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USE OF KNOTTED STRING ACCOUNTING RECORDS IN OLD HAWAII AND ANCIENT CHINA

Abstract: The use of the "quipu" for accounting purposes has been primarily attributed to the Peruvian Inca culture in the days of old. Documented evidence, however, provides that early Hawaiians and ancient Chinese predated the Incan usage. Studies concentrating on the quipu as an accounting device rather than as an element in the evolution of the writing process might provide valuable contributions to the solution of the mystery surrounding this artifact. Insight into the development of mankind in the Pacific may be gained by understanding the use of the quipu in the East and West, and in Hawaii—the "meeting place" of the Pacific.

An artifact mentioned in the research of anthropology, archaeology, and ethnology is of interest to accountants, particularly accounting historians. This artifact—the knotted string record—is most commonly known in published research of these three scientific areas by the Peruvian (not Spanish) name, "quipu," "quippo," "kipu," or "khipu" which means "knots" in the Quechua (or Quichua) Indian language of the Peruvian Inca Empire.

The author became fascinated with these knotted string records while assisting Stanford University establish Latin America's first exclusively graduate school of business in Lima, Peru in 1963-64. He published an article describing the Incan use of the quipu.¹ The article which follows presents some documentation of early use of knotted string records as accounting devices in *old Hawaii* and in *ancient China*.

Hawaii

The Hawaiian use of knotted string records as accounting devices is described more recently by travelers than either the Peruvian or Chinese use. One such traveler to Hawaii, cited later in this

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article, wrote about them in his travels of 1821-29 A.D. Discovery and settlement by a native population perhaps took place in Hawaii in the eighth century A.D.² The Inca Empire traditionally is traced to its first "divine emperor," Manco Capac (c. 1200 A.D.).³ The various Peruvian cultures conquered by the imperial Inca line of rulers, however, date back to about 8000 B.C. in Peru.⁴ The history of these conquered Andean peoples, in turn, is almost entirely theoretical—their southeast Asian origin being one theory.⁵

According to Gavan Daws, an eminent scholar of Hawaiian history, two theories predominate in explaining the origin of the Polynesian culture:

(1) Archaeological findings, together with studies of winds, currents, flora and fauna, suggest that the origin of the Polynesian culture was in the Western Pacific. Linguistic studies support this idea. The vocabulary of the Polynesian islanders is related to a widely dispersed language family extending west across Southeast Asia—as far west, indeed, as Madagascar. (2) In opposition to this general body of theory and evidence is the work of Thor Hyerdahl, who has devoted a great part of his active life to the idea that the origin of Polynesian culture is not Asian but American. Certain elements of the Polynesian flora and fauna are American in origin, and Hyerdahl's own Kon-Tiki raft expedition demonstrated that human contact was possible between the Pacific Coast of South America and Polynesia. But whether America has been a main element in the emergence of Polynesian culture, or merely subsidiary, or indeed no more than a problematic presence, remains an unresolved question.⁶

To sum up, the ancestors of both the Pre-Inca Peruvians and the Pre-Hawaii Polynesians might have used the knotted string records. Indeed, if the origin of both of these groups were in Southeast Asia, it is possible the first use might be traced to China.

Anthropologists have known for some time that knotted strings were used, for any of several possible purposes in the Marquesas Islands (near Tahiti). A few specimens of these are in the Bishop Museum in Honolulu which is famed for its collection of Polynesian artifacts. These particular museum specimens, however, are thought to have recorded genealogical data.⁷ Their use as accounting devices in the Hawaiian Islands is not generally known and has not been researched until now. Unfortunately, there are no Hawaiian

specimens of knotted string records in the Bishop Museum collection, but they were written about by travelers and others interested in Polynesia.

"The first Hawaiians came from south of the equator, from the Marquesas Islands, and the Society Islands of central polynesia,"⁸ whose knotted string record specimens have survived. Ralph Linton served with the Marquesas Islands party of the Bayard Dominick Expedition, 1920-21, devoting his attention to material culture and archaeology. He recorded that "the use of string records seems to have been more highly developed in the Marquesas than in any other part of Polynesia [in which Hawaii, of course, is included]."⁹

Earlier (1904) another scientist and Polynesian scholar concluded that knotted string records served as mnemonic devices whose key to interpretation or translation was held by the one who knotted the strings or one of his disciples.¹⁰ This limiting of the secret to decoding the string records is also found in the Peruvian-Inca use of the quipu by quipucamayocs (*kipu kamayog* in Quechuan) who inherited the role and underwent special training to preserve the skill.¹¹ What, in modern times, is the *chart of accounts* necessary for understanding, entering, and storing accounting information was memorized and entrusted to only a few select persons in both the Peruvian and Polynesian cultures in which knotted strings were used for recording transactions and storing economic and other information.

Evidence of the early Hawaiian use of knotted string records for accounting purposes is found in a journal kept (1821-29) by a representative of the London Missionary Society "deputed . . . to visit their various stations in the South Sea Islands, China, India, etc."¹² He writes:

The tax-gatherers, though they can neither read nor write, keep very exact accounts of all the articles, of all kinds, collected from the inhabitants throughout the island. This is done principally by one man, and the *register* is nothing more than a *line of cordage* from four to five hundred fathoms in length [a fathom is six feet].

The physical characteristics of the cords permitted a recording by the tax gatherer-accountant of the dual nature of the collection: the recipient chief (district, fund) and the source (commoner-taxpayer). The cords also made possible a subsidiary classification of the collection by objects (dollars, hogs, dogs, etc.) according to this missionary who continues:

Distinct portions of this [cordage] are allotted to the various districts, which are known one from another by knots, loops, and tufts, of different shapes, sizes, and colors. Each taxpayer in the district has his part in this string, and the number of dollars, hogs, dogs, pieces of sandalwood, quantity of taro, etc., at which he is rated is well defined by means of marks, of the above kinds, most ingeniously diversified.¹³

Prior to this 1921-29 description, a noted historian, Terrien de Lacouperie, was even more explicit (in 1885) about the nature of the knotted strings in Hawaii:

The tax gatherers in the Island(s) of Hawaii by this means [cord records] kept accounts of all articles collected by them from the inhabitants. A rope four hundred fathoms long was used as a *revenue book*. It was divided into numerous portions corresponding to the various districts of the island; the portions were under the care of tax gatherers, who with the aid of loops, knots and tufts of different shapes, colours and sizes, were enabled to keep an accurate account of the hogs, pigs, and pieces of sandalwood, etc. at which *each person was taxed* [emphasis added].¹⁴

The mention of "revenue" (hogs, pigs, etc.) and "each person taxed" describes what is found in modern accounting systems.

The Peruvian knotted string record (quipu) has attracted the most attention in anthropology, and its related fields, because it is believed to be the most highly developed example. The early London missionary in Hawaii cited above, however, believed that the Hawaiian knotted string record *was about equally advanced*. In his words:

It is probable that the famous quippos, or system of knots, whereby the records of the ancient Peruvian empire are said to have been kept, were a similar, and *perhaps not much more comprehensive*, mode of reckoning dates and associating names with historical events [emphasis added].¹⁵

The knotted string by its very simple nature was versatile and is known by anthropologists to have been used as a calendar, a genealogical or chronological record, etc. What is important in this research find in Hawaii is the documented, unequivocal use of the knotted string record by the "tax gatherer-accountant."¹⁶

Another quotation in this missionary's journal demonstrates that a monetary system is not necessary for the effective use of knotted string records for accounting purposes by persons who can neither read nor write:

Our guide said that once when he came hither, being very weary and fainting with thirst, he had offered a native, who was with him, a dollar to fetch him a draught of water from the stream below. The man refused, saying, 'What good would a dollar do to *me*; for it would soon be known that I had it, and then I must give it up to the chief!' Thus were these miserable peasantry plundered by their rapacious landowners, of whom they held their little farms. Pigs, dogs, taro, and other produce, are *paid by them instead of rent*, according to mutual agreement; but the chief, in addition, can at any time extort from his tenant whatever he sees in his possession and covets; for, if refused, he may take away his lands immediately, and the poor man has no redress [emphasis added].¹⁷

Readers familiar with the author's hypothesis that the *concept* of double entry accounting predated writing, and therefore Pacioli, might find this early recorded Hawaiian usage of knotted string records for recording economic transactions to be of interest. The duality of the transaction—both the tax revenue *owed to* the Hawaiian chiefs who owned the land and the amount *owed by* the peasant natives strikes a familiar ring to the Pacioli plan "to arrange all the transactions in such a systematic way that one may understand each one of them at a glance, i.e., by the debit (debit—owed to) and credit (credito—owed by) method."¹⁸

China

The use of knotted strings for record-keeping purposes in China dates back to ancient times. Research by historians, anthropologists, and even religious scholars that far back is so fragmentary and uncertain that exact dates cannot be established for such usage—but the Chinese usage was much earlier than recorded Peruvian, and certainly Hawaiian, usage.

Two important philosophical works document the Chinese use of knotted string records. One of these is Confucian (551-479 B.C.), the other is Taoist (604? B.C.).

The description attributed to Confucius is reproduced here in French, then from another source, in English:

“Les hommes de l’antiquité se servoient de cordes à noeuds pour donner des ordres. Ceux leur succédèrent leur substituèrent des signes ou figures.”¹⁹

“The men of antiquity used knotted cords to convey their orders; those who succeeded them substituted signs or figures for these cords.”²⁰

The date is more precisely pinpointed in this statement from a secondary historical source: “Before the accession of the Emperor Fo-hi (3300 B.C.) it is said that the Chinese were not acquainted with writing and used quipos.”²¹

From the literature of the Taoist philosophy-religion the philosopher, Lao-tze, according to one interpreter, “is ready to . . . give up the practice of writing on bamboo slips, in favor of the pre-historic mode of keeping memoranda by knotted cords (*chieh shing*), or as they are now called with an American name, *quipu*, a method of assisting the memory by threads or various dyes knotted in special ways.”²²

The specific passage about knotted string records in the original ancient Chinese characters of the primary source is as follows:²³

使人復結繩而用之

The interest of historians in the knotted string records often centered around the records as precursors of the development of writing and communication processes rather than as a means of record-keeping of economic matters. The following quotation, however, emphasizes their management accounting use in the administration of affairs.

The celebrated Chinese historical work entitled *Yih-King* [attributed to Confucius] mentions that previous to the invention of writing there had existed in China a conventional mnemonic process of tying knots in cords. In the appendix of the work named, the philosopher Koung-tseu [Confucius] says: ‘In great antiquity knotted cords served them for the *administration of affairs*. During the following generation the saintly man Fou-hi replaced these by writing [emphasis added].’²⁴

In Tibet, now an autonomous region of Southwest China, the ancient use of knotted string records is historically documented, again in connection with the “writing process” and its evolution:

Before the reign of their famous king, *Srong btsan sgam-po* (629-698 A.D.) the Tibetans had no writing. Notched sticks and knotted cords were their *means of communication*, but we have no information on these processes, nor on their likeness or non-resemblance to similar devices in use among neighbouring nations [emphasis added].²⁵

The quotation suggests the familiar contemporary description of accounting as the “language of business” and the means of communication in the administration of economic matters.

Another interesting source indicates the primitive setting in which knotted string records were adequate for recording events, including economic events. There were economic events because there was *some* private property in the predominantly feudal system in which the string records were used in the administration of affairs. For example, G. Spurgeon Medhurst “for twenty years a Missionary in China” wrote in 1905:

A native [Su Pao] laments the degeneracy of present times: ‘In ancient times men lived in caves and holes of the earth. They wore leaves for clothing. They used earthenware of the rudest description, their carts had no tires, to record events *they simply knotted a cord*. In ancient times sovereign and people all sat on mats on the floor. In ancient times the sovereign invited some one to take his place while he retired. The feudal system prevailed. Now every one of these customs is obsolete, and we all know what we have at the present day [emphasis added].’²⁶

Medhurst translated Lao-tze’s *Tao Teh King* (604? B.C.) as a short study in comparative religion. His translation states:

Then, though they had boats and carts, they would have no use for them; though they had armor and weapons they would not display them. They should be *taught to return to the use of the quippo*; to be content with their food, their clothing, their dwellings, and to be happy in their traditions [emphasis added].²⁷

In another translation of this same work the record-keeping use is more vividly noted; “Let people return to the spirit of the olden days when *they used knotted cords for their records* . . . [emphasis added].”²⁸

East and West: Accounting, Anthropology, and Ethnology

This article has presented documentation of the knotted string record as an accounting device in old Hawaii and ancient China. Previously published research in anthropology-archaeology and ethnology has been focused mainly on the Peruvian (Inca) South American development of the quipu (knotted string record). Perhaps in future studies the eye of an accounting historian, not jaundiced by the singular pursuit of knotted strings as part of the "process of writing" evolution, can indeed help to solve the anthropological, archaeological, ethnological mystery of this artifact by focusing on its use as an accounting device. Its early use in the East (China) and the West (Peru) as well as in Hawaii where East meets West might well provide insights into the history of mankind in the Pacific. Indeed, such study might even provide clues eventually favoring one of the two predominant theories about the origin of the Polynesian culture.

FOOTNOTES

¹Jacobsen, pp. 221-228. See also Keister, pp. 414-416 for classic historic references to the Incan quipu.

²Daws, p. 7.

³Mason, p. 107.

⁴Mason, p. 16.

⁵Mason, pp. 19-31.

⁶Daws, p. 3.

⁷Linton, p. 443.

⁸Daws, p. 11.

⁹Linton, p. 443.

¹⁰von den Steinen, pp. 108-114.

¹¹See, for example, Lumbreras, p. 230.

¹²Tyerman and Bennet, pp. 71-72.

¹³Tyerman and Bennet, pp. 71-72.

¹⁴Terrien de Lacouperie, pp. 428-429.

¹⁵Tyerman and Bennet, pp. 71-72.

¹⁶Tyerman and Bennet, pp. 71-72.

¹⁷Tyerman and Bennet, pp. 71-72.

¹⁸Geisbeek, p. 33.

¹⁹Saffray, pp. 404-405.

²⁰du Pouget, pp. 458-460.

²¹du Pouget, pp. 458-460.

²²Carus, pp. 186-187.

²³Carus, pp. 186-187.

²⁴Hoffman, pp. 136-140.

²⁵Terrien de Lacouperie, p. 473.

²⁶Medhurst, p. 129.

²⁷Medhurst, p. 129.

²⁸Wai-Tao and Goddard, p. 68.

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