli's--for making these theories and practical applications known everywhere. Fibonacci's work remained almost unknown for centuries, primarily because of the lack of a printing press and the comparatively few manuscript copies that were able to be circulated in his day. So Luca's principal advantage in history was the century in which he lived and the tools available for the dissemination of his work.

As for Pacioli's summation of the principles and intricacies of accounting, no one can deny that this first published analysis of the process of double-entry bookkeeping is still being used today by every business, government, and even taxpayer, who is called upon to "settle accounts" on a weekly, monthly and/or annual basis, with or without the benefit of the computer or EXCEL.



The first printed illustration of a rhombicuboctahedron, by Leonardo da Vinci, published in *De divina proportione*.

This drawing by Da Vinci was designed for Pacioli's book, *De Divina Proportione (The Golden Ratio)*, in 1496-98, and published in 1509. The Golden Ratio refers to Fibonacci's experiments with a theory of Euclid's by which one could create an almost infinite series of numbers by adding the first and second, then the second and third, then the third and fourth, etc. (0,1,1,2,3,5,8,13,21....). The higher up in the sequence, the closer two consecutive numbers divided by each other would result in a mysterious "golden" ratio of approximately 1: 1.6180339....

By the way, if you've ever gone past the small Mosque on the corner of West Esplanade and David Drive in Metairie, you've already seen a rhombicuboctahedron in the form of a dome, or at least half a dome, atop the building.