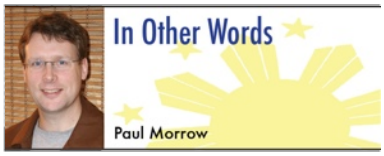

Counting the old way

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Last time, we were talking about Tomás Pinpin, the early Filipino printer who wrote a book exactly 400 years ago – though its publishing anniversary passed unnoticed in April.

Librong Pagaaralan nang manga Tagalog nang Uicang Castila (1610) was Pinpin's manual for teaching his fellow Tagalogs the Spanish language and Catholic doctrine. The first lesson in the book was how to count in Spanish, which might seem like an odd way to start, but this new way of counting – the way we count today – was so different from the old Tagalog method that it merited special attention.

Pinpin wrote, *"Dito sa unang cabanata, isisilid co ang mga pagbilang nang dilan balang na, munti't marami; ang sa pilac at ang sa dilan tinatacal: at ang siya ngang naiibig ninyong onahing pag-aralan."* [Here in the first chapter, I will insert the counting of any number of things, few and many; of money and anything that is measured: and it is the very thing you want to study first.]

Pinpin's intention was to teach Spanish numerals but, in the process, he unwittingly recorded the old Tagalog method of counting for posterity. It is all but unknown to us today, though it could be unique in the history of the world.

Big numbers

One interesting feature of the old Tagalog counting system – though not a unique feature – was its extensive vocabulary. There were words for orders of numbers that are only vaguely remembered now, some of which have no equivalent in English or Spanish. Aside from the familiar *pu* (ten), *daan* (hundred) and *libo* (thousand), there was also *laksâ*, meaning ten thousand, and *yutà* for hundred thousand.

Pinpin only used the term *sang-pouóng yutà* or, "ten hundred-thousands," to express the number one million but the 1860 edition of the 1754 Noceda and Sanlucar dictionary shows two words for this number – *angaw-angaw* and *gatós*. The first word, *angaw*, is still in modern dictionaries meaning "million" but with an added sense that it also refers to any large, unknown or uncountable number. (Think "gazillion".)

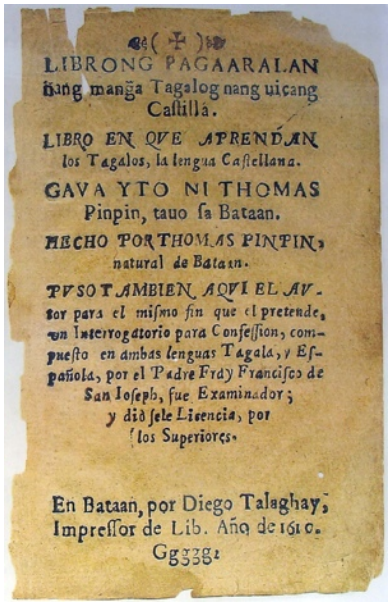
Gatós is found, in one form or another, in many Philippine languages and related tongues throughout Southeast Asia and Polynesia, but it usually means "hundred." Apparently, only Tagalog/Filipino uses *daan* for "hundred" while *gatós* is shown in today's dictionaries as meaning "billion." This new meaning can likely be traced back to the early 1900s when many Tagalists were inventing new words and meanings to prepare Tagalog for its eventual role as the national language. Pedro Serrano Laktaw's 1914 dictionary shows *gatós* as billion but his earlier 1889 dictionary shows no Tagalog word for billion or even million. Eusebio Daluz published a dictionary in 1915 that included a whole series of invented words for orders of magnitude up to a decillion – that's the number one followed by 33 zeros, or in Europe, a one followed by 60 zeros. His proposed numerals never caught on, though.

Above one million, the Noceda and San Lucar dictionary shows the word *kati* for ten million and *bahala* for "hundred million."

Orders of Magnitude

10	pú
100	daán
1,000	libo
10,000	laksâ
100,000	yutà
1,000,000	angaw
10,000,000	kati
100,000,000	bahalà
1,000,000,000	gatós

There is a mystery here. The pre-colonial Tagalogs obviously dealt with numbers in their trade relations but why did they have words for such astronomically big numbers? What did they need them for? There is no evidence of advanced mathematics, high finance or massive trade deals


LIBRONG PAGAARALAN
nang manga Tagalog nang uicang
Castilla.
LIBRO EN QVE APRENDAN
los Tagalos, la lengua Castellana.
GAVA YTO NI THOMAS
Pinpin, tauo sa Bataan.
HECHO POR THOMAS PINPIN,
natural de Bataan.
PVSO TAMBIEN AQVI EL AV-
tor para el mismo fin que el pretende,
vn Interrogatorio para Confession, com-
puesto en ambas lenguas Tagala, y Es-
pañola, por el Padre Frdy Francisco de
San Ioseph, fue Examinador;
y dió sele Licencia, por
los Superiores.
En Bataan, por Diego Talaghay,
Impressor de Lib. Año de 1610.
Gg338z

with foreigners. Fr. Gaspar de San Agustin described the old Tagalog numerals in his 1703 grammar, after which he commented, ... *aunque los Tagalos son poco aritméticos* [however, the Tagalogs are not very mathematical]. Also, the old baybayin writing system did not even have digits; numerals were written out in full, just the same as words.

The linguist Jean-Paul Potet surmised that these large numerals were only used in speculative calculations with no practical application. He wrote in a 1992 paper, *"One cannot help thinking of a deep Hindu influence (through Java) where such numbers mainly served in the calculation of the years spent in the netherworld by unfortunate souls."* Potet indicated that this view has yet to find the support of evidence.

A unique way to count

As intriguing as it is, this vocabulary for very large numbers was not the outstanding feature of the old counting system. What made the old numerals unique was the very method that Tagalogs used to count.

We tend to think that counting works the same way in all languages because we are familiar with the numbers in English, French, Spanish, Filipino and some of the regional Philippine languages. We know that when we count beyond ten, it is a

simple matter to attach the basic numerals (one to nine) to whatever multiple of ten, hundred, thousand or whatever large sum we need. So, when we add one to 20, we simply say *twenty-one* in English, *vingt et un* in French, *veintiuno* in Spanish and *dalawampu't isa* in Filipino.

This seems like the obvious way to count in any language but it is not – and it was not always like this in Tagalog either. Even though Tagalog has its own words for numbers, the Spanish language influenced the way we count today in Filipino.

In the old Tagalog counting system, the numerals from one to 20 were the same as they are today and so was each multiple of ten, hundred, thousand and million. That is to say, *dalawampu* = 20, *tatlong daan* = 300, *apat na libo* = 4000, etc.

However, the numerals in between the zeros were very different. The number 21, for example, was not *dalawampu't isa* as we'd expect; it was *maikatlong isa*, meaning "one in the third set of ten." The first set of ten being zero to nine, the second set 10 to 19 and the third set 20 to 29.

The prefix *maika-* always referred to the next highest set of ten, hundred, thousand, etc. For example, *maikapat dalawa* meant "two in the fourth [set of ten]" or 32. This pattern continued until *maikaraan* siyam, "nine in the 100 set", which meant 99.

Labí [in excess] was used for the numbers between 10 and 20, just like today. When we say the number 11, *labing isa*, it means "one in excess of ten," but we don't say the word *pu* [ten] because it is understood. The difference in the old Tagalog method was that labí was also used consistently for the first set of numbers above one hundred, one thousand, one *laksa* (10,000), one *yuta* (100,000) and one million. *(See the chart of old numbers.)*

New Tagalog numerals

Apparently, some Filipinos in the early colonial period were eager to learn Spanish. This is why Tomás Pinpin wrote his manual in 1610. Eventually they borrowed not only many Spanish words and numerals, but they also adapted the Spanish method of counting to the Tagalog numerals.

It is possible that it was not so much the Spanish language that influenced Tagalog counting as much as it was the digits that the Spaniards used. Pre-Hispanic people of the Philippines did not have digits like 1, 2, 3, etc., in their baybayin writing system. They just spelled out their numerals the same as words.

Tomás Pinpin took great pains to explain to his readers what we call the Arabic numerals (though they actually originated in India). When he explained that the meaning of a digit depends on its position in a string of digits, Pinpin illustrated his point with examples of large numbers. In these numbers he stated the value of each digit separately rather than just writing out the Tagalog phrase for the complete number. This way of learning the Hindu-Arabic digits might have affected the way that Tagalogs counted all the numbers higher than twenty. Pinpin wrote:

Datapoua't con ang sulat ay 1234 sa macatouid ay labi sa libo dalauang daan, at maycapat apat, ay ano yaong na onang letra dili caya sang libo; yayamang 1 nga at may casonod pang tatlo at yaong icalaua, dili caya dalauang daan; yayamang 2 nga at may casonod pang dalaua, at yaong icatlo'y dili caya tatlong pouo: yayamang 3 nga at may casonod pang isa, at yaong uacas ay dili caya apat na lamang; yayamang 4 nga at uala nang casonod.

[However, if 1234 is written, it is therefore one thousand, two hundred and thirty-four and what is that first letter [meaning digit] but one thousand because it is a 1 and it is followed by three more [digits] and that second [digit] is none other than two hundred because it is a 2 with two more [digits] following it and that third [digit] is but thirty because it is a 3 followed by one more [digit] and that last one is only four because it is a 4 and nothing more follows it.]

The old way is forgotten

It is hard to imagine how the ancient Tagalogs could do any calculations or transactions with the old system of numerals, especially since they didn't have digits – but apparently, they managed. Jean-Paul Potet wrote the following in his 1992 article:

My interpretation is that computation and numerical expressions were entirely separated. The former depended on an abacus drawn with a stick on the ground, which, for all its crudeness, was in no way inferior to any figure drawn on a blackboard by a mathematics teacher. The use of small pebbles as tokens should not deter us from concluding that this technique must have been fairly sophisticated; after all, didn't calculus [reckoning] mean "small pebbles" in Latin? Once the result was obtained in this silent (?) way, it was read aloud and/or taken down in their syllabic script.

Even so, it seems that the new Tagalog numerals, which we use today, were adopted quite early in the colonial era. The archive at the University of Santo Tomas has two old bills of sale written in the baybayin script in 1613 and 1625. The dates in these documents were written using the new numerical expressions. In the 1625

The Old Tagalog Counting System

Numbers 1–20 are the same as modern Filipino.

1, 2, 3, etc……..	*isa, dalawa, tatlo*
11, 12 ….	*labing isa, labindalawa*
20 ……	*dalawampu*
21 ……	*maikatlong isa*
22 ……	*maikatlong dalawa*
30 ……	*tatlumpu*
31 ……	*maikapat isa*
80 ……	*walumpu*
81 ……	*maikasiyam isa*
90 ……	*siyamnapu*
99 ……	*maikaraang siyam*
100 ……	*isang daan*
101 ……	*labi sa raang isa*
111 ….	*labi sa raang labing isa*
121 ……	*labi sa raang maikatlong isa*
200 ……	*dalawang daan*
201 ……	*maikatlong daang isa*
300 ……	*tatlong daan*
301 ……	*maikapat na raang isa*
1000 ……	*isang libo*
1001 ……	*labi sa libong isa*
2000 ……	*dalawang libo*
2001 ……	*maikatlong libong isa*
9000 ……	*siyam na libo*
9001 ……	*maikalaksang isa*
10,000 ……	*isang laksa*
10,011 ……	*labi sa laksang labing isa*
20,000 ……	*dalawang laksa*
22,000	*maikatlong laksang dalawang libo*
90,000 ……	*siyam na laksa*
90,001 ……	*maikayutang isa*
100,000 ……	*isang yuta*
100,001 ……	*labi sa yutang isa*
200,000 ……	*dalawang yuta*
200,001 ……	*maikatlong yutang isa*
1,000,000 ……	*isang angaw-angaw*

document the date was a mixture of the old and new systems. The year 1625 was written [*isang*] *libo, anim na raang taon, maikatlong limang taon*, but in strict ancient Tagalog counting, this number would have been expressed, *labi sa libong mai-kapitong raang maikatlong lima*. (These two baybayin documents can be seen on my web site, Sarisari etc.)

Eventually the old way of counting was forgotten. In 1745, one Spanish friar, Sebastian Totanes, explained the old Tagalog counting system in his *Arte de la Lengua Tagala*, after which he added the comment, "now, due to communication with Spaniards, many of them [the Tagalogs] count like us, and so they say: *'Dalawampu't isa'*, twenty-one. *'Sangdaan at lima,'* one hundred five. *'Limang daang dala-wampu't lima,'* five hundred and twenty-five, and it is like that with the other numbers."

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