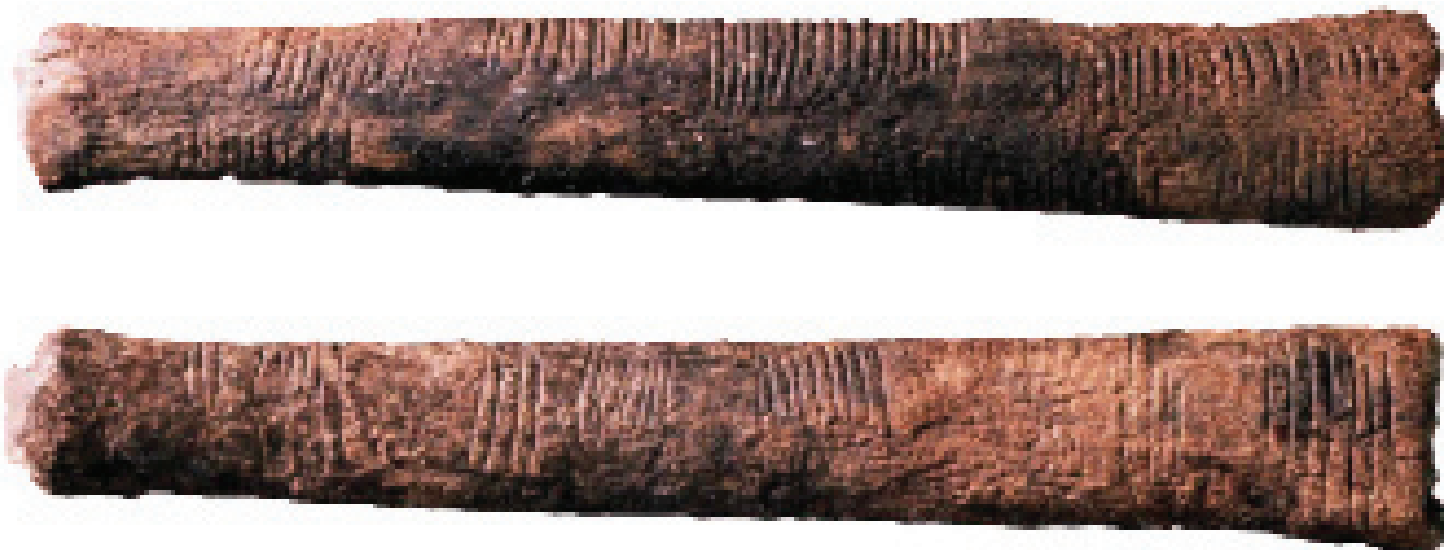


# The Tally Stick: The First Internal Control?

By Nicholas Apostolou and D. Larry Crumbley



One of the most important aspects of the Sarbanes-Oxley Act of 2002 (SOX), the most significant securities legislation passed since the Securities Exchange Act of 1934, is the strong emphasis on an effective system of internal control. Under SOX, all public companies are required to have an adequate system of internal control, and company officers who fail to comply are subject to fines and even imprisonment. SOX section 404 requires companies to include a report of management on the company's internal control over financial reporting in their annual reports. In addition, SOX requires companies to develop sound principles of control over financial reporting and continually assess that these controls are working. Finally, external auditors are required to present a report attesting to the level of internal control. The internal control requirements of SOX mean that external and internal auditors must understand how internal controls are designed and operated so that they can be assured that the controls have been implemented.

## What Are Internal Controls?

Although internal controls have been an integral part of business for centuries, confusion exists over the exact meaning and scope of the term. Historically, the term internal control applied to the domain of accounting. The term was applied to the effort to safeguard assets and ensure

the accuracy of the accounting records. More recently, the definition of the term has evolved into a broader concept that extends beyond the accounting functions of an enterprise. The Committee of Sponsoring Organizations of the Treadway Commission (n.d.) defines internal control as a process, affected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories:

- Effectiveness and efficiency of operations
- Reliability of financial reporting
- Compliance with applicable laws and regulations.

## Before Luca Pacioli

Traditionally, the history of accounting begins with the invention and recording of double-entry bookkeeping focusing upon Luca Pacioli as the author of the first text (published in 1494) describing basically the same accounting cycle we learn today. But this history omits the centuries-old evolution of accounting systems beginning with the earliest known records of commerce in the Mesopotamian Valley in about 3500 B.C. and continuing through the Middle Ages.

Interestingly enough, the earliest form of writing dating from over 30,000 years ago is represented on tally sticks in the absence of paper. A tally stick is a stick on which notches are cut to

### Tally Stick Languages

Many languages have their own names for tally sticks:

**Chinese**—chi-chi

**German**—kerbholz (notched wood)

**Hebrew**—teomin (twins)

**Greek**—symbolon (put together)

Adams, L. C. (n.d.). Fraud in other words: Professional jargon and uncensored street slang. Retrieved 9 January 2008, from [http://www.larry-adams.com/200509\\_article.htm](http://www.larry-adams.com/200509_article.htm)

keep a count or score. Notches have been found cut on a variety of animal bones from ancient times, including those from wolves and baboons. A baboon bone found in Swaziland called the Lebombo bone dates from approximately 35,000 BC and is marked by 29 clearly defined notches. This particular bone may have served as a lunar phase counter and ranks with the oldest mathematical artifacts known to exist. This ancient tally stick is similar to the calendar sticks still in use by Bushmen families living in Namibia (Williams, 2005). More recent historical references to tally sticks are represented by Pliny the Elder (23–79 AD), describing the best wood to use for tally sticks, and Marco Polo (1254–1324), who mentions the Chinese use of tally sticks (Baxter, 1989).

### Earliest Internal Control Tool

Unsplit tally sticks started as mathematical objects serving as mnemonic aids to counting, but they eventually found another use as commerce developed. Because so few people could read and write, tallies provided the earliest form of bookkeeping for recording both physical quantities and money. By the medieval period, tallies had really come into their own as the English equivalent of today's credit card and as an instrument of internal control. King Henry I, son of William the Conqueror, assumed the throne of England in 1100 AD, and in an effort to enhance his power, invented a unique money system called the tally stick system.

Tally sticks were made of polished hazel or willow wood, and transactions were recorded by notches carved into the square tally with a knife. The size of the notch indicated the denomination. A tally was officially described as follows:

The distance between the tip of the forefinger and the thumb when fully extended . . . The manner of cutting is as follows. At the top of the tally a cut is made, the thickness of the palm of the hand, to represent a thousand pounds; then a hundred pounds by a cut the breadth of a thumb; twenty pounds, the breadth of the little finger; a single pound, the width of a swollen barleycorn; a shilling rather narrower than a penny is marked by a single cut without removing any wood.

(Treasures from The National Archives.)

Internal control was implemented by splitting the tally stick lengthwise through the notches, leaving one half of the notches on each piece. Each party to a transaction kept one half of each tally stick, and the accounts were audited by fitting the two pieces together to determine if they would "tally." According to Axel Grandell (1977, p. 103):

For later verification of the transaction the two halves were put together so that the notch cut across the peg was in exactly the same place on each half of the peg. If the tally was made out of a wood with a very clear grain, usually pine, it was furthermore impossible to falsify either half of the tally without detection. The grain in the wood served the same function as the watermark in today's paper money.

By splitting the tally it had become a means of proof. The notches in the tally provided evidence of each piece of work done. The tally's function as verification, even as acknowledgment of debt, can be seen in many documents (court registers and deeds) from the 17th and 18th centuries in Sweden and Finland.

The tally stick was used also for verification in bookkeeping. There is a 1662 Swedish decree that states that the bookkeeper on the Crown's estates should verify the bailiffs' registers with the threshers' tally sticks (Grandell, 1977). Monasteries in medieval Italy would accept deposits of money or goods for safekeeping, giving the depositor part of the split tally. This portion had to be presented at withdrawal (Edler, 1934).

But King Henry expanded the role of tally sticks beyond simple record keeping. Since tally sticks could be used to pay the taxes imposed by the king, he created a demand for tally sticks. This demand for tally sticks expanded their role, and they began to circulate as a form of money (Carmack, 2003).

Some might ask the question: Why would sticks of wood ever be accepted as money? History shows us that anything of value or perceived value was accepted as money. Salt, silver, copper, gold, cowry shells, whales' teeth, and paper have all been accepted as currency. In other words, anything can be money as long as people accept it as having value.

In England, tally sticks continued to be used until 1826 when they were officially abolished. The tally sticks were then taken out of circulation and stored in the Houses of Parliament. In 1834, the burning of the huge number of accumulated tally sticks in an overburdened stove resulted in a fire that started with the paneling, and eventually destroyed the old Houses of Parliament (Holzmann, 2000).

### Then Came the Term Stockholder

Tally sticks had been used as a recording or counting device virtually since the dawn of recorded history. By the Middle Ages under the reign of King Henry I, the role of tally sticks had expanded to include records of financial trans-

## Ishango Bone

The Ishango Bone is a bone tool handle that was first thought to have been a tally stick. It was found c. 1960 and dated to c.9000 BC.

At one end of the bone is a piece of quartz for writing, and the bone has a series of notches carved in groups on three rows running the length of the bone. The markings on two of these rows each add to 60. The first row is consistent with a number system based on 10, since the notches are grouped as 20 + 1, 20 - 1, 10 + 1, and 10 - 1, while the second row contains the prime numbers between 10 and 20. A third seems to show a method for multiplying by 2 that was used in later times by the Egyptians. Additional markings suggest that the bone was also used as a lunar phase counter.

Darling, D. (n.d.). The Internet encyclopedia of science. Retrieved 9 January 2008, from [http://www.daviddarling.info/encyclopedia/I/Ishango\\_bone.html](http://www.daviddarling.info/encyclopedia/I/Ishango_bone.html)

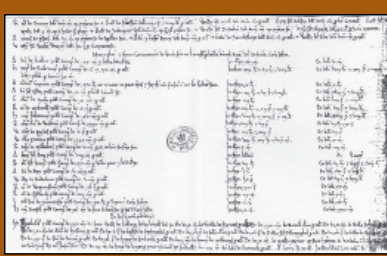
## The Bank of England



The Bank of England, being a sensible and conservative institution naturally suspicious of new technologies, continued to use wooden tally sticks until 1826: some 500 years after the invention of double-entry bookkeeping and 400 years after Johann Gutenberg's invention of printing. The tally sticks were then taken out of circulation and stored in the Houses of Parliament until 1834, when the authorities decided that the tallies were no longer required and that they should be burned. As it happened, they were burned rather too enthusiastically and in the resulting conflagration the Houses of Parliament were razed to the ground

Birch, D. (n.d.) Tallies & technologies. Retrieved 9 January 2008, from <http://www.arraydev.com/commerce/JIBC/9811-11>

## Great Roll of the Exchequer



▲ A pipe roll from 1194

The oldest surviving accounting record in the English language is the Pipe Roll, or "Great Roll of the Exchequer," which provides an annual description of rents, fines and taxes due the King of England, from A.D. 1130 through 1830. Compiled from valuations in the Domesday Book and from statements of sheriffs and others collecting for the royal treasury, the Pipe Roll was the final record on parchment of a "proffer" system which extensively used a wooden stick as a basis of accounting. Twice a year, at Easter and Michaelmas (September 29), the various county sheriffs were called before the Exchequer at Westminster. At Easter, a sheriff would pay about half of the total annual assessments his county owed. In accepting a sheriff's payment on account (the proffer), the treasurer would have a wooden tally stick prepared and cut as a record of the transaction.

At Michaelmas, each sheriff returns for the final accounting, at which he pays the whole year's revenues. The treasurer reads the amount due from the Pipe Roll, and the sheriff must justify any unusual expenses claimed. Final settlement occurs at a table covered by a checkered cloth, for which the Exchequer is named. "Counters" are placed on the squares to visually represent the amount due the king from that county. Another row of counters represents the Easter payment, which is verified by fitting together the sheriff's tally stock with the Exchequer's foil to demonstrate that the notches and cuttings correspond.

Alexander, J. R. (n.d.) History of accounting. Retrieved 9 January 2008, from [http://www.acaus.org/acc\\_his.html](http://www.acaus.org/acc_his.html)

actions. Splitting a tally stick in half lengthwise prevented either party from adding notches on his half of the tally stick. This control measure ensured that any attempt at fraud would be recognized as soon as the two halves were combined. Although this internal control procedure might seem primitive, history records its effectiveness for hundreds of years. It was accepted as proof in medieval courts under the Napoleonic Code.

According to Thomas Madox, "when the two parts came afterward to be joined, if they were genuine they fitted so exactly that they appeared evidently to be parts the one of the other" (1711, p. 709). This split tally was almost fraud proof—"an intricate but robust form of record not replaceable readily till carbon copying" (Baxter, 1989, p. 50).

A refinement of the split tally was to make one-half of the marked stick shorter. The longer half was called the *stock* and was given to the party advancing the money to the receiver (e.g., the stockholder or stock market) ("Tally Stick," 2007). The shorter part, the *foil*, went to the debtor, who "got the short end of the stick." If holes were placed at one end, many tallies could be strung on a rod or thong. A sixteen-sided tally of 1863 served a Swedish mine foreman as an output record with one side per employee (Baxter, 1989).

### Conclusion

The tallies reached their peak in the 14th century, but their decline was slow even with the introduction of paper. The role of tally sticks was mentioned by Shakespeare in Sonnet 122.2 from *Henry VI*: "nor need I tallies thy dear love to score" and "whereas before, our forefathers had no other books but the score and tally" (as cited in Baxter, 1989, p. 63). Although tallies were not the ancestors of double-entry accounting, tallies did foster credit transactions and multi-sized transfers (Baxter). In addition, tally sticks were a crude but effective tool of internal control for centuries. Although, we currently define internal control more broadly to include promoting the efficiency of operations and complying with regulations, the use of tally sticks provides a useful illustration of the essence of internal control.

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