

**GEM 1506 – HEAVENLY MATHEMATICS: HIGHLIGHTS
OF CULTURAL ASTRONOMY**

TERM PROJECT

**THE NEW YEAR
FESTIVAL OF SRI
LANKA**

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INDEX

ABSTRACT.....5

**1. INTRODUCTION TO SRI LANKA AND
THE SRI LANKAN
CALENDAR.....6**

1.1 SRI LANKA.....6

1.2 FESTIVALS OF SRI LANKA..... 8

1.3 CALENDARS USED IN SRI LANKA..... 11

1.4 THE SRI LANKAN CALENDAR..... 14

2. HISTORICAL FACTS.....15

**3. CALCULATION OF THE YEAR
AND THE AUSPICIOUS HOURS.....17**

**3.1 TERMS USED IN THE ASTRONOMY OF
SRI LANKA.....17**

**3.2 DEFINING THE SRI LANKAN
CALENDAR.....19**

**3.3 THE CALCULATION OF THE
AUSPICIOUS HOURS.....26**

4. THE DAWNING OF THE NEW YEAR (THE REASON BEHIND THE CHANGES).....	28
5.THE CUSTOMS (WITH RESPECT TO THE CALENDAR).....	29
5.1THE DAWNING OF THE AUSPICIOUS HOURS.....	30
6.FESTIVITIES.....	31
6.1THE FOOD.....	32
6.2THE GAMES.....	33
6.3THE RITUALS OF GOODWILL.....	33
6.4THE NEW YEAR AS A NATIONAL FESTIVAL.....	34
7. BIBLIOGRAPHY.....	35

ABSTRACT

Sri Lanka is situated at 5° - 10° North and 79° – 82° East in the Indian Ocean, separated from Southern India by a narrow oceanic strip of 42km. Due to the proximity to India, Sri Lanka consists of a variety of native as well as foreign cultures.

Nevertheless, the New Year festival celebrated in Sri Lanka is coincidentally shared by the Indian immigrants – the Tamil Hindus, as well as the native Sinhalese Buddhists.

The New Year is of an astronomical importance because the calculation of the year is done in respect to the movement of the sun along the twelve zodiac signs (though, in reality the sun does not move).

With a rich history behind the astronomy of Sri Lanka, the new year is a unified celebration that pronounces ethnic harmony where the message is conveyed to the world that similarities are the fundamentals of differences!

This project covers the following areas:

- Introduction to Sri Lanka and the Sri Lankan calendar.
- Historical facts.
- Calculation of the year.
- The dawning of the new year (the reasons behind the changes).
- The customs (with respect to the calendar).
- Festivities.

1. INTRODUCTION TO SRI LANKA AND THE SRI LANKAN CALENDAR

1.1 SRI LANKA



Figure 1.1.1 Sri Lanka – the “Pearl of the Indian Ocean”

Better known as the “Pearl of the Indian Ocean” during the good old days, Sri Lanka is an island situated roughly within the Northern latitudes of 5° and 10° and the Eastern longitudes of 79° and 82° . As indicated by the map above, it’s separated from Southern India by a narrow strip of sea of 42km – the Palk Strait.

It is considered as a “Pearl” due to the diversity in flora, fauna and climate in different parts of the country. In comparison to Greenland, UK, New Zealand and many South-East Asian islands, Sri Lanka is a small area of land (65, 610 square km). This area roughly consists

of 64, 740 square km of land and 870 square km of water (Grolier Multimedia Encyclopedia – 1995).

Although Sri Lanka is a midget of an island, it consists of a variety of cultural and religious groups. Ethnically, there are four dominant cultures (Sinhala, Tamil, Muslim and Burgers) and religions (Buddhism, Hindus, Muslim and Christianity). According to the estimates of 1999, Sinhalese are in the majority, consisting of 74% of the entire population, followed by the Tamils (18%), Muslims (7%) and Burghers (1%). In considering the religion, Buddhism is at front (nearly 70% of the population are Buddhists), subsequently followed by Hinduism (15%), Islam(8%) and Christianity (7%).

Sinhalese is the official and national language of Sri Lanka. Tamil is also a national language but spoken by only 18%. English is commonly used as well and is spoken competently by about 10% of the population.

The capital of Sri Lanka is Colombo. Nine administrative divisions (provinces) are found, namely Western province, Central province, Southern province, Uva province, Sabaragamuwa province, North-Central province, Northern province, Eastern province and North Western province.

Sri Lanka's most dynamic industries at present, are textiles and food-processing. Plantation crops were the main export till late. Yet in 1996, textiles and garments accounted for 63% of exports whereas plantation crops made up only 20% of the exports.

A continuing cloud over the economy is the raging civil war against the LTTE (Liberation Tigers of Tamil Eelam) – an insurgent cohort fighting for a separate piece of land within Sri Lanka (<http://www.cia.gov/cia/publications/factbook/geos/ce.html>)

1.2 FESTIVALS OF SRI LANKA



Illustration 1.2.1 Vesak Celebrations



Illustration 1.2.2 Vesak Pandol

Sri Lanka's festivities can be divided into two categories: religious festivals and cultural festivals. The Vesak festival (Illustrations 1.2.1 and 1.2.2), Deepavali, Ramazan and Christmas are instances of religious festivals. Cultural festivals include the world-famous "Esala Perahera" (Illustration 1.2.3) and the Sinhala and Hindu New year (Illustrations 1.2.4 and 1.2.5).



Illustration 1.2.3 The Esala Perahera



Illustration 1.2.4 The New Year festivities – playing the “Rabana”
(<http://www.atsrilanka.com/festivals.html>).



Illustration 1.2.5 The new year festivities with the Tamil Hindus
(<http://www.atsrilanka.com/festivals.html>).

Most of the festivals of Sri Lanka have an astronomical significance, (the New Year in particular), where the movements of heavenly bodies are taken into consideration for the calculation of the dawning of the festive season (“The April New Year” – Professor J.B. Disanayake -1993 et.al).

1.3 CALENDARS USED IN SRI LANKA

1.3.1 MEASURING TIME

Time is a matter of indefinite continuous duration. Terms like “seconds”, “minutes”, “hours”, “days” etc. etc were devised as units of measuring time. However, the Sri Lankans have their own Sinhalese terminology for these time segments.

Tappara – seconds

Vinadi – minutes

Paeya – hours

Davas – days

Sati – weeks

Masa – months

Aurudu/ Wasara – years

Dasaka (Dasa = ten) – decades

Sata varsha/ siyavas (*Sata/siya*=hundred + *varsha/vas*= years) – centuries

Kalpa – aeons

The fascinating point is, although currently, these Sinhalese terms have their corresponding English definitions as above, the meanings were used in a totally reversed manner in ancient times. At present, an hour has 60 minutes and a day has 24 hours (in rounded figures). Yet, in ancient Sri Lanka the day was considered to have 60 *paeya* (hours) and 24 *vinadi* (minutes). The reason behind this usage is lost in history (“The April New Year Festival” – Professor J.B. Disanayake – 1993).

To measure time, Sri Lankans had invented numerous instruments. The most popular device was the “*pae taetiya*” an equivalent of the hour-glass. This was a simple device made out of the half of a coconut shell (which was made out of copper-based brass, later on) with a hole at the bottom. The coconut shell was then left to submerge in a container of water and the total time consumed for the submerging of the shell was accounted as an hour or a *paeya*. This system of measuring the hour had discrepancies mainly due to the variation of size of the hole in the shell. Hence, the time consumed for the submerging differed from one device to the other.

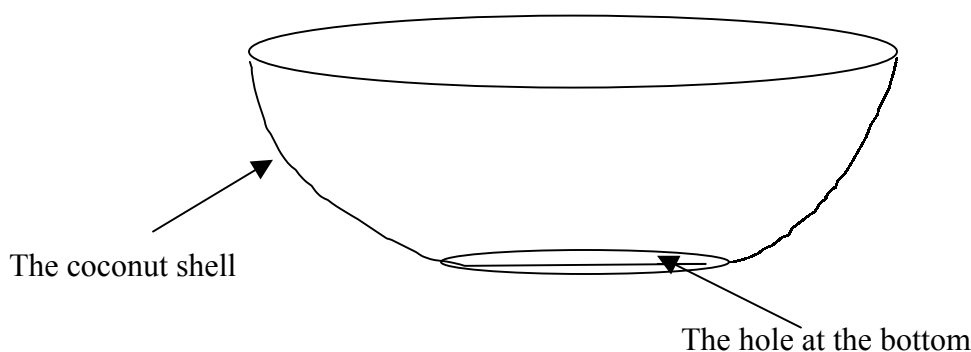


Figure 1.3.1.1 A rough sketch of the *pae thetiya*

Yet, even during ancient times, the level of accuracy achieved by calculating the time with respect to heavenly bodies was evident. Therefore, the ancient Sri Lankan calendars (that is used even nowadays at special occasions as the New Year and Vesak festival) was based on the movement of the sun, moon and planets across the celestial sphere.

1.3.2 CALENDARS IN SRI LANKA

Sri Lankans use four different calendars:

1. The Gregorian calendar
2. The lunar calendar
3. The Buddhist calendar
4. The solar calendar.

1.3.2.1 The Gregorian calendar

The Gregorian calendar is common to every Sri Lankan and was introduced as a result of the foreign influence during the past. This calendar is currently used world wide for secular purposes based on a cycle of 400 years consisting of 146, 097 days, giving a year of average 365.2425 days. The Gregorian calendar was constructed to give a close approximation to the tropical year (the mean interval between the Vernal equinoxes) which is the accurate length of time taken by earth to complete one orbit around the sun.

According to this calendar the present year is 2001.

1.3.2.2. The lunar calendar

The traditional Sinhalese calendar is a lunar calendar based on the phases of the moon. The twelve months of the lunar calendar are named in Sinhalese and the first month is given the name *Bak* – a word derived from the Indian word “*Bagya*” meaning prosperity and fortune. In going further more onto the next chapters, it would be clear that the nomenclature used for the beginning of the first lunar month and the first month of the Sri Lankan calendar are coincidentally the same.

A lunar month consists an average of 29.53 days and divided into 2 equal halves with respect the moon’s waxing phase and waning phase. Therefore, the traditional Sinhalese new year begins on the first day of the waxing phase of the month *Bak*. This day falls in the English month of April, and is not celebrated by the present Sinhalese.

1.3.2.3.The Buddhist calendar

This calendar is also based on the phases of the moon but the years are calculated with reference to the death of Lord Buddha. The most important day in the Buddhist calendar is the day of the full moon or *pasalovaka*.

In Sri Lanka, every full moon is celebrated as a commemoration of some event in the history of Buddhism of Sri Lanka.

According to this calendar the present year is 2544 lunar years after the passing away of Lord Buddha.

1.3.2.4 The Sri Lankan calendar

This is based on the movement of the sun across the celestial sphere along the zodiac (explained further in chapter 3). A month in this calendar, is the period of time the sun takes to travel across from the beginning of one of the segments of the zodiac to its end. The new year begins as the sun enters the first of the segments (*rashi*) named *Mesha* (Aries). This takes place in the Gregorian calendar month of April, which coincidentally is also the month in which the lunar calendar of Sri Lanka celebrates its new year.

The new year festival held in April celebrates the beginning of the new year in this Sri Lankan calendar. What simulated the Sinhalese Buddhists to celebrate the new year at the beginning of this particular calendrical year rather than the beginning of their own lunar year, maybe the belief that for their agrarian society, the sun is more important than the moon.

(“The April new year” – Professor J.B. Disanayake – 1993).

1.4 THE SRI LANKAN CALENDAR

The Sri Lankan calendar is called the “Sri Lankan calendar”, because the new year that falls in April according to this calendrical system is celebrated by two ethnic groups of Sri Lanka.

The sky and the heavenly bodies have fascinated man for a long period of time. Today these aspects are studied in a rational manner which is called “astronomy”. Our ancestors looked at these celestial bodies from another point of view. That was with respect to the influence they seemed to have on human affairs. The study of the influence of these bodies on human affairs is called “astrology” – a study mixed with science, myth and magic (“The April New Year Festival” – Professor J.B. Disanayake – 1993 et.al).

Although the majority of Sri Lankans are Sinhalese Buddhists in race, the majority are agrarians in profession. Hence, the usage of the Sri Lankan calendar took over the usage of the lunar and Buddhist calendars in ancient history, when it comes to the celebration of a new year day, since it was the sun – the most important heavenly body in Agriculture, that was the basis of this calendar. This is discussed in detail in the next chapter.

The usage of the Sri Lankan calendar has a more important significance at present, however. As the entire world knows, Sri Lanka is experiencing a civil war that is simply deteriorating the infrastructure. In a period of conflict, the Sinhalese and Hindu New Year symbolizes ethnic harmony where two distinct ethnic groups celebrate one brand new day in the month of April! (“Unity in New Year” – The Daily News – 12.04.2001).



Illustration 1.4.1 The reason behind the change of the use of calendars
(http://www.worldphotos.org/sri_lanka.htm)

2.HISTORICAL FACTS



Illustration 2.1 The sunrise as viewed from the summit of Adam's peak

Nature has mystified and fascinated mankind from the very beginning of time. When it came to the celestial sphere, ancient observers were curious on the various routes the celestial objects took during the course of the day. Astronomers regarded the celestial objects to be instruments of measuring time. Through many years of tedious observations, our ancestors constructed calculations to unravel the mysteries behind the movements of nature's creations in the sky. However, before mankind looked at the scientific and realistic side of nature, there was a mythological side to the story.

In ancient Sri Lanka, as in many places of the world, the sun was regarded as a god or "*deviyo*". They used their imagination to explain instances where the sun seems to have power over everyone. The sun had the power to make their harvest a good one as well as a bad one depending on their faith. When the sun was provoked, it hid itself, bringing total darkness to the land. Our ancestors had every right to believe that the sun was a god rather than a heavenly body.

However, the Sinhalese who were venerating the sun god faced a problem when Buddhism was introduced to the island. In Buddhism, the man is supreme and no external god can help man to find salvation. Yet, the Sinhalese found the perfect remedy for this situation.

The remedy is shown in Illustration 2.1. By making the sun god pay homage to Lord Buddha – the superior of all men, the worship of the sun god would be peacefully assimilated.

The Adam's peak is one of the highest mountain peaks of Sri Lanka. On its summit is what is believed to be the footprint of Lord Buddha. According to Sinhalese Buddhists this is where the sun god pays homage to Lord Buddha. This rite is witnessed even today by the pilgrims who visit this sacred mountain peak. It is rightfully called "*ira-sevaya*" – service of the sun.

The *ira sevaya* is realistically the sunrise as shown in illustration 2.1. As the sun rises above the eastern horizon, it seems to move up and down thrice like a worshipper dipping itself in water. It is a truly picturesque sight as the sunrise casts a shadow of the peak against the plains below the peak, and is cherished by everyone who witnesses the awe-inspiring phenomenon.

The interest of ancient astronomers, regarding the path of the sun in diurnal and annual terms probably began with this observation, as the sun can be perfectly viewed without any obstacles from the summit of Adam's peak.

This maybe the reason why, even during the good old days, (as indicated by ancient chronicles) the accuracy of determining the new year was maintained, regardless of the difficulty of calculation, during a time where technology was embryonic ("The April New Year Festival" – Professor J.B. Disanayake – 1993).

3. THE CALCULATION OF THE NEW YEAR AND THE AUSPICIOUS HOURS

In my opinion, this was the hardest part of this project! It turned out to be so, because of the lack of certain facts, and the facts that could be found had so many contradictions and disagreements. However, I have tried my best to rationalize, organize and explain the information and at times, turned raw facts into data.

I must mention that one should not feel insulted if what they have come up with is considered to be incorrect. Being in the wrong and being called wrong is not an insult. It is only an expression of bringing one to the right, to prevent further errors.

3.1 TERMS USED IN SRI LANKAN ASTRONOMY

To begin with, Sri Lankan astronomers believed that the sun, stars and planets rotated around the Earth. Although this is incorrect in reality, it is the best way to understand the motion of the heavenly bodies in the sky. The following Sinhalese terms were used by the astronomers while staying in this belief:

3.1.1 THE *KHA-GOLAYA*

This is the imaginary sphere around the Earth where the sun, stars and planets are found. This was considered to be rotating clockwise around the Earth.

Today, we know the *Kha-golaya* as the celestial sphere. In fact, the word *golaya* means sphere.

3.1.2 THE *KHA-GOLA SAMAKAYA*

The imaginary celestial sphere around the Earth was divided exactly into half by the horizontal circle (horizontal in the sense with respect to the celestial sphere's rotational axis), called the *kha-gola samakaya* (the celestial equator).

3.1.3 THE KRANTHI-VALAYA

Out of all the heavenly bodies, as mentioned in the chapter before, the sun was the most important heavenly body for the Sri Lankans. Hence, the ancient Sri Lankan astronomers rendered extra efforts to observe the path of the sun during the course of a year, which they called the *Kranthi-valaya*.

Valaya means “circle” –therefore, it was considered to be a circular path.

The astronomers were smart enough to figure out the fact that this path was tilted with respect to the *kha-gola samakaya*, since the sun’s annual rising position could be viewed from top of Adam’s peak. This varied throughout the year. Therefore, they could but come up with one explanation for this – the *kranthi-valaya* was tilted with respect to the *kha-gola samakaya*.

However, information could not be located whether the astronomers knew the angle of tilt of the *kranthi-valaya* with respect to the *kha-gola samakaya*.

Today we know the *kha-gola samakaya* as the ecliptic.

(“Sinhala Aurudda” – Professor Nalin De Silva – March, 2001)

3.2 DEFINING THE SRI LANKAN CALENDAR

This is the hardest out of the hardest parts of this section! I encountered many conflicts of facts in gathering the concepts behind the Sri Lankan calendar.

Before moving further, it is necessary to define the concept of *rashi*, which frequently appears in describing the concepts of the calendar.

3.2.1 RASHI

The *kranthi-valaya* was divided into 12 equal segments by the ancient astronomers of Sri Lanka. Each segment was called a *rashi*. According to the knowledge available at that time, this was an angular value of 30^0 in the *kranthi-valaya*, since the *kranthi-valaya* was a circle consisting of 360^0 and $360^0/12=30^0$.

However, according to present day's sense, this does not make any sense at all! Apart from the fact that the Earth did the revolutions around the sun and not vice-versa, later on, Johannes Kepler discovered that the annual path of the Earth was an ellipse and not a circle.

The deductions of the Sri Lankan astronomers would have been more accurate if the *kranthi-valaya* was taken to be an ellipse.

Therefore, realistically the angular value of a *rashi* is not 30^0 . Around the greater curvatures of the ellipse, the *rashi* would be less than 30^0 in angle and more than 30^0 in the areas of lesser curvature of the ellipse.

Nevertheless, we are talking of absolutely ancient times, where discoveries in astronomy were not easy to come up with as today, and with whatever resource that was available the task had to be performed.

The following are the names that were given to each *rashi* segment:

NAME OF RASHI	WESTERN NAME	SYMBOL
<i>Mesha</i>	Aries	The goat
<i>Vrishabha</i>	Taurus	The bull
<i>Mithuna</i>	Gemini	The twins
<i>Kataka</i>	Cancer	The crab
<i>Sinha</i>	Leo	The lion
<i>Kanya</i>	Virgo	The virgin
<i>Tula</i>	Libra	The balance
<i>Vrishchika</i>	Scorpio	The scorpion
<i>Dhanu</i>	Sagittarius	The archer
<i>Makara</i>	Capricorn	The goat
<i>Kumbha</i>	Aquarius	The pot
<i>Meena</i>	Pisces	The fish

Table 3.2.1.1 The nomenclature of the *rashi*

3.2.2 THE DEFINITION OF THE YEAR IN THE SRI LANKAN CALENDAR

The period of a year with respect to these *rashi*, was taken as the period of time the sun takes to travel from the beginning of one *rashi* segment to the end of the *rashi* segment before that one.

Yet, the *kranthi-valaya* is a circle – it does not have a specific end or a beginning, and therefore, there came the need to define a specific point to mark the end or beginning for the sake of celebrating the new year.

There was but one choice left – to mark a point in the *kranthi-valaya* by a specific *rashi*. With 12 segments to choose from, the problem persisted as to where specifically the beginning and the end of the year should be.

This was sorted out by referring to the environment. The ancestors of Sri Lanka discovered that the time when the sun enters from the *rashi* of *Meena* to the *rashi* of *Mesha* was the time when the trees bear fruits and flowers blossom – a sign of fertility. Therefore, to have the new year falling upon a prosperous time of the environment, the beginning of the *kranthi-valaya* was taken to be the *rashi* of *Mesha* and the end as *Meena*.

Therefore, the definition of the year could be re-phrased as, the period of time the sun takes to travel from the beginning of the *rashi* of *Mesha* to the end of the *rashi* of *Meena* along the *kranthi-valaya*. The astronomers of Sri Lanka took this period of time to be 365 solar days and 6 hours (365.25 solar days).

Since the movement of the sun along the *rashi* happened in a cyclic sequence, the *kranthi valaya* is sometimes addressed as *rashi cakra* (*cakra* – cycle).

(“Sinhala Aurudda” – Professor Nalin De Silva – March, 2001 et.al).

3.2.3 THE DEFINITION OF THE MONTH OF THE SRI LANKAN CALENDAR

This was taken as the period of time the sun takes to travel from the beginning of one *rashi* segment to the end of it. With 12 *rashi* available, the month would roughly be 30.43 solar days (365.25/12). However, this value varies in reality as discussed later, in this chapter.

The months of the calendar are named as follows:

MONTH	NAME	THE <i>RASHI</i> SEGMENT
1 st month	<i>Bak</i>	Beginning of <i>mesha</i> to its end
2 nd month	<i>Vesak</i>	Beginning of <i>vrishabha</i> to its end
3 rd month	<i>Poson</i>	Beginning of <i>mithuna</i> to its end
4 th month	<i>Esala</i>	Beginning of <i>kataka</i> to its end
5 th month	<i>Nikini</i>	Beginning of <i>singha</i> to its end
6 th month	<i>Binara</i>	Beginning of <i>kanya</i> to its end
7 th month	<i>Vap</i>	Beginning of <i>tula</i> to its end
8 th month	<i>Il</i>	Beginning of <i>vrishchika</i> to its end
9 th month	<i>Unduvap</i>	Beginning of <i>dhanu</i> to its end
10 th month	<i>Durutu</i>	Beginning of <i>makara</i> to its end
11 th month	<i>Navam</i>	Beginning of <i>kumbha</i> to its end
12 th month	<i>Medin</i>	Beginning of <i>meena</i> to its end

Table 3.2.3.1 The nomenclature of the months of the Sri Lankan calendar (“The April new year festival” – Professor J.B. Disanayake – 1993)

3.2.4 WHY 12 MONTHS ?

This is a question that must be raised for every calendar. Why does every calendar have 12 months and not anything less or more? Let me answer the question from Sri Lanka's point of view. Sri Lanka has an agrarian society. Part of their profession is to keep track of the monsoon rains caused by the southwest westerlies from May to September, and the northeast westerlies from November to February.

Taking a period of 12 months, rather than 13 or even 11, it is easy to keep track of when rain should be expected. The south-west monsoon rains usually fall in the beginning of the month after the new year (*vesak*), that is in mid-May and then continues till the middle of the month of *binara*, which is the end of September. The north-east monsoon rains fall around the beginning of the month of *il* (mid-November) and continue till the beginning of the month of *navam* (mid-February). Thereafter, the cycle continued once again, after 12 months.

Every calendar that is and was used, has 12 months because it was easy to keep track of the environmental changes which seem to cycle after a period of 12 months. A calendar should serve the purpose of keeping track of the environment, more than anything else.

Although it was mentioned in a chapter before, that this particular calendar won versus the rest of the calendars used in ancient times because the sun was more important in the professions of the Sri Lankans, the reason also maybe that it was easy to keep track of the rainy and dry seasons using the *rashi* system rather than other calendrical systems.

3.2.5 THE SIDEREAL ASPECTS OF THE SRI LANKAN CALENDAR

The sidereal year is defined as the period of time the constellations in the celestial sphere take to travel 360° across the celestial sphere and return to the former position. From this definition, it would seem appropriate to call the Sri Lankan calendar a sidereal calendar.

According the Sri Lankan calendar, a year is the time that is taken by the sun to travel from beginning the *rashi* of *Mesha*, to the end of the *rashi* of *Meena*. In other words, in re-phrasing this movement with respect to the sidereal definition, it is the time taken by the constellations that fall along the ecliptic to travel across the path and return to their former positions with respect to the sun. Here, the original point of the first constellation *mesha*, in the celestial sphere, is marked by the sun – in fact, the “former position” as mentioned in the definition of the sidereal year. This justifies why the Sri Lankan year is 365.25 solar days in length.

In reality, the sun and the constellations of the celestial sphere do not move. The revolution of the Earth around the sun seems to make the constellations as well as the sun move around it.

3.2.7 THE ERRORS IN CALCULATING THE LENGTH OF MONTHS OF THE CALENDAR

Sri Lankan astronomers took the length of a month to be uniform all throughout the year. However, Kepler's laws nullify this fact.

To begin with, the sun's motion along the *kranthi-valaya* is only an apparent motion, where in reality the transit of the sun with respect to the *rashi* happens in the following manner:

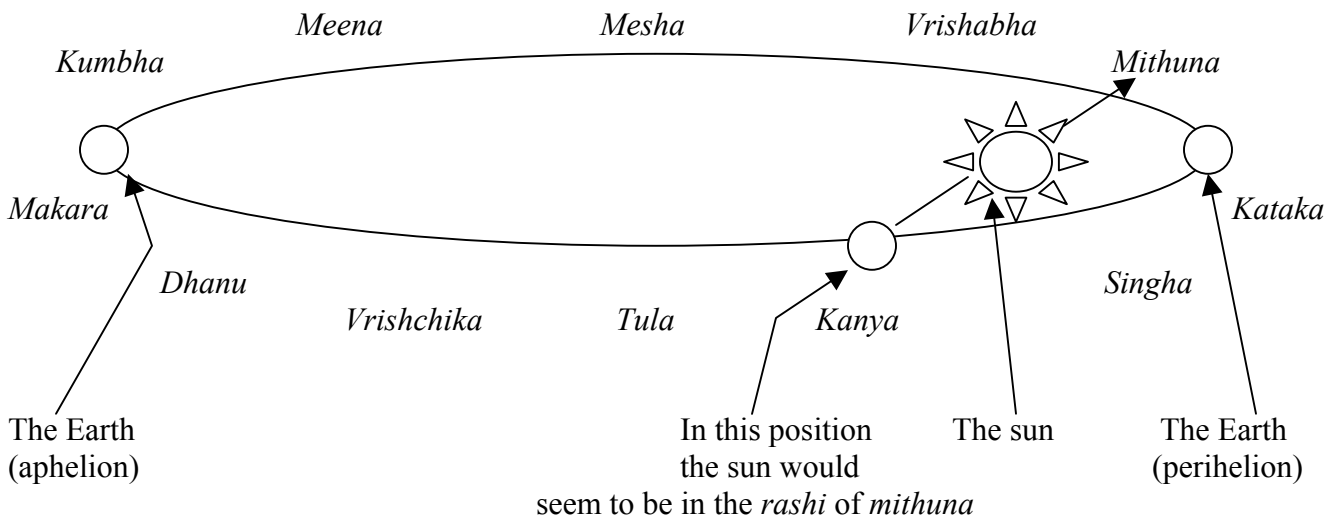


Figure 3.2.7.1 The transit of the sun from the *rashi*, the perihelion and aphelion.

According to Kepler's laws, the Earth would be covering equal ground within a unit of time in the orbit. Hence, during the perihelion (where the Earth is closest to the sun) as shown in figure 3.2.7.1, the Earth would be moving fast, whereas during the aphelion (where the Earth is farthest from the sun), the Earth would be moving slow. Aphelion occurs roughly around the 4th of July, and the perihelion occurs around the 4th of January. Hence, the months of the Sri Lankan calendar would not be of equal length.

On the 4th of January, the sun would be moving across the *rashi* segment of *dhanu* (Sagittarius) and in July, it would be moving across the *rashi* segment of *kataka* (Cancer).

In January, the Earth would be moving fast along the orbit, where the transit across the *rashi* of *dhanu* would be faster. Hence, the month in the Sri Lankan calendar of *unduvap* (mid-December to mid-January), would have less than the average 30.4 days in length. The months on either side of *unduvap* would be short as well, since the perihelion is not an instant situation, but a gradual one.

In July, the earth would be at perihelion where it moves slowly along the orbit. The transit across the *rashi* of *kataka* would be slow. Therefore, the month of *poson* would take more than the average 30.4 days. As before, the months adjacent to *poson* would also be longer than expected. Hence, due to the elliptical orbit of the Earth, the months of the Sri Lankan calendar would not stick to a uniform period of 30.4 days.

3.2.8 THE CALCULATION OF THE NEW YEAR

This was not an easy task during the past. The astronomers had to keep track of the sun's diurnal motion to figure out exactly when the new year occurs. After years and years of tedious observations, they managed to master a method of calculating exactly when the new year happened. However, unfortunately, I was unable to get my hands on any equations or formulae which would lead me to the answer as to how the astronomers managed to determine the exact time of the new year, when the sun makes the transit from the end of *meena* to the beginning of *mesha*.

The following are the hours and dates that the new year had dawned for the past six years:

YEAR	HOUR AND DATE OF THE DAWNING OF THE NEW YEAR
1996	13 th April 4.43 PM
1997	13 th April 10.51 PM
1998	14 th April 5.33 AM
1999	14 th April 11.47 PM
2000	13 th April 5.52 PM
2001	14 th April 12.12 PM

Table 3.2.8.1 The hours and dates of the dawning of the new year.

3.2.9 THE NONAGATE

Nevertheless, one thing was evident from the information that I received – the word “transit” was emphasized only when the sun moved from *meena* to *mesha*. This was called a *sankranthi* period (“The April new year festival” – Professor J.B. Disanayake – 1993). This is also called the *nonagate* which means “inauspicious” time (figure 3.2.8.1). It is considered inauspicious because, as mentioned in previous chapters, the sun was considered to be a god and during this time, when the sun god is in between the old and new years, it was in a dilemma. If the immortals were in a quandary, need I say anything about the mortals? Therefore, this transit was considered as an inauspicious time (discussed in detail in the next chapter).

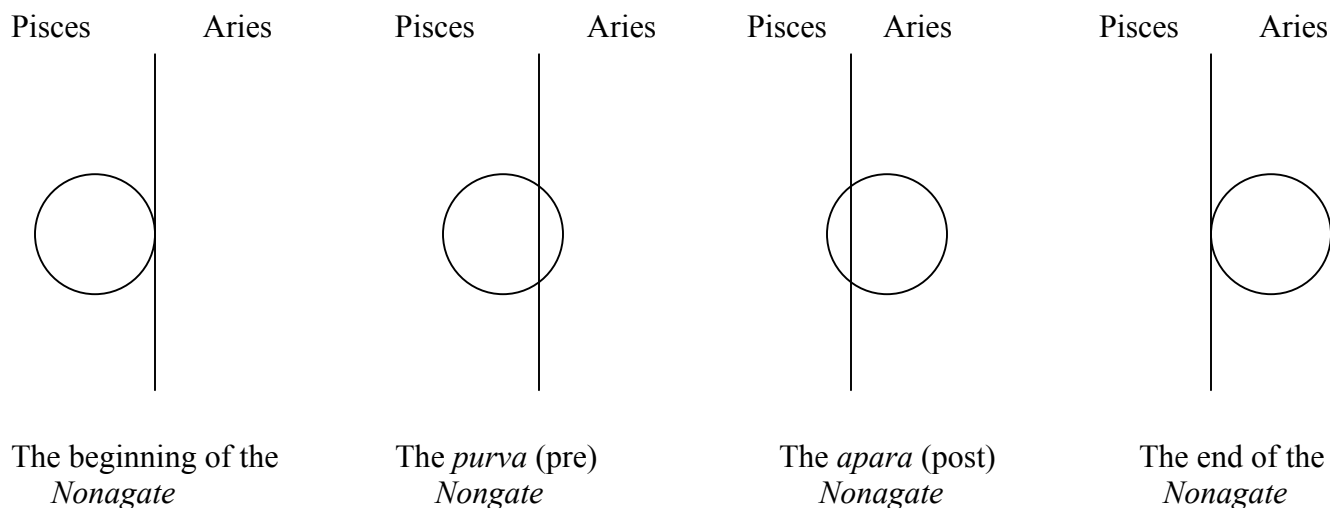


Figure 3.2.8.1 The *nonagate* as a diagrammatic representation (“Sinhala Aurudda” – Professor Nalin De Silva – March, 2001)

The period of the *nonagate* for the past six years are as follows:

YEAR	PERIOD OF NONAGATE
1996	10.19 AM on the 13 th of April to 4.43PM on the same day
1997	4.27 PM on the 13 th of April to 10.51 PM on the same day
1998	11.09 PM on the 13 th of April to 5.33 AM on the 14 th of April
1999	5.23AM on the 14 th of April to 11.47AM on the same day
2000	11.28AM on the 13 th of April to 5.52PM on the same day
2001	5.48 PM on the 13 th of April 6.36 AM on the 14 th of April

In other words, this was the period of time that the sun took to make its transit from the *rashi* of *meena* to *mesha* during the past few years. As you may see, this was a uniform period of **6 hours and 24 minutes** – a little more than a quarter of a day.

3.3 THE CALCULATION OF AUSPICIOUS TIMES

This part belongs to astrology, rather than astronomy and is one of the most interesting, yet complicated areas of study.

In astrological calculations, the zodiac was once again divided into 27 segments called “*Neketh tharaka*”. Each *Neketh Tharaka* is divided into 4 “*Neketh Paada*”. Hence, in all, the zodiac consists of 108 *Neketh Paada* and each *rashi* consists of 9 of them. (108/12).

It is estimated that each *Neketh Tharaka* in rounded figures is $13^{\circ}20'$ ($27 \times 13^{\circ}20' = 359.91^{\circ}$) and a *Neketh Paada* in rounded figures is $3^{\circ}20'$ ($108 \times 3^{\circ}20' = 359.64^{\circ}$). These are the main terms that are used in determining an auspicious time for a special moment.

There are 3 main heavenly bodies that were used during ancient times to construct horoscopes and auspicious hours:

1. The sun
2. The moon
3. The planets (namely Mercury, Venus, Mars, Jupiter and Saturn)

Ancient astronomers had observed how these heavenly bodies moved with respect to the *rashi* and thereby had the ability to determine when and where they lined-up at certain hours. These positions were added with some superstition in order to name them as auspicious and inauspicious!

Nevertheless, these are some of the facts that astrologers had used for these purposes:

HEAVENLY BODY	NOMENCLATURE IN SRI LANKAN ASTROLOGY	FACTS
Mercury	<i>Budha</i>	Considered as a lively planet. Spends 30 days or less in one <i>rashi</i> segment. The lord of the <i>rashi</i> of <i>mithuna</i> and <i>kanya</i> .
Venus	<i>Sikuru</i>	A pacifier of the mind. The lord of the <i>rashi</i> of <i>vrushabha</i> and <i>thula</i> .
Mars	<i>Kuja</i>	The lord of the <i>rashi</i> <i>mesha</i> and <i>vrishchika</i> . Spends about 45 days in a <i>rashi</i> .
Jupiter	<i>Guru</i>	The planet that brings luck. Lord of the <i>rashi</i> <i>dhanu</i> and <i>meena</i> . Spends about 6 months in each a <i>rashi</i> .
Saturn	<i>Shani</i>	The lord of the <i>rashi</i> <i>makara</i> and <i>kumbha</i> . A planet that brings misfortune. Spends about 2.5 years in one <i>rashi</i> .
Sun	<i>Ravi</i>	The lord of the <i>rashi</i> of <i>singha</i> .
Moon	<i>Sandu</i>	The lord of the <i>rashi</i> of <i>kataka</i> .

Table 3.2.1 The astrological significances of the heavenly bodies.

The movement of these heavenly bodies against the *Neketh Paada* and *Neketh Thaaraka* was what interested astrologers in the making of horoscopes and determination of auspicious and inauspicious hours – in fact, the “complicated part”!

Hence, after the dawning of the new year, the rest of the rituals are all based upon the astrologers’ words, on which hours are auspicious to resume everyday procedures after the dawning of

the new year (discussed further in chapter 4 – “The customs (with respect to the calendar)” – subheading 4.2 – “The auspicious hours”) – the “interesting” part!

The calculations behind the auspicious hours (and horoscopes), which must follow this brief introduction can be identified as a separate subject. Therefore, it is a good idea to keep to the topic of the new year rather than diverting onto a completely different area of study!

4. THE DAWNING OF THE NEW YEAR (THE REASONS BEHIND THE CHANGES)

To begin with, historical records of Sri Lanka show that the Sinhala and Hindu new year was not always celebrated in April. Proof is found in the chronicles of Robert Knox, the explorer who visited Sri Lanka in 1659 AD. During his stay in Sri Lanka, the new year was celebrated around the 26th or 27th of March.

This difference is caused due to precession – the rotation of the Earth’s axis in a clockwise direction (figure 4.1).

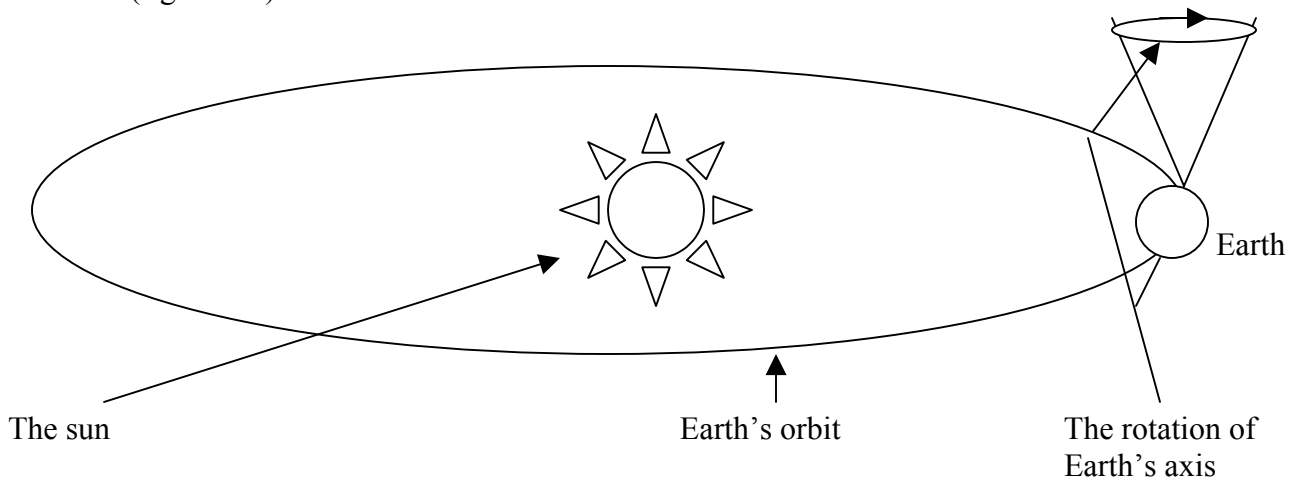


Figure 4.1 Precession

Because of precession, the *rashi* seem to be moving backward along the zodiac. This is not a rapid movement. The backward movement per year is around 50'26". Through calculations, it can be shown that the vernal equinox and the *rashi* of *mesha* was in the same position in the celestial sphere about 2000 years ago.

Hence, it can be said that during the period of Robert Knox, the sun moved from the *rashi* of *meena* to *mesha* in March. Precession moves the *rashi* backward along the zodiac. Therefore, the day that the sun makes its transit moves backward (with respect to the Gregorian calendar) as expressed by the shift of the new year day from the days of Robert Knox (in March) to now (in April).

At present, the *rashi* of *meena* is somewhat in the same position of the vernal equinox (“Sinhala Aurudda – Professor Nalin De Silva – March, 2001).

5.THE CUSTOMS (WITH RESPECT TO THE CALENDAR)

As described before, the “crossing” of the “Sun god” from the *rashi* of *Meena* to the *rashi* of *Mesha* is a dangerous event. The ambiguity of the Sun god, that he is in no man’s time was a worry for the mortals. They considered the Sun god to be helpless at this period of time. To add to the suspense, the humans were helpless as well, since their superior is in a state of dilemma. This spelt danger as there was no immortal to help them out.

The place where the mortals were guaranteed safety was their places of worship. Hence, the tradition of participating in religious rituals within the period of the crossing, arose. The time of the crossing is considered an ill-omen to begin things anew. Therefore, the people refrain from doing any everyday activities during this period. No food would be eaten as well.

Due to the religious activities, the period when the crossing of the sun takes place is considered as the beginning of the *punya-kale* (*punya-* merit, *kale-* time). Yet, because this is an inauspicious time, it is also called the *nonagate* (*no-* non, *nagate* is derived from the word *nakatha* which is a term use for the auspicious time).

In some Sinhalese villages, *pirith* (discourses of dialogue of the truth and disciplines towards the spiritual directions) is chanted in the temples during the *nonagate*, to ward off any potent danger.

Once the sun reaches its destination, life gradually comes back to normal (“The April New Year Festival” – Professor J.B.Disanayake - 1993).

5.1 THE DAWNING OF THE AUSPICIOUS HOURS

The auspicious hours, (as mentioned in the chapter before), are calculated by the astrologers with respect to the positions of the heavenly bodies after the arrival of the sun to Aries.

The three most important symbols of fertility are water, fire and milk. These elements are not touched during the *nonagate*. Hence, to start from where it stopped an auspicious hour is set for each of these elements.

Usually a bucketful of water is taken into the house with the arrival of the new year. A small bundle containing jasmine flowers and pieces of charcoal is dropped into this water. A copper coin is dropped into the well, in exchange for the water.

Fire is brought back to the house at the auspicious hour set by the astrologers by the lighting of the hearth. This is done by the housewife, facing the direction (East, West, South, North etc.etc) that is prescribed by the astrologers as well.

To bring milk back to the house, it has been made obligatory that the first meal that is cooked contains milk. As a principle, this meal is milk-rice which is described in chapter 6 (sub-section 6.1).

Work is also considered as a matter of fertility. Hence, an auspicious hour is set for the people to begin their work, which was stopped to prevent it from getting polluted during the *nonagate*. In ancient times, this was performed by the man of the house, by cutting a branch of a tree which oozes a milky substance when cut (symbolizing milk – the element of fertility), or by tilling a piece of land.

Resuming work coincides with having the first meal of the new year. The auspicious hours for these two events are the same.

The events described above have the auspicious hours falling on the same day or within 24 hours. Yet, the auspicious hours for the first bath during the new year and the moment to attend to the work of the profession fall on different days (as shown in table 5.1.1). The reason for this is once again the complicated astrological calculations which are influenced by the superstitious beliefs.

These are the auspicious hours and dates that were set by the astrologers for the past five years:

YEAR	LIGHTING OF THE HEARTH	RESUMING EVERYDAY WORK AND CONSUMPTION OF FOOD	OILING OF THE HEAD FOR THE FIRST BATH
1996	13 th April 5.18 PM	13 th April 6.20 PM	15 th April 10.51AM
1997	14 th April 4.07AM	14 th April 6.24AM	16 th April 9.20AM
1998	14 th April 7.47 AM	14 th April 9.14 AM	15 th April 9.38 AM
1999	14 th April 2.32 PM	14 th April 3.34 PM	17 th April 8.10AM
2000	13 th April 7.39 AM	13 th April 8.51 PM	15 th April 8.11AM
2001	14 th April 4.16 AM	14 th April 6.11 AM	15 th April 7.36 AM

Table 5.1.1 The auspicious hours from 1997-2001

The auspicious hours are stated in the traditional almanac called *lita* which is released in an annual basis (“Customs and traditions” – The Sunday Times – 08.04.2001).

6.FESTIVITIES



Illustration 6.1 The dawning of prosperity (http://www.worldphotos.org/sri_lanka.htm)

The Sinhala and Hindu New Year is the beginning of a brand new period of time. Although its astronomical importance is the transit of the sun along the zodiac from Pisces to Aries, the new year is a time for celebration and renewal of spirit.

The month of April is a time when the trees begin to bear fruits and the flowers bloom as well. Hence, it is regarded as a very colourful month as shown in illustration 6.1. It is a time when nature awakens from being inert.

Concurrently, the Sinhalese and the Tamils become increasingly active during this season (not that they are not during other times!) to prepare for the festivities. It is the period of time when business becomes a clear success with the purchasing of goods for the preparations and activities. New year bargain sales could be found at every corner of the island where the usual sale prices are cut down to nearly half. Ingredients for the special food items prepared for the festivities can be bought anywhere and everywhere, in contrast to the other times where they are in paucity.

In general, the most pronounced areas of the new year festivities are food, games and the rituals of goodwill (“Customs and traditions” – The Sunday Times – 08.04.2001).

6.1.THE FOOD



Illustration 6.1.1.1 The cashew curry – the “April Cuisine” of Sri Lanka!
(http://www.worldphotos.org/sri_lanka.htm)

The new year is the ideal time to taste the typically Sri Lankan sweets and curry dishes. The cashew curry as shown in illustration 6.1.1.1 is prepared in almost every home since the month of April is the time when the cashew trees bear the nuts.

Also, traditional sweets as oil-cakes, *Aluwa*, *Unduwel*, and *Kokis*, *Aggala*, and *Asmi*, are prepared for the festivities. These sweets decorate the new year table that is prepared for the auspicious time. This new year table is incomplete without a ripe bunch of bananas and milk-rice as described in an earlier chapter. The milk-rice is a special preparation in Sri Lanka which is usually made during special occasions. For the new year, this is prepared by using new rice added with coconut milk and cooking it in a new clay pot over the hearth.

Most of the food items are prepared from honey which is obtained from the “*kithul*” tree a kind of palm tree that is found in Sri Lanka. The oil-cakes, *Unduwel*, *Aluwa* and *Aggala* are some of the sweets prepared from honey.

As shown in illustration 6.1 the new year season is the time when fruits are not a rare sight. The mangoes, *rambutan*, cashews, duriyan, bananas and *jambu* are the kinds of fruits that are most abundant. They all contribute to the colour of the festive season (“The April New Year Festival” – Professor J.B. Disanayake - 1993).

6.2 THE GAMES

The period of the *Nonagate* is where the religious as well as the secular activities are practiced. Those who do not choose to go to the places of worship for the religious rituals choose to play games! Yet, there is no specific time to play these games. They could be played at any time during the festivities and also throughout the year. However, this is the main holiday season where virtually everyone gets to relax by participating in the contests.

The games here are simply not computer games, but the games that have been passed on from generation to generation to play during the new year season.

The new year games can be categorized as indoor and outdoor games. Some of the indoor games are *bello* (sea shells) and *kaju* (cashew nuts). The outdoor games are *havari hengima* (hiding the wig), *chaggudu* and *kotta pora* (pillow-fighting).

In villages giant-wheels or *kathuru oncilla* were built for the entire village to get together and have fun with. Added to that, *ankeliya* – a game played with horns was a competition that brought the entire village to one place.

The significance of the games is that everyone regardless of the age, gets themselves involved in the competitions. Also, all the indoor games are played on the floor. If the games were to be played by sitting on chairs, it would create certain problems of sitting, which in the traditional Sri Lankan culture involves certain restrictions.

Added to that, when the outdoor games are played on a village-scale, the entire neighbourhood gets together which enhances the unity and eliminate the misunderstandings of the past (“The April New Year Festival” – Professor J.B. Disanayake).

6.3 THE RITUALS OF GOODWILL

The renewal of human relationships is the most important of all the new year festivities. This is the chosen time of year where the conflicts of the past are forgotten and the ties are reconstructed.

The new year festival gives a chance for the husband and wife to be together, enjoying the company of their children, who come to pay respect to them, with a handful of betel, as a symbol of gratitude. In spite of the commercial life, children make it their duty to call on their parents during the new year season. In Sri Lanka, all the government and commercial establishments remain closed for a couple of days to enable workers to visit their ancestral homes in the distant villages.

The ties between the brothers, sisters and cousins get renewed with the exchange of gifts and the games.

The new year is also the time which brings the village and the temple or the shrines together. Even those who do not visit the temple or the shrine frequently make it a point to visit them during the *nonagate* (“The April New Year Festival” – Professor J.B. Disanayake – 1993).

6.4 THE NEW YEAR AS A NATIONAL FESTIVAL

Rather than making the new year limited to only the Sinhalese and the Tamils, other races join in the festivities as well. The auspicious hours and games are shared by everyone. Hence, it would not be a crime to consider the new year as a national festival, since it draws the entire country together at one time of the zodiac calendar.

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