



# Indigenous Astronomy & Calendar Making

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[https://www.youtube.com/watch?v=W\\_-bml2bLuk](https://www.youtube.com/watch?v=W_-bml2bLuk)

The term calendar is taken from [calendae](#), the term for the first day of the month in the Roman calendar, related to the verb *calare* "to call out", referring to the "calling" of the new moon when it was first seen (American Heritage Dictionary, 2017; [Dershowitz & Reingold, 1997](#)).

Doggett (1992); Richards (1998) and Lynn (1999) indicate that *Latin calendarium* meant "account book, register" (as accounts were settled and debts were collected on the calends of each month).

The Latin term was adopted in old French as *calendrier* and from there in Middle English as *calendar* by the 13th century (the spelling *calendar* is early modern). The first recorded calendars date to the Bronze Age, dependent on the development of writing in the Ancient Near East, the Egyptian and Sumerian calendars. Some calendars date back to the Iron Age (American Heritage Dictionary, 2017; Birashk, 1993; [Dershowitz & Reingold](#), 1997). A calendar is a system of organizing days for social, religious, commercial or administrative purposes. This is done by giving names to periods of [time](#), typically [days](#), [weeks](#), [months](#) and [years](#) (Spier, 1986 & Zerubavel, 1985).

In summary, there various types of calendars such as the Julian, Gregorian, Islamic, traditional and lunar calendars.

In Cairo, Nabta Playa, stones were erected and aligned with the rising sun during the summer solstice.

These rocks were used as a calendar that helped them to know when the summer solstices occurs.

Among the Batswana, the coming of the rains, after the dry winter season, marked the renewal of the year.

It was decided that this time was suitable to start a new year.

Therefore, the New Year started around September.

The traditional calendar of Batswana like many other African indigenous communities such as the Dogon of Mali is based on observing the different phases of the moon.

Some African communities used the lunar calendar, other used the observation of the sun.

African indigenous astronomy (*bolepa-dinaledi in Setswana*) is one Discipline of Competency (DoC) of the broader African Indigenous Knowledge Systems (AIKS) negated by modern education system including researchers and policy makers.

Historians of science agree that astronomy is the first science in the world.

In addition, scientists including archaeologists also agree that Africa is the cradle of human kind and civilisation, therefore an argument can be made that disciplines such as astronomy, cosmology, mathematics, chemistry also started in Africa.



# 4. RECOGNITION OF PRIOR LEARNING





Long before slavery, colonisation, apartheid and Bantu education system in RSA, African indigenous communities had knowledge of the sun, moon, stars and other constellations.

This knowledge was used to address their day-to-day challenges such as time reckoning, agriculture, navigation, reproductive health, calendar making etc.

Evidence of indigenous astronomy and calendar making can be found among the Batswana, Zulu, Vhenda, Xhosa, Khoisan, Shona, Dogons of Mali, etc.

Mkhulu Nsingisa in his book *Kemet / African Royal Calendar* indicates that African indigenous cultures in RSA and the African continent affirm September as the month of the new beginnings.

That is demonstrated by the way they name the months in the African calendar. Kemet means black and refers to the land of people.

Among the Khoi, September is called Tara / Khumu; Sesotho called Loetse and Setswana known as Lwetsi.

In Tshivenda is the period of khubvumedzi; while in Tsonga is known as ndzhati and Xhosa called EyoMsintsi.

In siSwati is inyoni, in Zulu referred to as Umandulo and among the Amandebele, uKhukhulamungu.

In RSA we have the oldest stone calendar in Mpumalanga called “*Indzalo ye langa*” commonly known as Adams Calendar.

*Inzalo ye Langa* is the scared place for African people and this is where the late Baba Credo Mutwa was initiated as an African indigenous healer or what is commonly known as Sangoma or Sanusi in 1937.

The late Credo Mutwa indicated that *Inzalo Ye Langa* is the most sacred place for African people in the continent and is supposed to be the Mecca for all Africans.

This means that is tied to our African indigenous spirituality so it can never be commercialised or privatised.

That is why all efforts must be towards revival, reclaiming, and restoration of *Inzalo Ye Langa* so that it retains its sacredness.

Mkhulu Nsingisa, the CEO of the Zinzi Mandela Foundation and Great Empire of Kemet Movement argues that the *Inzalo Ye Langa* in Mpumalanga is older than the stone calendar in Egypt, which means that it should be declared the indigenous spiritual heritage for all the Africans.

Mkhulu Nsingisa argues that the view or long-term plan is to make that place a pilgrimage for African people because we do not have a centre where we all meet as a collective.

The IKS Centre, Department of Science and Innovation including the diverse African Traditional Health Practitioners in South Africa support this view and argues that there are also research, teaching, learning including community engagement prospects at *Inzalo Ye Langa*.

The Indigenous Knowledge Systems Centre, Faculty of Natural and Agricultural Sciences, North-West University celebrated the African New Year on the 23 September 2021 - 2023 at Mpumalanga, *Inzalo Ye Langa* (birthplace of the sun).

## Pictures of stones circles (granites, dolomites and hornfels) at Inzalo Ye Langa















it is very important to integrate indigenous astronomy in the curriculum of education and teach the African child that September is marked as the beginning of the New Year among various African indigenous communities.

For instance, the Ethiopians celebrate their New Year on the 11 September, however the African New Year among the Bantu communities is scientific not political due to fact that it is based on the nature, equinoxes, solstices and is the oldest.

The African calendar is in alignment with nature and due to the indoctrination of the Western education system, we are more accustomed to the Gregorian calendar, which is completely out of alignment with nature and based on Western philosophy, astronomy, cosmology, worldview and epistemology.

The study conducted previous years argues that the Batswana like all other cultures developed their own calendar system.

Indeed all organised societies whether they are villages, towns, cities or empires, have developed calendar systems.

People performed important rituals and ceremonies during special days that were determined by the calendar (Medupe, 2010).

For example, the Batswana of Botswana needed to know the beginning of the rainy season in order to prepare rituals to cleanse the land, and in Swaziland, the first fruit ceremony (*incwala*) was performed annually on the 21 of December, during the summer solstice (Medupe, 2010).

Ruggles (2015) who argues that all human cultures developed their own calendar system, for instance to synchronize or coordinate events, to arrange events chronologically, to provide a temporal framework for referencing and enacting events, and to determine durations (time intervals) between events.



Medupe (2010), calendars are used as a way to manage activities in societies throughout the year.

They are typically, although not exclusively, linked to one or more astronomical cycles such as the phase cycle of the moon, the seasonal cycle of appearances and

disappearances of stars and asterisms, and the seasonal movement of the position of sunrise or sunset to and fro along the horizon (Ruggles, 2015).

Different authors have written about the sun and moon calendars, however, many of them agree that the origins of the calendar is a controversial study in itself (Sparlinger, 1995).

The way in which we divide the day into hours and minutes, as well as the structure and length of the yearly calendar, owes much to pioneering developments in ancient Egypt ([Alistair](#), 2017).

Richards (1998); Curry (1990) and Alistair (2001) point that the study of the Egyptian indicates that there were three different calendars,

firstly the lunar calendar based on 12 lunar months,

secondly, the civil calendar used for administrative purposes.

A third calendar, which dates back at least to the fourth century BCE was used to match the lunar cycle to the civil year. It was based on a period of 25 civil years which was approximately equal 309 lunar months (Richards, 1998; Curry, 1990 & Alistair, 2001).

# Batswana months

- There are more than one version of the Batswana months.
- The following table is a summary of one version of the months according to the Batswana. The study takes into consideration that there are several versions by various scholars on Batswana months.
- The summary of 12 Batswana months, according to R. Pretorius, D.T Cole and P.M Sebate, are listed below.

## The description of Batswana months

Setswana	Eng	Discription
Phatwè	Augt	<p>This month in the past was ‘the one that starts the year’ (the beginning of the Tswana year). The year knocks and says: ‘Twa! Twa!</p> <p>It is clean’ signifying a new beginning, a new life.</p> <p>It is the time to start ploughing when the first rains (kgogolammoko) can be expected. The Tswana once regarded August as the first month of spring.</p> <p>August, nevertheless, is also the time of strong winds and clouds of dust.</p>
Lwetse	Sept	<p>The month of illness or bolwetse when new life begins in spring, and there is much illness amongst the people and the animals.</p>
Phalane	Oct	<p>Also a month of spring.</p> <p>Rain falls, the veld grass begins to grow, trees come out in flower, and the happy sounds of animals and birds can be heard.</p> <p>This is the time when some animals give birth to their young and the birds are breeding or hatching their eggs.</p> <p>These sounds resemble the sounds of whistles or diphala, giving rise to the name of the month. According to D.T. Cole, it is in this month that the impala drop their young: hence diphalana or ‘the young impala antelope [plural]’.</p>
Ngwanatsele	Nov	<p>The start of summer when temperatures increase.</p> <p>The month when the young of many wild animals and cattle are born (ngwana = ‘child’ and tsala = ‘to give birth’ = Ngwanatsêlê).</p> <p>Another interpretation is that the name of the month refers to the plentiful supply of fruit in the fields.</p> <p>Children can pick the fruit that they desire: ‘Ngwana itsêlê’ where itsêlê means ‘to take for yourself’.</p> <p>D.T. Cole states that the name of the month is derived from Ngwana-itsêlê meaning ‘Child take for yourself, help yourself’.</p>

Sedimonthole	Dec	<p>Summer is now in full swing.</p> <p>Vegetables, fruit and other crops are plentiful in the fields.</p> <p>The woman need help when returning home from the fields, since their baskets are so full of produce.</p> <p>The baskets are balanced on the heads of the woman.</p> <p>The name of the month reflects this procedure where go ithola means 'to take something off your head', hence se di mo ntholê or 'help me to take it off my head'.</p> <p>D.T. Cole maintains that the name of the month is derived from sedimo meaning 'ghost, unearthly creature' (a reference to the badimo or ancestors) and ntholê or to 'remove or take off [from my head] all the produce from the fields'.</p>
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The harvest, certainly for the woman of southern Africa, was not altogether a joyous occasion. Lloyd, Parr, Davies and Cooke (2010) have suggested that the repeated carrying of a heavy load on a person's head is linked to chronic neck pain.

Fërikgong	Jan	<p>It is very hot in this month.</p> <p>The Sun is fierce and even affects grazing as well as the grain crops in the fields. The intense heat of the Sun, it is said, causes the branches (wood) of the mofiri or perhaps the mperifiri shrub or small tree to become dry or brittle. The species could be the Bell Spike-thorn or Klokkiespendoring (<i>Gymnosporia tenuispina</i> = <i>Maytenus tenuispina</i>) which is a shrub.</p> <p>A further possibility is the Small Honeysuckle Tree or Kleinkamperfoelieboom (<i>Turraea obtusifolia</i>) which is a spindly shrub or small tree.</p> <p>The wood (legong; kgong) of the shrub or tree can be broken off without too much effort, and is highly sought after for making fires.</p> <p>The name of the month is indicative of this 'easy to harvest' feature of the species. The heat, it is stated, also induces snakes to escape from their holes in the ground.</p> <p>D.T. Cole indicates that the name of the month is derived from fêra or 'to bend fingers in counting' and the word for firewood (di) kgong.</p>
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Tlhakolê	Feb	<p>February is the month which 'cleans away' (e tlhakola) the heat or mogote of January.</p> <p>The grass recovers from the baking heat of the previous month.</p> <p>One result is that the wild animals again graze in the veld (di tlaa fula = 'they will graze').</p> <p>This month is the beginning of autumn (letlhafula).</p> <p>According to D.T. Cole, the name of the month comes from motlhakola or the Common Guarri / Small-leaved Guarri or Gewone Ghwarrie / Fynblaarghwarrie (<i>Euclea undulata</i> = <i>E. undulata</i> var. <i>myrtina</i>; <i>E. myrtina</i>).</p> <p>The leaves of this shrub or small tree were once used as toilet paper to 'wipe off'. The expression is derived from tlhakola or 'to clean the anus', especially of a child, with the said leaves.</p>
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Mopitlwê

March

It is now autumn.

Crops such as green maize and sweet-sorghum are maturing in the fields. Each child is able to eat until his stomach is very full (mpa go pipitlelwa). The beans are bursting with growth, and are said to be pitlaganeditse ('full in their skins'). The grass begins to lose its green colour.

Motshêganông

May

This is the first month of winter when the rain ceases and a strong southerly wind blows.

The grass turns yellow, the trees shed their leaves, and small pans dry up. The larger pans hold only a little water.

The name of the month refers to the fact that the grain crops are now mature. The crops are said to be laughing at all the birds (dijala di tshêga nông), since the birds or nông are unable to eat the mature ears of the grain crops.

Seētēbosigo	June	<p>Low temperatures are now very apparent.</p> <p>Bitter cold results from the southerly winds (i.e. cold fronts).</p> <p>It is so cold that it is not really possible to travel at night (go eta bosigo), given that there will not be enough blankets available at other homesteads to share with visitors.</p> <p>A relevant Tswana proverb is: ‘Moeng wa mariga o mo adima mpa, eseng dikobô’ meaning that one can lend a traveller a stomach (give him food) in winter, but not blankets. Frost and veld fires are characteristic of this month.</p>
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<b>Phukwi</b>	<b>July</b>	<p>This is the last month of winter and also the year when harvesting is nearly finished.</p> <p>The intense cold of winter begins to ease, particularly since there is a change in wind direction from southerly to northerly. Some rain might fall in this month.</p> <p>The people often expressed a desire for the year to come to an end so that a new beginning (year), when life starts afresh, can be enjoyed.</p> <p>The name of the month, as per D.T. Cole, is derived from Phukwimaphukutsa-dithare or 'July, the shaker off of leaves from the trees'. The name is linked to the wind and the dried out leaves.</p>
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# Batswana & Time calculation

Celestial Images	Translation
Mahube	Mahube is derived from hubedu, meaning red in Setswana, that is, reddish skies or the dawning of the day, redness of the sky in the morning or blush of dawn; the streaks of colour and light at dawn or red tinges in the sky at dawn. The word is formed by the prefix ma- + adjective stem - hubedu
Mahube a 'naka tsa kgomo	This is at first dim light or when the skies are reddish and one can see the horns of the cattle etched against the morning sky. Only the horns of cattle are visible in the dark, as they are white.
Mahube a banna	This is, at first light, very early in the morning before mahube a basadi.
Mahube a basadi	This is very early in the morning, when it is light enough for the woman to go out and fetch water or collect firewood.
Mahube a magakgala	This refers to the very first rays of daylight which look like caterpillars with glittering button-like shapes. Magakgala are the stars of the dawning clouds

<b>Moso</b>	The word moso means sunrise. It is derived from the stem -sameaning clearing of the darkness of the night, to disperse darkness.
<b>Motshegare</b>	The word is derived from motsi- meaning time and space, and garein the middle. The word means the middle of morning and afternoon.
<b>Sethoboloko</b>	Sethoboloko means noon or midday. It is approximately twelve noon.
<b>Maitseboa</b>	Maitseboa is early afternoon to shortly before sunset. The word is derived from motsi- time and space, and the verb stem -boa, as in di boa di tla gae, they are coming back home. This refers to people coming home or animals coming back to the kraal before sunset
<b>Phirimane</b>	The word phirimane is derived from phirima meaning 'set'. Bophirima is the direction of the setting sun. Phirimelela is when the sun sets before a task has been done or completed or accomplished, or to force one to stay overnight owing to darkness setting in soon. Phirimane is when the sun sets, with darkness setting in soon.

<b>Lotlatlana</b>	<b>Lotlatlana is dusk, eventide, early evening twilight - the gloaming.</b>
<b>Maabanyane</b>	<b>Maabanyane is the evening after sunset, towards night.</b>
<b>Maitiso</b>	<b>Maitiso is late evening and time for conversations before retiring to bed, time for story-telling.</b>
<b>Bosigo</b>	<b>Bosigo is night or time to go to bed and rest.</b>

African concept of time is unique and different from European concepts and understanding.

The narrative that African communities do not value time is inaccurate and misleading.

Among the Africans, time is not about punctuality but about the mutual relationship which human beings have with the environment, cosmos and the universe at large

Language is also important when it comes to analysing and understanding the concept of time and space among the African indigenous communities.

Celestial bodies, animals, religious or mythological figures plays crucial role in understanding the concept of time in Setswana ontology.

# Conclusion

- What is the time
- The time for us to now recentre, realign ourselves with the African calendar as one of the strategies to restore the African pride and knowledge systems.
- The above table provides a brief version of different names of months according to the Batswana. As indicated earlier, the Batswana from time immemorial they had their own calendar system which was based on the lunar system.
- However, due to the influence of slavery, colonialism and apartheid, often led by missionaries influenced the African calendar systems and also distorted them.

# Way Forward

- Collaboration
- Partnership
- Networks
- Community engagement
- Research
- Mainstreaming in the curriculum
- Teaching