

The Horoscope, Isan House, the Missing Local Indigenous Mathematics

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Abstract: The people of Northeast Thailand have strong beliefs in horoscope and have unique traditional methods in Building houses in order to bring good fortune to the occupants. On the other hand, the determinations of the horoscope of Isan House was the measurement or specify the portion of the house's main structure, for example, pillars, stairs, floor, door bolts and katod. These determine used organs of the owner's body to measure, for example, hand, foot, finger, elbow, arm and trunk. It could be said that Isan house in the past was specified with the owner because of using their body to measure. Moreover, the construction of Isan people was changed because of capitalism and the expanded of the townspeople. The determination of the horoscope of Isan House was not admired and used the same as the past. The mathematic hidden in the determination was also disappeared.

Key words: Isan, northeast Thailand, mathematics, local indigenous knowledge, Isan traditional house

INTRODUCTION

The climate in Isan is hot and dry in summer because this area was very far from the sea and surrounded by mountains because ocean air cannot reach this area. The main occupation was farmer using rain water. Moreover, there were other occupations such as weaving, livestock, basketry and productivities from forest (Jiramanee, 2002). Regarding to the settle of community, Isan people would gather and set the community in the suitable atmosphere, area especially river area that they could use for the whole year such as a river, streams, reservoir and marshes. As, we could acknowledge from the name of the villages were named according to the name of these river such as Ban Nong Soe, Ban Tha Khon yang etc. Isan Communities resembled the same characteristic, they would locate spread all over the area and there were roads to connect between the communities. The Communities were surrounded by forest and paddy fields. There were projects to improve these communities by making roads along with the length of the area and made it to be a square area called, in dialect, Khoom. Each Khoom would be called differently such as Khoom Noe, Khoom Tai, Khoom Klang ect. The roads, then, were the connection between each Khoom. In each community, there would be a building that built

according in the local resembles such as Huoen or the lodging and the building related to Buddhism, etc.

MATERIALS AND METHODS

Research area included the Provinces of Khon Kaen, Mahasarakham and Roiet which are located in Northeast Thailand (Isan). Research analysis was undertaken by the guidelines of Ethno-mathematics, Symbolic Interaction, Structuralism, Localism, Cultural Ecology and Community of Practices theory. The main purposes of this research are to To study the Local Indigenous Knowledge of Mathematics of Isan that was used in the construction of traditional homes. To study the current status and problems of applying traditional Isan Knowledge in Mathematics to building houses in modern day Isan. To study and research the development of Isan Indigenxous Knowledge in mathematics to building modern houses.

RESULTS AND DISCUSSION

Characteristics of Isan Hoen: Isan People chose to settle the houses in the location that could support themselves and their livestock as well. Sompop *et al.* (1995) divided the location of Isan villages as following:

A water supply: It was considered as the first important thing. This could be a big reservoir or a brook or a water course that separated from the main river that would full of water only in the rainy season. Most of this area was the low lying land used for livestock in some season.

High land area, a hill rock or the high land: They could use this area for truck farming and there were fields for livestock. There were both of the high land area beside the river and in the forest but the water would flow and became a reservoir.

A virgin forest area: This location was used for farm corps and the villagers could find productivities from forest easily. There was a stream flowed. When many people came to live, this area then became a village.

A low lying area: The area was suitable for rice field farming and livestock field in dried season. The village was located at the edge or the area that connected to forest but there had never been flooded in Rainy season. Some area was the low lying area and there was stagnant water for the whole year.

A bracken area: This area was used for public to use for livestock. Moreover, the villagers could hunt small animals and Finding some herb to use as medicine.

Hoen is an Isan dialect meaning home. Children when they grow up would build a new house near to their parent's home. The houses would be built at every space between each house. Normally, the characteristic of these houses were the house with high cellar or basement in order to let the wind blow and there would be useful spaces for other purpose, for example, ox and bull cattle and to keep the agricultural instruments, etc. Isan house was opened and airy house in order to be reliable with the geography. There would be only a wall to be a partition between bed rooms and some part of the outside. The wall was made of weave bamboo, Keptong (a wall made of leaves), Am Paan (a plank), etc. The purpose of using these kinds of wall was to make an airy house (Klangboonklong and Phairot, 1994). If divide the kind of these houses, we could have 3 kinds of houses. Twin house with Roen Kong There were two houses built together, Roen Yai or Roen Non and Roen Kong (a balcony). The roof of these 2 houses would be joined and connected together by a gullet. Roen Kong would be opened and there was no wall to be a partition. Single house without Reon Kong. This kind of house was smaller than twin house. There was only Roen Yai (using for bedroom purpose). In front of the house was a balcony, connected from the roof of Reon Yai. In front of

a balcony was a porch and Han Aeng Nam (a stand for clay pot drinking water). There was only one way for step up and down. A temporary house, it was the house that built for the one who had just married. Most of these houses would be built near to parent's home. There were 2 kinds, the overlap structure (to lean on) to other buildings, for example, Geoy Laokao (leaned to a barn) and Toop or a small hut made of material that could be found in the local area. There was no partition for this kind of house.

Traditional Isan house

Stairs: It was the first thing that would lead to the main area of the house. The dimension of most of these stairs was 0.70 m in height and 2.60 m in length. The stair was consisted of major and minor stairs. The odd number was used for the minor stairs, for example, 5 or 7 stairs.

Porch: It was the opened area, both of with and without roof. A porch with roof was called Chan Rom and a porch without roof was called Chan Dad. Its floor would be 20 cm lower than other parts of the house. A porch would be far from the house in order to use this area for washing and drying. One part of porches was used for setting up a basin (earthen jar). If the structure was lifted up, it would be called *Han Aeng Nam*.

A stand for earthen jar: It was built in order to use in the house. There were 2 kinds, used the rear of a porch next to the kitchen for the purpose of set up the earthen jar on the a porch floor. There was a structure for itself with the roof. There were 4 pillars to lift this structure to be higher than a porch about 40-50 cm.

Corridor: It was a part of a balcony, its structure was divided from the main house. The width of this corridor was 3 m equal to the size of the main house. Corridor was important that it connected to every used space in the house. It could be used for welcoming guests, for relaxation and some other activities such as cooking or eating area.

Gully: It was the area that connected to the eaves of the main house and Reon Kong. Twin house which was 2 houses built connected to each other, there would be a gully or other connected area and some area that were expanded as well.

Heon Kong: It was a balcony area that built together with the main house of the twin house. There was its own structure. This area was an airy area and there was no partition. It could be used for welcoming guests, for relaxation and some other activities.

The main house (*Heon Non*): The local villagers called this area as *Heon Yai*. It was the only area that consisted of 4 walls with doors. It was regarded as the private zone of the owner. The location of this area would be faced to the east and the west. When sleeping, the owner would set their head to the north or the south. The door that used for entering the house would be set on the side which their feet turned to. The purpose of 2 doors in the house was comfortable for entering and going out the house, especially, the west door would be a good luck to the son-in-law and daughter-in-law according to their ancient belief that son-in-law and daughter-in-law should not had passed the east door which were the Poeng Room or religious room and parent's room. The 4 side of wall were made of Amp Paan and weaved bamboo. For the weaved bamboo wall, there was a small window at the front side of the house, called Iam Pong, used for looking outside for any incident outside the house. Regarding to the floor of the house would be spread across the main structure of the house and then the owner would sleep according to this side. The floor would be lifted up 1 feet from other part of the house in order to avoid them to be annoyed from footsteps of other people.

Poeng room or monk room: Most of Roen Non would be consisted of Poeng Room which was one of the 2 or 3 bed rooms. The position of this room would always be set in the east of Reon Non. It was mainly used for son's bed room, to keep some other belongings such as cabinets, reed mats, pillows, etc. There was a monk shelf, in order to worships gods and some other worthy things, on the wall at the headed side of the house. Thus, other people that were not the member of the family could not enter into this room especially son-in-law and daughter-in-law. If there was an offensive in to this forbidden area, they would be called Poo Laung Poeng and blamed. After that, they should pay for the penalty and asked make a formal apology to the elder of the house.

Parent's bedroom: It was a center part of the house used to be a parent's bedroom and keep some assets.

Hong Saum (daughter's and son-in-law's bedroom): It was a west bedroom of the house. This room was used for the daughter that had just married before she would move to her own new house. Or this room was also used for the single daughter and to keep some belongings of the house.

Kitchen: It was one part of the house used for cooking. The position of this room in Isan house was not so

obvious. There is no Reon Kong for the kitchen of the single house. Sometime, they used a part of a balcony which connected to the porch and the area near to earthen jar to set a structure and roof in the form of a shed or an overlap connected from the Reon Non and Balcony. It was surrounded by walls and connected to the usage area of the balcony that used for eating area next to the porch and Han Aeng Nam. Regarding to the kitchen of the twin house with Reon Kong, there would be a floor structure and roof in the form of a shed or an overlap connected from the main house (Reon Non) or Reon Kong, the front or the back side, next to Han Nam in order to be comfortable to use for washing and other purposes.

New style Isan house: It was noticed that local Isan house in Thai-Lao culture was in the gable form consisted of the important parts which were pillar and floor structure, roof structure and wall structure. However, Thada Suthitam had commented on the characteristic of Isan house and researched more about the house of rural area in Isan, especially Shee River area. From the research shown that the house of rural area in Isan, Shee River area, had been more influenced from the townspeople. There were only few ancient houses remaining and there was a new form of houses as following (Suthitham, 1999).

Pan Ya House (a house with a hip roof): Most of these house were locate near the town. The owners were mainly government official or the richer. The body of the house was lifted up. A roof of the house was in a hip roof form and covered with zinc. The body of the house made of wool from sawmills. There was no fixed diagram and the size of the house was bigger than the ancient house.

Commercial house with front balcony: Most of these houses were located beside the main road of the village. The characteristics were the 2 floors wooden house, gable roof. The upper floor was used for living and the lower floor was used for commercial. The door of the shop made of Ban Fiam (forming a partition or a shop façade that can be folded back to make a wide passageway). Balcony would be found at the front of the building.

Adapted house: There was no fixed plan for this house. The owner would build a house according to their creativities, for example, there were many gables, steep gables and hip roof with gables, etc.

Modern house: It was a house that designed by an architect. For the first phase, it was a 2 floors house with closed wall both of upper and lower floor and less steep gables. The used material was industrial substances. The second phase still remains 2 floors house with closed wall

both of upper and lower. The lower floor or some parts might lay the brick according to the moldings of the roof. Some houses had high gables and there were prefabricated doors and windows. These kinds of houses was called Ban Song Sa Uoo.

The cellar and usage: Because Isan house was the lifted floor house, there was a space at the cellar. There were some important advantages for the usage of this area that was harmonized with the way of life of Isan people. To Make a Stall It was used to make a stall of ox, bull, chicken and duck. Most of the stalls was set under the main house (Reon Non) because there was a huge space and it was the nearest and most comfortable area to look after the livestock at the night, especially ox and bulls that were regarded as the important belongings. To keep agricultural instruments and productivities This area was normally used the cellar space of Roen Kong or the main house (Reon Non). This area could be used to hang small agriculture instruments as well as a big cart could be also kept in this area. Moreover, there was no barn for some houses and then they could use this area to be a cellar and keep un husked rice as well.

To be a living room or room for other activities Because the cellar was an opened area, the wind could easily blow then this area was suitable for using as living room as well as some activities such as setting a wooden frame, to do basketry and handicraft, etc.

The horoscope for house: To build the house for living of Isan people in the past followed the beliefs from the ancient time of their ancestors. It was for the good fortune to the occupants. One of Isan people beliefs in building a house was to find a house horoscope.

The Royal Institute Thai dictionary (1999) defined the meaning of Chalohk as the characteristics of both good and bad. If good, it would be called *Took Sok*. If bad, it would be called *Mai Took Sok*. It was often defined by the consideration of characteristics, the measurement, the counting of people, animal and things, to see that if it was good or bad fortune.

Isan astrology and horiscope in house building: Regarding to the astrology, horoscope means fate, opportunity and the relation to other things which are universal. It is a favor and bolster in righteous way. It means mercy which is the bolster of this world. It is anything, men or things that related to anyone and make the better changing then called right horoscope of that person. If there is any worst changing then call wrong fortune with that person. Thus, horoscope is the important issue in the astrology and could never be

overlooked (Puang, 2008). Because of the relation between Isan way of life and Buddhism and astrology, Isan people should do everything for themselves to bring luck and fortune. Isan house in the past was built to be a right horoscope to the owner and the occupants because it would last in their lives from birth to death. Thus, the building should support to gain good things to their lives. To find the horoscope of Isan people was the measure or specified the size of the structure of the house to find the right size and gain good luck according to the prophecy since the past. To find the right horoscope used the owner organs as the instrument to measure or specify the structure of the house to gain good fortune, the detail were as following.

Local mathematics and finding the horoscope of the house: The finding of the horoscope of the house of Isan people in the past, they used some organs of the house owner to measure and determined the structure to get the best shape in order to be a good luck to the owner and the tenants. Using some organs of their body such as thumb finger, arm, hand and sole, was the easy measurement that human gain advantages from the surrounded things to be instruments. Even though it was not a standard measurement or it was not detailed, as the measurement by the modern instruments, it was the measurement which the villagers could accept. The most important things were the relationship between the house and the owner. Because the measurement was used the owner's body, so the owner and the house would be bound and united. It was the reason of the owner to take best care of their house as if it was their own body.

The horoscope of the stairs: Stairs was the first important part of the house leading to the house. The harden wood, sun-proof and waterproof was selected to make a step. The components of the stair were stringers (left stringers called *Mae Kra Dai*, right stringers called *Poe Kra Dai*) and stairs tread (Fig. 1).

Poe Kra Dai was the right stringer (Fig. 2). It was a bit longer than Mae Kra Dai. The specification of the length used the thumb to find a right horoscope according to the ancient orthodoxy (some part used the width of a palm or the height of fists joined together):

- If Poe Kra Dai was longer than Mae Kra Dai 1 inch (Kam), could be shorten aged
- If Poe Kra Dai was longer than Mae Kra Dai 2 inch (Kam), there would be many offspring
- If Poe Kra Dai was longer than Mae Kra Dai 3 inch (Kam), there would be many ox and bulls

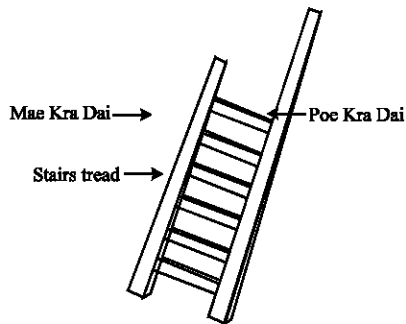


Fig. 1: Stair

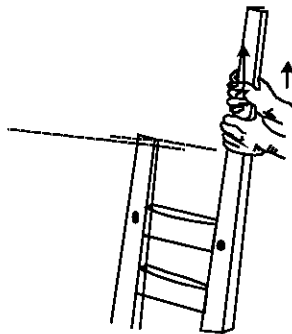


Fig. 2: Finding horoscope of Poe Kra Dai

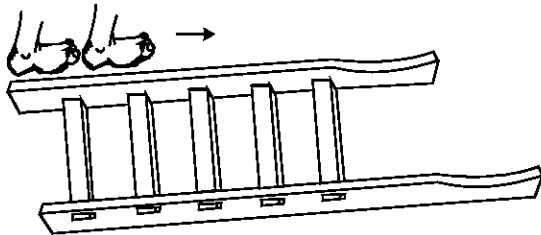


Fig. 3: Finding the horoscope of Mae Kra Dai

- If Poe Kra Dai was longer than Mae Kra Dai 4 inch (Kam), the owner would be rich
- If Poe Kra Dai was longer than Mae Kra Dai 5 inch (Kam), there would be good fortunes
- If Poe Kra Dai was longer than Mae Kra Dai 6 - 7 inch (Kam), it was not good

Floor: To find the horoscope of Mae Kra Dai used the owner's sole for the measurement by stepping step by step, sole to sole. Then they would get the horoscope from the amount of the stepping. Or, they would measure by using the length of the owner then lay flat against to the prepared wool. The prophecies of Mae Kra Dai were as following (Fig. 3):

- If the amount of the sole was 1 sole, it was not good and bad luck

- If the amount of the sole was 2 soles, there would be bad thing happened and they would cry for that
- If the amount of the sole was 3 soles, there would be many followers
- If the amount of the sole was 4 soles, the owner could collect and store wealth and belongings
- If the amount of the sole was 5 soles, there would be rich and wealth
- If the length of Mae Kra Dai was over than 5 soles, in the 6th soles, they should re-count from the 1st sole. If the amount of the sole was 3-5, regarded as the good luck. In case of very high house, should change from using the sole to be the elbow instead

The stairs was often made of the wooden wood without a gnarl They would shape this wood as a circle bar length 2 km (the length was measured from the elbow to the finger). The space between each step was 50 cm. The amount of the step often used odd number (from 5-11 steps).

The horoscope of the korn reon: Korn Reon means the wood framework that lies under the material used to cover the roof (Fig. 4).

To find the horoscope door bolt was made by using a rope to find the length of Korn Reon. After that, tread on step by step to measure. The prophecies of the horoscope Korn Reon were as following.

- If could be counted 1 sole, there were wealth in the house and there were abundant belongings
- If could be counted 2 soles, people in the house were united and love each other
- If could be counted 3 soles, people in the house would know how to save money
- If could be counted 4 soles, people in the house would face difficulties and hardship both body and mind
- If could be counted 5 soles, people in the house would be separated
- If could be counted 6 soles, the separated people would come back to live together
- If could be counted 7 soles, there would be guests always come to the house, to eat in the house
- If could be counted 8 soles, people in the house like to gossip and complain other people
- If could be counted 9 soles, people in the house would be poor and never gain enough for their lives

The horoscope of the Ka Thod Reon: Ka Thod Reon means the wood sheet fixed with the 4 pillars of the house indicated the width and length of the house (Fig. 5).

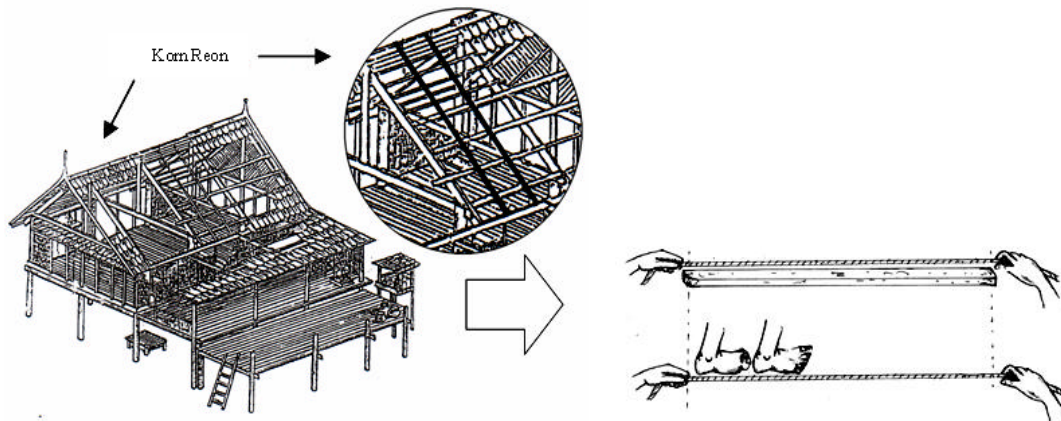


Fig. 4: Finding the horoscope of Korn Reon

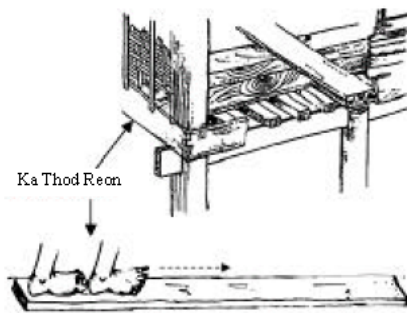


Fig. 5: Finding the horoscope of Ka Thod Reon

Ka Thod Reon was regarded as the important part of Isan house. To find the horoscope Ka Thod Reon was made by measure the length of Ka Thod according to the length of the house then tread on step by step to measure as the prophecy as following.

- If could be counted 1 sole, the owner was the richer
- If could be counted 2 soles, there was no offspring in that house
- If could be counted 3 soles, there would face only happiness in their whole life
- If could be counted 4 soles, the owner could not collect or keep money and the belongings
- If could be counted 5 soles, there would be relatives of the wife wait to help in trouble time
- If could be counted 6 soles, people in he house often getting ill
- If could be counted 7 soles, there were abundant wealth and belongings
- If could be counted 8 soles, people would be poor at first but would be rich after that
- If could be counted 9 soles, the owner would be rich. If they were not careful for expense, they would become a beggar

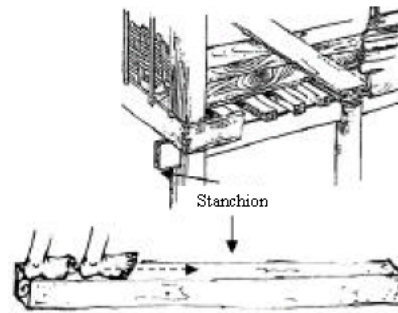


Fig. 6: Finding the horoscope of Stanchion

- If could be counted 10 soles, there would be someone telling about the treasure trove and good occupation
- If could be counted 11 soles, even though they came from poor family, if they were honest in working and never be discouraged, they would become rich in the future

The horoscope of stanchion: It was one of the most important parts of the house. Building house should be done according to the right horoscope and then the owner would live happily.

To find the horoscope of the stanchion was made by tread on step by step, from the bottom to the edge of the Stanchion (Fig. 6). When finish counting, which number and find something good, they should seize to that one. The prophecies were as following.

- If could be counted 1 sole, the owner and offspring would live happily
- If could be counted 2 soles, the owner would use money and the thief would come to take it
- If could be counted 3 soles, there would be abundant of money and the belongings
- If could be counted 4 soles, people in the house often getting ill

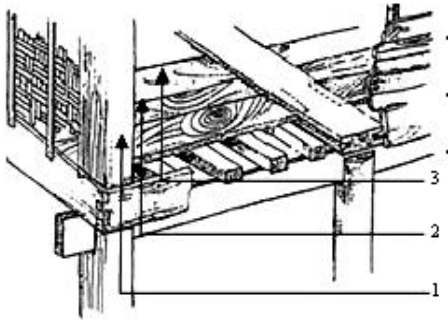


Fig. 7: Finding the horoscope of floor

The horoscope of the floor: In Fig. 7, it was made by counting the wood sheet, spread in the house, from the first sheet to the last one. When finish counting which number and find something good, they should seize to that one. The prophecies were as following:

- Sheet, relatives of the husband would love and care for
- Sheets, relatives of the wife would love and care for
- Sheets, the owner would be rich
- Sheets, the owner would face difficulties
- Sheets, the owner would live long
- Sheets, there would be quarrels
- Sheets, there would be ill and disease

CONCLUSION

Mathematics had been related to the way of Isan people life in building house in the past. Due to the changing of the Isan society, influenced by the capitalism

and the expanded of townspeople, the construction of the house was also changed. In the past, people in the community were responsible for building the houses by announce to their relative and neighbor to help when they were free from working. Because of the way of building house in the past, people then gain some knowledge from the process of building house. But, as of now, building house was responsible by the contractor. Some beliefs were neglected due to it was considered as the waste of time especially the finding of the horoscope that was not appeared anymore. It effected to the process of thinking about local mathematics, the villagers used to support their belief in finding the horoscope, also now disappeared.

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