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Indigenous Knowledge about Time-Keeping: Astronomical Aspects of The Batak Calendar

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Abstract

The Batak calendar year is often referred to in literature as a lunar year. However, the Batak calendar system reveals that it is set up to compensate for the difference between the lunar year and the solar year. This is of great practical importance insofar as a solar year is primarily useful for planning agricultural work. Nevertheless, they were able to maintain peace and stability within their territorial organizations, called *bius*, and they were able to organize the co-operation necessary to pursue irrigated rice cultivation. This study is a field research report on an investigation into the subject of the indigenous knowledge of time-keeping, as it was of practical importance to the communal organization of agricultural activities in traditional Toba Batak society. The Batak's time calculation expert calculates, to put it simply, twelve months of thirty days each and calls the remainder of the solar year *lobi-lobi ni bulan* (the remainder of the month) or *lamadu*, which makes the lunar and solar years congruent again. As far as is known, the years themselves were not counted in Batak culture, or, if so, only to a limited extent, but the days of the year were counted. Usually there was always at least one specialist in time calculation within a *bius* organization, because the reliable determination of time was essential to the ritual as well as to the agricultural course of the year.

Keyword :

INTRODUCTION

In pre-colonial times (before 1900) the Toba Batak had neither a state nor a government in the modern sense. Nevertheless, they were able to maintain peace and stability within their territorial organizations, called *bius*, and they were able to organize the co-operation necessary to pursue irrigated rice cultivation. A *bius* organization consists of a common territory and (usually) a few thousand residents who belong to different clans (*marga*) but hold rituals together and jointly maintain irrigation systems. The *parbaringin*, the organized representatives of the localized clan groups within a *bius*, were the agents of common action in rituals as well as in agriculture. Usually there was always at least one specialist in time calculation within a *bius* organization, because the reliable determination of time was essential to the ritual as well as to the agricultural course of the year. In *bius* Sihotang (Samosir region), in which I did field research, the time keeping specialist (*datu siboto ari*) was also a member of the *parbaringin* organization with the title of a *raja na lima*.

METHODS

The text below is a report on an investigation into the subject of the indigenous knowledge of time-keeping, as it was of practical importance to the communal organization of agricultural activities in traditional Toba Batak society.

RESULTS

In pre-colonial times (before 1900) the Toba Batak had neither a state nor a government in the modern sense. Nevertheless, they were able to maintain peace and stability within their territorial organizations, called *bius*, and they were able to organize the co-operation necessary to pursue irrigated rice cultivation. A *bius* organization consists of a common territory and (usually) a few thousand residents who belong to different clans (*marga*) but hold rituals together and jointly maintain irrigation systems. The *parbaringin*, the organized representatives of the localized clan groups within a *bius*, were the agents of common action in rituals as well as in agriculture. Usually there was always at least one specialist in time calculation within a *bius* organization, because the reliable determination of time was essential to the ritual as well as to the agricultural course of the year. In *bius* Sihotang (Samosir region), in which I did field research, the time keeping specialist (*datu siboto ari*) was also a member of the *parbaringin* organization with the title of a *raja na lima*.

The Batak calendar year[1] is often referred to in literature as a lunar year. Winkler, who has so far done the main work on this topic, even goes as far as to call it a "pure lunar year".[2] However, Winkler himself admits elsewhere that the Batak calendar system reveals that it is set up to compensate for the difference between the lunar year and the solar year.[3] This is of great practical importance insofar as a solar year is

[1] Not only the Toba Batak, but also all other Batak groups traditionally had a similar way of determining the time and structuring the year. To a certain extent, this is still in use today and, as in Medan and the Karo region, is also published annually as a printed calendar (e.g., Wari-Wari Karo, Percetatkan Ulih Saber, or Percetakan Toko-Barus, Kabanjahe) It should also be mentioned that the Toba Batak term *taon*, usually translated as year, is also used to indicate the planting cycle of certain plants. The duration of a *taon eme* (rice year) should be set at around nine months, and a *taon jagung* (maize year) at around three months.

[2] Winkler 1913: 436.

[3] 1913: 447 und 1925: 214.

primarily useful for planning agricultural work. In fact, the *parbaringin* in Sihotang have made use of both a solar year and a lunar year. Hence, the Batak calendar system can be seen more as a combination of lunar and solar year.

To determine the beginning of the new year, Batak's time calculation experts used to observe two constellations which roughly correspond to those known in the West as Orion and Scorpio. Decisive to the determination of the beginning of the year is the time in the year at which Orion prepares to set in the western sky after dark[4] while Scorpio simultaneously rises in the eastern sky. In other words, the time in the year when parts of both constellations – which according to Batak point of view chase each other are visible. It should be noted here that we do not know for sure whether the Batak observed exactly the same constellation of stars which we understand by Orion and Scorpio to be. It can be assumed that the distinctive constellation of the scorpion, which is also called a scorpion in both the Batak and in the Indonesian language (*hala* or *siala*; Ind. *bintang kala*), to which a tail (*ihur*) is ascribed, by and large also corresponds to our point of view.

The picture of Orion is more complicated. Winkler identifies Orion with *siala sungsang*, literally the 'inverted scorpion', and Scorpio with *siala poriama* or *hala poriama* (present-day spelling: *pariama*),[5] which in its turn has been adopted by numerous other authors. However, if we analyse the text of a tradition published by Hoetagaloeng, the opposite is true: he says the star constellation which sets at the beginning of the year is called *si pariama* and the rising *siala sungsang* in the east.[6]

Even earlier Van der Tuuk had recorded that the Pleiades are called *poriyama*, and that the tenth or harvest month is called *bulan poriyama* and *morporiyama* (*marpariama*; a term which is also used in Sihotang) is the activity of harvesting.[7] It should also be added that the Pleiades (Karo *Bintang periama*, Ind. *bintang tujuh*) and the three belt stars of Orion (Ind. *bintang tiga*), both in other Batak groups and in other regions of Sumatra are related to the harvest (before they set) as well as with the planting season, or the preparations for it (after they appear in the sky before sunrise).[8] Of particular importance is the fact that, as a constellation the Pleiades are related to Orion and not to Scorpio.[9]

A clear indication that the Pleiades and the three belt stars of Orion can form a common constellation among the Batak is provided by a 1939 article in the Batak magazine Partoengkoan, in which an interview with a time calculation expert (called *datu panusur* there) is published. This *datu panusur* describes the movement of the constellation *hala pariama* as follows: From the middle of the seventh month (*parsitongaan ni boelan sipaha* VII), which roughly corresponds to November 5, 1939, a part of the constellation becomes visible in the early evening and wanders the sky all night On the 22nd day of the eighth month (*antian ni angga di boelan sipaha* VIII), which corresponds to December 3rd or 4th, the 'tail' of the *pariama* (*ihoer ni pariama*) is also visible in the early evening (around six o'clock). The *datu panusur* describes this tail as the "three stars in a row."[10] This is a precise description of the movement of the Pleiades and Orion and also of the three belt stars, which are often known in the archipelago as "the three stars".

Winkler relied mainly on information provided by a key informant, Ama Batuholing Lumbangaol, an experienced *datu* who had explained many of the principles of *datu* science to him very well. However, we must probably see the names given to the star constellations by Winkler - whose identification with Scorpio and Orion he owes the Berlin astronomer Riem[11] - to be just one of the versions which have been handed down in Batak culture.[12] In the tradition recorded by Hoetagaloeng

[4] This point in time is mentioned far more often as the criterion for determining the beginning of the year than the criterion of simultaneity.

[5] Winkler 1913: 436-438

[6] "In the last or twelfth month, si Pariama are in the west and Sialasungsang in the east. At the beginning of the first month si Pariama descends to move from the west to the east" (*Ia di ari hoeroeng, di hasoendoetan ma bintang si Pariama, di habinsaran ma Sialasoengsang. Ia di boelan Sipaha sada Artianiangga, toeat ma si Pariama sian hasoendoetan laho toe habinsaran*) Hoetagaloeng 1926: 10.

[7] Tuuk 1861: 339; Neumann 1885-1887 III: 532 mentions *parejama* as a name of the Pleiades (southern Batakland) and Brenner 1894: 221 also mentions *bintang parejama* as a name for the seven stars (Pleiades).

[8] Cf. Neuman 1905: 54 and 1920: 377 for the Karo Batak, Hurgronje 1893 I: 266 f. for Aceh, Schröder 1917: 16 ff. for Nias, Schneider 1995: 94 f. for the Rejang in Bengkulu, as well as my own surveys of the Petalangan in Riau and the Minangkabau in various regions of Western Sumatra. The Pleiades are also related to agriculture in regions of the archipelago outside Sumatra, and the name *pariama* for this constellation can also be found in the east of the archipelago (Moluccas, etc.); see the overviews in Maass 1924 and 1926.

[9] This applies to Sumatra as well as to other cultures in the archipelago; see ENI under *tijdrekening* and Maass 1924 and 1926.

[10] *bintang na toloe na oedoer i* (Datoe Etek 1939).

[11] Winkler 1913: 438.

[12] Winkler himself admits that there are different versions and that he himself adhered just to a particular one (1913: 414) Neumann's (1885-87 III: 530-532) observations from the southern Batak countries, which were recorded thirty years earlier, seem to partly support Winkler's version at least in part, if a constellation consisting of 'three glittering stars', which is important to determining the time, can be identified as Orion. This is called *hala sontjang* (= *soncang*, corresponds to *sungsang* in the pronunciation customary in the southern Batak countries; cf. Eggink

there is an indication that Orion or Sipariama, who was originally a human and the (hostile) brother of Sialasungsang, is not seen as a scorpion, because he does not have a tail (*ihur*), as is the case with the latter, but (cock) tail-feathers (*lailai*).[13] This might indicate that, in the past, there had once been a tradition in which a rooster was seen in a constellation of stars which included both the Pleiades and the three belt stars of Orion.[14]

DISCUSSION

So, if the above-mentioned constellation was observed at the new moon, the Batak time calculation experts would wait for the narrow crescent of the waxing (*na poltak*) and setting moon to appear in a certain position north of Orion in the western evening sky[15] to determine the first day of the new year.[16] The subsequent full moon to be observed in the east would then be in the area of the Scorpio. The time of day of the observation was also essential for establishing the New Year; as Winkler suggests, it should be in the early evening. At this time, the afore-mentioned constellation would be observed in May and the year counting would begin in that month.[17] According to my surveys since 1990, however, the beginning of the new year in the Toba and Samosir region regularly falls in our month of April (possibly also in the last days of March).[18] However, such uniformity has not always been observed. According to surveys by H. Promes,[19] the beginning of the new year in Aek na Uli (Uluan region) fell in May in 1964 and in Parsoburan (Habinsaran region) in March. This suggests that different traditions exist regarding when to observe the star constellations.

From this it follows that the beginning of the year is roughly determined by the constellation of the stars, but the official beginning of the year (and the counting of the days) must be shifted by a few days each year, more precisely, a few days earlier than in the previous year and, finally, after a few years, when the new moon becomes visible long enough before the corresponding star constellation rises, to be set again later.

Subsequently the Batak's time calculation expert calculates, to put it simply, twelve months of thirty days each[20] and calls the remainder of the solar

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1936), in contrast to *hala godang* (the great *hala*), which, with its head turned west, is described as an outstretched parallelogram, will probably correspond to the Scorpio. The Pleiades are also referred to as *Pariama* by Neumann. Orion and the Pleiades are therefore to be seen as separate constellations by Neumann. Henny (1869: 25-29), who came to Sigompulan and Silindung in 1858, calls the two constellations, which are essential for determining the time *hala godang* and *hala soentjang* (= *suncang* = *sungsang*). According to the information available here, neither Neumann nor Henny could reliably determine the two constellations mentioned.

[13] "When the Sialasungsang sets in the west and the si Pariama rises in the east, si Pariama only sees only the tail of the Sialasungsang (*holan ihur ni Sialasungsang idaon ni si Pariama*) and vice versa Sialasungsang can only see its tail feathers" (*Sialasungsang holan lailaina do boi tataponna*) (Hoetagaloeng 1926: 10). In Neuman, the tail of the *hala na godang* is called *'lale'* (= *lalai*, the pronunciation of *lailai* which occurs in the southern Batak countries; see Egging 1936), but the constellation itself is depicted as a snake-like being (Neumann 1885-87 III: 530-532).

[14] Mr Promes pointed this out to me. Adriani and Kruyt (1912-1914, II: 234, 208, 263-268) have described such a constellation among the Bare'e-speaking Toraja, although there the Sirius region represents the cock's tail (and the Pleiades the head) whereas among the Batak, as mentioned above, the three belt stars of Orion are described as the tail of the *hala pariama*.

[15] Meerwaldt (1894: 548) calls it "passing under the feet of Orion", seen by the Batak as "being eaten by the scorpion's claws" (*manggagat hala*), as his informants described Orion to him". This suggests that this constellation was seen standing upside down compared to the Western point of view.

[16] If this constellation was missed, there were other possibilities to determine the beginning of the year retrospectively; see Winkler 1913: 436-438. In practice, the following full moon was often calculated back.

[17] A remark by Warneck seems to confirm this: in a footnote he mentions that the third Batak month would correspond to our July (1899: 132 fn. 2). The annual count would then begin around May.

[18] In the above-mentioned article from Partoengkoan (Datoe Etek 1939: 2) the new Batak year is described as falling in the month of April. This is also the case in a published almanac from 1965 (Pardede and Pohan).

[19] According to a written communication (undated) from H. Promes.

[20] According to the *parhalaan*, the Batak almanacs, which everywhere largely agree with this basic classification. Individual time calculation experts might have handled slightly different classifications, e.g., in months with 29 and 30 days (Neumann 1885-1887 III: 530 or with 29 and 31 days (Winkler: 1913: 447). This could be explained by the importance that the actual lunar cycles have on the choice of favourable and unfavourable days. According to Neumann, only the *datu* adhered to this calendar for the solar year (i.e., counted the days and inserted a leap month) and all other people determined the months by observing the phases of the moon (1885-1887 III: 530). In some cases, Islamic influence can also be suspected. This is particularly evident in Willer's description of the Mandailing calendar from shortly after the Padri period (1846: 397-399): The Batak names of the months and the days, the majority of which come from Sanskrit, are still retained, but the division of the year into twelve months of 29 and 30 days as well as the annual advance of the beginning of the year by eleven days compared to the solar year show the influence of Islamic ideas.

year *lobi-lobi ni bulan* (the remainder of the month) or *lamadu*, which makes the lunar and solar years congruent again. As far as is known, the years themselves were not counted in Batak culture,[21] or, if so, only to a limited extent, but the days of the year were counted. As Winkler notes, in every *bius* organization this task was assigned to a *datu porrusuk-rusuk*. This name of the time calculation specialist is derived from a buffalo rib (*rusuk*), the instrument he uses to count the days: "This rib was provided with four rows of holes, two rows of 12 holes each and two rows of 30 holes each, the 12 months of the year and the 30 days of a month accordingly. At the end of the first day, the Datu crossed it out on his rib calendar by pulling a thread attached to the rib through the first day hole, from top to bottom, at the end of the second day he passed the thread through the second hole, now from bottom to top, etc. until the end of the first month. In the second month, going backwards, day after day he pulled the thread out of the day holes again. In the third month he pulled the thread through the second row of daily holes, in the fourth month he also separated this monthly seam. - At the end of each month, the thread was passed through the row of twelve-monthly holes in a corresponding manner. In the second year the Datu counted the months by pulling out the thread laid in the first year; in the third and fourth years it used the second series of months in the same way. - One might be tempted to see an approach to a time calculation in this summary of a period of four years, but there is otherwise no trace of a calculation based on longer time periods with the Batak. "[22]

In Sihotang the term *parrusuk-rusuk* is not used. There the *raja na lima* from *turpuk* Sirandos, who had also been *datu siboto ari* for generations, were traditionally the specialists responsible for time calculation, that is, *'datu* who know the days,' *'datu* who know the favorable and unfavorable days'. According to the statements made by the descendants (grandchildren) of the above-mentioned *datu* and *raja na lima* Guru Sojuangon, their ancestors who held these positions were also entrusted with the task of counting the days, that is, they maintained the annual calendar. They did this on behalf of the *bius* organization and the fact they had a great responsibility towards the community is still widely acknowledged.

The instrument which Guru Sojuangon used to count the day - said to have been made of wood - no longer exists. His son and successor, Ompu Batuholing, had already used paper and pen for his notes on the annual overview in addition to a *parhalaan* on bamboo. Ompu Raja Bakti, a key informant of mine, also kept a Batak annual overview,[23] and worked in the same way.

CONCLUSION

The Batak's time calculation expert calculates, twelve months of thirty days each and calls the remainder of the solar year *lobi-lobi ni bulan* (the remainder of the month) or *lamadu*, which makes the lunar and solar years congruent again. As far as is known, the years themselves were not counted in Batak culture, or, if so, only to a limited extent, but the days of the year were counted.

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[21] A person's age in years was also irrelevant.

[22] *„Diese Rippe ward mit vier Reihen von Löchern versehen, mit zwei Reihen zu je 12 Löchern und zwei Reihen zu je 30 Löchern, den 12 Monaten des Jahres und den 30 Tagen eines Monats entsprechend. Nach Ablauf des ersten Tages strich der Datu diesen in seinem Rippenkalender aus, indem er einen an der Rippe befestigten Faden durch das erste Tagesloch hindurch zog, und zwar von oben nach unten, am Ende des zweiten Tages führte er den Faden durch das zweite Loch, jetzt von unten nach oben, usw. bis zum Ende des ersten Monats. Im zweiten Monat zog er zurückgehend Tag für Tag den Faden wieder aus den Tageslöchern heraus. Im dritten Monate zog er den Faden durch die zweite Tageslochreihe, im vierten Monat trennte er auch diese Monatsnaht wieder auf. - Nach Ablauf je eines Monats wurde daneben in entsprechender Weise der Faden durch die Reihe der zwölf Monatslöcher geführt. Im zweiten Jahre zählte der Datu die Monate durch Herausziehen des im ersten Jahre gelegten Fadens, im dritten und vierten Jahre benutzte er in gleicher Weise die zweite Monatsreihe. - Man könnte versucht sein, in dieser Zusammenfassung eines Zeitraumes von vier Jahren einen Ansatz zu einer Zeitrechnung zu sehen, aber es findet sich bei den Batak sonst keine Spur von einer Rechnung nach größeren Zeitperioden*." Winkler 1913: 439.

[23] It should also be noted that in addition to the use of modern, commercially available almanacs with a Western (rarely an Islamic) calendar, the traditional Batak determination of the beginning of the year by *parmalim* groups in Toba has a great influence on the maintenance of the Batak year by traditionally oriented groups in the Samosir region.

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