

THE WAY SUNDANESE GIVE NAMES TO THEIR BABY: CULTURAL ANTHROPOLOGY VIEW IN ETHNOMATHEMATICAL STUDIES

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Abstract

The mystery of numbers that were considered to have a role in the mystical dimension has long been practiced since the time of Pythagoras, then known as numerology. Some people in Sundanese tradition believe that numerology brings a lucky influence on their lives and generations. This study aims to reveal how the Sundanese tradition of naming their newborn babies and conduct a phenomenological study on several respondents with unique experiences related to Sundanese numerology in their names. The phenomenon experienced by respondents is seen from the point of view of cultural anthropology. This research was designed using qualitative methods through two approaches, ethnomathematics and phenomenology. Respondents were selected using purposive sampling and snowball methods and obtained 25 respondents scattered around the districts of Ciamis, Banjar, Tasikmalaya, and Garut in West Java. All respondents are expert resources as cultural practitioners in their own culture who can explain the numerology system they used, known as *Kasepuhan*. The results of the study show that there are many different numerological methods for calculating "lucky names" in the Sundanese tradition that depend on the epistemology of the science of *Kasepuhan* in their own culture. Most of the calculations involve the concept of integer (modular) operations where each 'remainder' represents its own philosophical meaning. Although mathematically the methods of calculating "lucky names" can be learned by everyone, the practice of these calculations is in fact only carried out by people who are considered to have been established from the aspect of science. This article discusses why the mystical phenomenon behind the numerology of the Sundanese tradition cannot be calculated arbitrarily by anyone, people trust more in the numerology calculations performed by *Kasepuhan*.

Keywords: Cultural Anthropology; Ethnomathematics; Mystical Phenomenon; Numerology; Sundanese Tradition

Abstrak

Misteri angka yang dianggap memiliki peran dalam dimensi mistis telah lama dipraktikkan sejak zaman Pythagoras, kemudian dikenal sebagai numerologi. Beberapa orang dalam tradisi Sunda percaya bahwa numerologi membawa pengaruh hoki pada kehidupan mereka beserta generasinya. Penelitian ini bertujuan untuk mengungkap bagaimana tradisi orang Sunda memberikan nama pada bayi mereka yang baru lahir dan melakukan kajian fenomenologi pada beberapa responden dengan pengalaman unik terkait numerologi Sunda pada nama mereka. Fenomena yang dialami responden dilihat dari sudut pandang antropologi budaya. Penelitian ini dirancang dengan menggunakan metode kualitatif melalui dua pendekatan, yaitu pendekatan etnomatematika dan fenomenologi. Responden dipilih dengan menggunakan metode *purposive sampling* dan *snowball* dan diperoleh 25 responden yang tersebar di wilayah Kabupaten Ciamis, Banjar, Tasikmalaya, dan Garut di Jawa Barat. Semua responden merupakan narasumber ahli sebagai tokoh adat dalam budaya mereka sendiri yang dapat menjelaskan sistem numerologi yang mereka gunakan, yang dikenal dengan Kasepuhan. Hasil penelitian menunjukkan bahwa ada banyak metode numerologi yang berbeda untuk menghitung "nama hoki" dalam tradisi Sunda yang bergantung pada epistemologi ilmu Kasepuhan tersebut. Sebagian besar perhitungan melibatkan konsep operasi bilangan bulat (modular) di mana setiap 'bilangan sisa' mewakili makna filosofisnya sendiri. Meski secara matematis cara menghitung "nama hoki" bisa dipelajari oleh semua orang, namun praktik perhitungan tersebut nyatanya hanya dilakukan oleh orang yang dianggap mapan dari aspek ilmu pengetahuan, dalam hal ini tokoh adat atau Kasepuhan tertentu. Artikel ini membahas mengapa fenomena mistis dibalik numerologi tradisi Sunda tidak bisa dihitung sembarangan oleh siapa pun, masyarakat lebih mempercayai perhitungan numerologi yang dilakukan oleh Kasepuhan.

Kata kunci: Antropologi Budaya; Etnomatematika; Fenomena Mistis; Numerologi; Tradisi Sunda

1. Background

The idea of ethnomathematics was first brought up by D'Ambrosio at a Mathematics Education conference with the title Ethnomathematics and its Place in the History and Pedagogy of Mathematics [1]. He puts ethnomathematics on the borderline between the history of mathematics and cultural anthropology, while the reports on ethnomathematics are not that many. Although anthropological reports show evidence of mathematical cultural practices such as counting, sorting, measuring, and weighing, the practices practiced by certain cultural groups are usually very different from those taught in schools. School mathematics is presented in a more formal and well-defined way so that each mathematical concept can be given a name so that the mathematization process is easier to do, while the mathematics that is done by indigenous in the distinct culture group may be different. Even if the concepts tend to be the same mathematically, most of them do not have a strong epistemological understanding such as they do not know the names of the operations or mathematical concepts they use [2]. Indeed, making a bridge between anthropologists and historians of culture and mathematicians is an important step towards recognizing that different modes of thoughts may lead to different forms of mathematics [1].

Along with the development of mathematics in modern science today, it seems that attention to the existence of mathematics in traditional culture is also become one of the research areas that are still in great demand by academics in the field of Mathematics Education. This can be seen from the trend of research on mathematics and culture as two things that cannot be separated. They have increased since more than the last decade in the ethnomathematics forum [2, 3, 4, 11, 12]. Although in practice some people are not very aware of the existence of mathematics in their lives, but they have used it informally like mathematics in school [13]. Even mathematics has always existed in every human social activities [14, 15]. This means that directly or indirectly we will find mathematics everywhere.

In explaining his ideas on the concept of ethnomathematics, D'Ambrosio also begins with an historical overview of mathematics education. He briefly shows some aspects of mathematics education throughout history through the periodization of the history of mathematics to some extent, but, he limits them according to the major changes in the socio-cultural composition of Western history [1]. There are several mathematical activities that anthropologically describe human mathematical thinking such as counting, calculating, measuring, designing/designing which is then explained in more detail by Bishop into a framework for mathematical activities in ethnomathematical research [16]. Unfortunately, Pythagoras was not discussed in his writings. In fact, when viewed from the aspect of mathematics and cultural anthropology, Pythagoras was one of the mathematicians with a special work on numerology. His numerological ideas have been popular in the great books of Pythagorean Numerology [17, 18].

However, it is undeniable that believing in the role of numbers in influencing 'lucky' is part of human culture. This is naturally attached to human aesthetic instincts. The simplest example that everyone will choose a special date to get married. Although

not due to customary factors, this becomes strong enough to assume that numbers do play an important role in human life. Another example may be for some people in choosing a telephone number to be associated with important things in their life so that the numbers they use represent an important meaning. Even historical records state that number mysticism or what is known as numerology has become a marker of the close relationship between mathematics and theology [19]. The belief in a mystical role in numerology is still believed by the Sundanese. Some Sundanese believe that 'lucky' can be determined through numerology. There are at least two of the most popular contexts in the Sundanese tradition in carrying out customary calculations, namely in determining the name of a newborn child and in determining sacred events in the phase of their life such as the date of getting married, building a house, or starting a business.

Previously, the studies on mathematical calculations in the Sundanese and Javanese traditions have been reported in several ethnomathematical research. The research [20] reports on community activities in Indrajaya Village, Brebes, Central Java in determining lucky days in marriage, building a house, migration, circumcision is carried out using a special method that contains the concept of modular arithmetic, namely modular 7, 5, and 4. It is still believed by the local community, but it does not explain how the mysticism is contained in the community's belief about the effect of the calculation. An ethnomathematical study on Sundanese activities in determining marriage, agriculture and finding lost objects/material in Banjar City, West Java [21] reported that calculations were carried out using a special method that included the concepts of 5 and 7 modular arithmetic. There is a philosophical explanation that explains the representation of the final divisors (modular) 5 and 7, but there is no discussion of how mysticism is contained in people's beliefs about the influence of these calculations. Research with a wider subject on mathematical number patterns for "weton" (birthday code) calculations in Javanese and Sundanese traditions [22, 23] also reports that calculations are carried out using special methods that contain the concept of modular arithmetic. Unfortunately, there is no discussion about how mysticism is contained in people's beliefs about the influence of these calculations.

A more comprehensive study [24] on traditional people's belief in counting lucky days in marriage reports that this tradition has been trusted in almost various regions in Indonesia. In his presentation, he explained more philosophical meaning behind the numbers in the calculation of lucky day. It was also explained that people believe that today's reckoning tradition can predict good or bad luck, so they should not take the wrong step in starting every activity in life. This belief has become a tradition of local wisdom passed down from generation to generation. Tradition is the sum total of material objects and ideas that have come from the past but are actually still present today, have not been destroyed or forgotten [25, pp. 69–70].

It has been explained previously that the idea of ethnomathematics which was first promoted by D'Ambrosio places ethnomathematics on the borderline between the history of mathematics and cultural anthropology. Therefore, Rosa explained that ethnomathematics is a combination of three aspects, namely mathematics, mathematical modeling, and cultural anthropology.

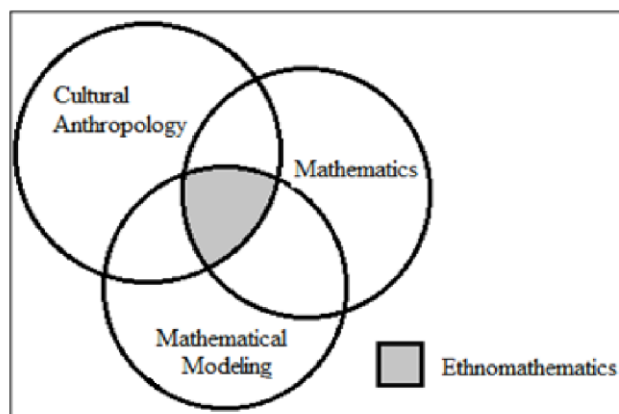


Figure 1. Ethnomathematics as An Intersection of Three Research Fields [26]

If the focus of ethnomathematics is the culture of traditional communities, it is natural that this research trend is growing rapidly in Indonesia as a multicultural country. The tradition of counting 'lucky' names as discussed above is not only believed by the Sundanese people but is also a tradition in various tribes in Indonesia [22, 27].

The authors wrote some notes that might describe the researcher's own personal view of several reports of ethnomathematical research on numerology conducted in several traditional traditions in Indonesia. Indeed, one important part of ethnomathematics is mathematical phenomena and cultural activities that describe mathematical activities. However, the authors see a different impression when an ethnomathematical report only explains mathematical activities or phenomena, without any explanation of the philosophical meaning explained from it. Moreover, if the researcher only uses an ethical approach, then it is only natural that the ethnomathematical report "like that" seems like "*cocokologi*" [12]. From this point of view, the researcher tries to strengthen the appearance of the cultural anthropological point of view in the study of ethnomathematics.

From the point of view of cultural anthropology, we can at least propose some deeper questions, including why the Sundanese still believe in and hold onto the numerology tradition in their lives (which is very traditional) even though We currently live in a very modern era; in fact, what factors most contribute to good fortune in the Sundanese reckoning tradition? The math, or cultural practitioners in their own culture who have the authority in calculating numerology in their culture "*Kasepuhan*"; then what is the difference between mathematics and mathematics in culture in the context of the Sundanese numerology tradition?

This study focused on the numerological tradition of the Sundanese in determining the lucky name to be given to their new baby. The novelty of this study is to present mystical experiences related to the Sundanese numerology tradition experienced by the respondents and revealed by emic approach. This emic disclosure is intended to support phenomenological studies conducted by researchers to achieve intentionality. Then the researcher will discuss it from the perspective of cultural anthropology as an inseparable part of ethnomathematics.

2. Method

This research was designed using qualitative methods through two approaches, namely case study and phenomenology. Respondents were selected using purposive sampling and snowball methods and obtained 4 cultural practitioner who expert on Sundanese numerology named *Kasepuhan* scattered around the districts of Ciamis, Banjar, Tasikmalaya and Garut West Java. Kasepuhan is a person who is trusted by the community and has the authority to regulate all traditions within a cultural group. We also have 21 Sundanese respondents who experienced mystical phenomena related to numerology and voluntarily they were willing to share their mystical experiences comprehensively. Data collection in this study was carried out by using semi-structured interviews and ethnographic observations. The authors used Rosa and Orey's ethnomathematical framework to analysis and map the data into mathematical modeling and anthropology sections [28]. Data analysis techniques were also carried out by comparing the current research findings with various previous research results.

3. Results and Discussion

3.1. There is No Standard Method in the Sundanese Numerological Tradition: The Calculation Method Depends on the Epistemology Knowledge of Kasepuhan

The results of the investigation show that the calculation methods in Sundanese tradition are very diverse. We found at least three different methods in calculating the nomination of names to be given to newborns. Called "nominee of names" because parents will purpose several names during childbirth and then they will consult to Kasepuhan to calculate the fortunes of these names. Names with good fortune according to Kasepuhan will be chosen. Here are some Sundanese calculation methods in determining baby names spread across four regions in West Java.

- Method of Hanacaraka

The Kasepuhan in Ciamis, Banjar and Tasikmalaya use the grammatical value of Javanese letters known as Hanacaraka.

Table 1. The Grammatical Value of Hanacaraka Javanese Script

Letter	Grammatical Value	Letter	Grammatical Value
Ha	1	Pa	11
Na	2	Da	12
Ca	3	Ja	13
Ra	4	Ya	14
Ka	5	Nya	15
Da	6	Ma	16
Ta	7	Ga	17
Sa	8	Ba	18
Wa	9	Ta	19
La	10	Nga	20

Source: Authors' research field note

"We use the Hanacaraka method, you know, in Java this is Honocoroko, right? Just count the syllables, separate the consonants and vowels, add them up and divide by six. What's the reminder? Then we will determine whether the name can be used or not based on the reminder", said Abah Karta from Dayeuhluhur, a small village on the border of Ciamis.

The number is obtained by counting names based on the Javanese hanacaraka script. The grammatical system of the Sundanese script is the same as the grammatical system of the Javanese script [29]. Note that the name that will be counted must be adjusted to its grammatical value with the spelling that is in the Hanacaraka Javanese script. If there is none, it is called a consonant letter which has a value of 1 (one).

Researcher : *Can you show a method of counting "lucky names" in your tradition?*

Respondent A : *Well, now We count the name of Mr. Karsoy, he is one of the figures who are a descendant of the original here [He was present with our interview]*

Table 2. Grammatical Values of "Karasojo"

<i>KARSOYO</i>
<i>Ka + R (died) + Sa + Ya</i>
<i>5 + 1 + 8 + 14</i>
<i>28</i>

(Transcribed from field notes based on respondents' expressions)

Researcher : *how about two syllable names?*

Respondent A : *Ok, who has that name?*

Researcher : *me, ok, Eko Yulianto*

Respondent A : *well, now we count your name!*

Table 3. Grammatical values of "Eko Yulianto"

<i>EKO</i>	<i>YULIANTO</i>
<i>E (died) + Ka</i>	<i>Ya + La + An(died) + Ta</i>
<i>1 + 5</i>	<i>14 + 10 + 1 + 19</i>
<i>6</i>	<i>35</i>
<i>41</i>	

(Transcribed from field notes based on respondents' expressions)

Researcher : *ok, we go it! So, what does it mean?*

Respondent A : *Mr. Karsoyo has a value of 28, right? Divided by 6 has a remainder 4, that is 24 and 4. When he was children, he was extrovert, after growing up usually active, it was proven, he is now the head of the youth organization in this village and his profession is also as an MC at public events. Just confirm with him directly, is it true?*

Researcher : *what about me?*

Respondent A : *Your number is 41. Forty-one is less than 1 to 42, so the remainder is 5. It's mean you will live happily in old age. Now, how old are you?*

Researcher : *I'm 32*

Respondent A : *Very young, be patient, keep working, there will be a time [while smiling]*

Since the result of adding grammatical values is divided by 6, there are only six possible remainders, namely 0, 1, 2, 3, 4, and 5. The method of calculating numbers on a name in their terminology is called “*Lintang*”. If the benchmark calculation used is the division of 6 then it is called “*Lintang Enam*”. *Enam* means six in English. *Lintang* itself is a term used by *Kasepuhan* in the Dayeuhluhur area to represent the six possible remaining numbers from the result of dividing the sum of the grammatical values of *Hancaraka* divided by 6. Mathematically if N is the number of grammatical values of a person's name then $N/6$ is likely to remain 0,1,2,3,4, or 5. Ethically and mathematically, we can assume that they use the concept of modulo $6 = \{0,1,2,3,4,5\}$ in their Sundanese numerology activities. Of course, emically they do not know the term modulo.

Bishop [16] describes six mathematical activities that can be identified in cultural groups, among which the most ethnomathematical researchers find is counting activities. Indeed, it has been mentioned that there is a difference between cultural mathematics and school mathematics [13], this can be found from the activities they do when calculating the *Lintang* of name. What's interesting is that they have done two different calculation methods for the same purpose, namely finding the remainder of the division of 6. See case 28 divided by 6 by case 41 divided by 6,

Table 4. Mathematical Thinking Process of respondent A

	Case 1		Case 2	
	Case	Exposure	Case	Exposure
Narrative	<i>Mr. Karsoyo has a value of 28, right? Divided by 6 has a remainder 4, that is 24 and 4</i>	<i>Emic</i>	<i>Your number is 41. Forty-one is less than 1 to 42, so the remainder is 5</i>	<i>Emic</i>
Mathematical Modeling	$28 = 24 + 4$ $28 = 6 \cdot 4 + 4$	<i>Emic</i> <i>Emic - Ethic</i>	$41 + 1 = 42$ $41 = 42 - 1$ Then $-1 + 6 = 5$	<i>Emic</i> <i>Emic</i> <i>Emic - Ethic</i>
Modular Expression	$28 = 6k + 4, \quad k \in \mathbb{Z}$ $28 \equiv 4 \pmod{6}$	<i>Ethic</i> <i>Ethic</i>	$41 = 42 - 1$ $41 = 6k - 1$ $41 \equiv -1 \pmod{6}$ $41 \equiv -1 + 6 \pmod{6}$ $41 \equiv 5 \pmod{6}$	<i>Ethic</i> <i>Ethic</i> <i>Ethic</i> <i>Ethic</i> <i>Ethic</i>

Case 1. Emically, respondent A said “*Mr. Karsoyo has a value of 28, right? Divided by 6 has a remainder 4, that is 24 and 4*”. Mathematically, he had thought that 28 was $24 + 4$. The number 24 we can be sure ethically represents $6k$ where $k \in \mathbb{Z}$ on his mind. Particularly, the k must be 4. The researcher's belief describes this modeling stage in accordance with the thought process of the insider legitimized by the narrative of the case listed. The narrative clearly describes the insider's thought process. However, even so, this exposure was carried out by the researcher unilaterally without in-depth interviews about the whole insider thinking process. No wonder if the authors claim this as a two-sided exposure, namely emic and ethical. In the section of modular expression, it is entirely ethical exposure.

Case 2. Emically, respondent A said “Your number is 41. Forty-one is less than 1 to 42, so the remainder is 5”. Mathematically, he had thought that to be 42 they only need 1 point from 41. It can be written as $41 + 1 = 42$. In other words, he said $41 = 42 - 1$. This kind of thinking, emically show insiders’ thought. He realized that 42 was divisible by 6. Now all he had to do was think about the meaning of -1 in division 6. Authors have difficulty translating their thinking stages to arrive at the meaning of -1. but the fact that they know that -1 equals 5 in division 6. Amazing. At the very least, we can ethically presume that he believes that -1 is OK to add 6 and that it won't change the value of the equation. Maybe he was sure because he was dealing with division 6. This kind of analysis cannot be claimed as insider thinking because it has been interfered with by the author's thoughts as observers. So, this stage describes two exposure approaches, emic and ethic. In the section of modular expression, it is entirely ethical exposure.

From the analysis in the two cases above, it is sufficient to explain to us that mathematics in certain cultural groups is interesting to be exposed. They may not know the mathematical terminologies they are doing, cannot write them formally in mathematical sentences, but conceptually their activities describe mathematical concepts. This phenomenon is in accordance with the authors' findings in a previous study that identified the numeracy skills of carp breeders in West Java [2].

The next discussion is the meaning of each of the remaining 6 divisions. The remaining six digits have a unique meaning in the beliefs of some Sundanese people in determining the character of a child.

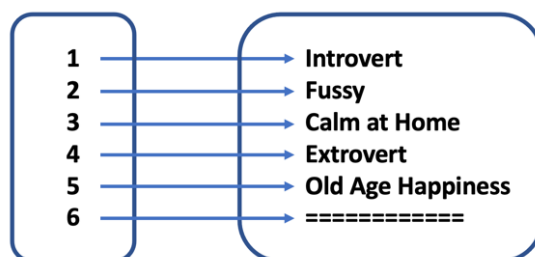


Figure 2. Child Character Based on Lintang 6

Source: Authors' research field note

Based on tables 2 and 3, we can get a description of the name characters based on *Lintang 6* which is believed by Sundanese as follows.

Table 4. Name Character Based on Lintang-6

Name	Grammatical Values	Modular Arithmetic 6	Character
Karsoyo	28	$28 \equiv 4 \pmod{6}$	Extrovert
Eko Yulianto	41	$41 \equiv 5 \pmod{6}$	Nice at Old Age

If there is a grammatical value of more than 36 then there is no need to calculate the values of *Lintang*. Local belief calls it the term 'out of *Lintang*' (exceeding the

maximum number limit). Therefore, most of the Sundanese people who still hold firmly to the tradition of calculating names, especially those living in rural areas, rarely give long names.

- **Correspondence Initials of Name with Birthday Based on Hanacaraka**

The next concept of naming is paying attention to the initials (first letter or syllable) of the name based on the day of birth. All Kasepuhan in Ciamis, Banjar, Garut, and Tasikmalaya presented a list of recommended initials based on their customs as follows

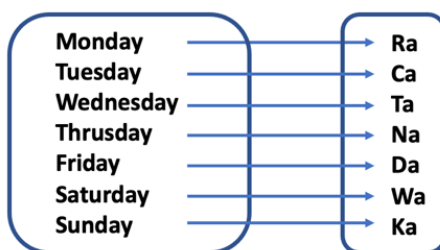


Figure 3. Initials of Name Based on Birthday on Hanacaraka

Source: Authors' research field note

Mondays are usually given the initials *Ra*, Tuesdays are given the initials *Ca*, Wednesdays are given the initials *Ta*, Thursdays are given the initials *Na*, Fridays are given the initials *Da*, Saturdays are given the initials *Wa*, and Sundays are given the initials *Ka*.

Table 5. List of respondents with initials based on Sundanese tradition

Name	Birthday	Address
Ratmi	Monday	Kp. Cimahi Dayeuhluhur
Ruswa	Monday	Kp. Kopeng Dayeuhluhur
Cucu Arumsari	Tuesday	Kp. Kopeng Dayeuhluhur
Carsa	Tuesday	Kp. Kopeng Dayeuhluhur
Tarya	Wednesday	Kp. Kopeng Dayeuhluhur
Tinah (RIP)	Wednesday	Kp. Kopeng Dayeuhluhur
Nanang Setiawan	Thursday	Kp. Sukahurip Dayeuhluhur
Datono	Friday	Kp. Kopeng Dayeuhluhur
Warso	Saturday	Kp. Kopeng Dayeuhluhur
Karsoyo	Sunday	Kp. Sukahurip Dayeuhluhur

Source: Data of Research in Ciamis

The main rule of this naming is the consonants while the vowels can be adjusted to good feeling. *Kasepuhan* in Ciamis who became the research resource used the benchmark day according to Hijri, namely the change of day starting from sunset (*Maghrib* time). For example, someone born on Monday at 20.00 WIB will be considered a child with Tuesday *weton* because he has passed the change of day based on the lunar cycle (Hijri). Table 5 are some examples of respondents whose names use the rule.

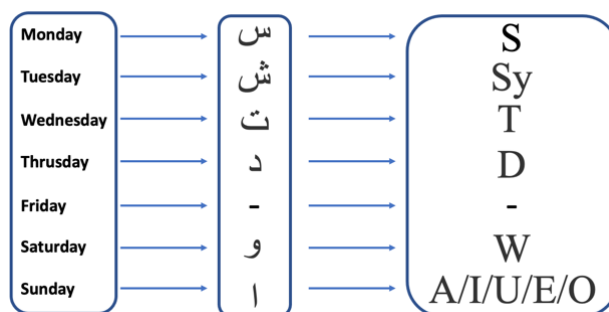
Table 6. The Placement of Consonants in Names Describes Birthday

Name	Birthday	Address	Notes
Eko Yulianto	Wednesday	Kp. Kopeng Bolang Dayeuhluhur	Letter 'to' refers to 'ta' as a marker of Wednesday is not placed at the beginning of name
Sutaryo	Wednesday	Kp. Kopeng Bolang Dayeuhluhur	Letter 'ta' as a marker of Wednesday is not placed at the beginning of name
Wiwi Kartiwi	Sunday	Kp. Kopeng Bolang Dayeuhluhur	Letter 'ka' as a marker of Sunday is not placed at the beginning of name

The next fact is that some people place the consonants that are used as standards, not always in the initials of the name, but can be anywhere if it represents the identity of the birthday. However, most of Sundanese people put it at the beginning of the name. Here are some examples of placing consonants that represent or characterize birthdays that are not placed at the beginning of the name.

- Correspondence Initials of Name with Birthday Based on Arabic Term

The concept of naming with a slightly different Sundanese custom was later found in the Cintamanik area, Garut. This concept uses almost the same method as the previous method which uses Hanacaraka as a benchmark, but here uses the direction letters as the initials of a name based on the day of birth.

**Figure 4.** The Initials of Name with Birthday Based on Arabic Term

Mondays are usually given the initials of the letter S taken from the Arabic letter (س), Tuesday the name is given the initials of the letter Sy which is taken from the Arabic letter (ش), Wednesday names are given the initials of the letter T which is taken from the Arabic letter (ت), on Thursday names are initialed from the letter D taken from the Arabic letter (د), Friday names are not given a special initial, Saturday names are initialed from the letter W taken from the Arabic letter (و), and Sunday names are initialed from vowels a/i/u/e/o taken from Arabic letters (ا).

Kasepuhan in Cintamanik Garut, who became the research resource, used the standard day according to AD calculations, namely the change of day starting at midnight at 00.00. For example, someone born on Monday at 22.00 WIB will be

considered a child with Monday *weton* because he has not passed the change of day based on the circulation of the sun (*Syamsiah*).

This naming guide is different from the previous one in Dayeuhluhur and Ciamis which allows a change of place as exemplified in table 7. According to Abah Herman, the initial letters representing each day must be placed at the beginning of the name as initials, should not be kept in the middle or at the end.

From the above explanation, we can now describe more clearly mathematical phenomena and mathematical concepts. Mathematical phenomena are constructed with an ethical approach by people outside the subject of observation (indigenous), in the context of research they can be researchers, experts, or even authors and reference books. Mathematical concepts can be expressed using techniques like mathematical phenomena, it's just that what is revealed must be a way of thinking or indigenous consciousness itself. In a practical sense, the way of thinking written by the researcher describes an indigenous way of thinking. Meanwhile, mathematical phenomena are free from it, or it can be purely an observer's interpretation outside the indigenous. The discovery in this research have complemented the mathematical phenomena revealed by the authors in the previous paper [10]. The previous paper, only mathematical phenomena were disclosed and had not been compared with mathematical concepts. The discovery in this research by contrast distinguish mathematical concepts from mathematical phenomena [12]. The mathematical concept describes mental entities which are consciously applied by indigenous in daily practice of dhikr. In other words, this is expressed by the emic method [30]. Mathematical knowledge can be seen to emerge from emic rather than ethical origins [31]. This mathematical idea was poured out by the researcher but based on indigenous original thoughts, not by the researcher. This process of translating is called ethno-modeling [30], efforts to express mathematical ideas using the emic method have been initiated by ethnomathematics researchers.

3.2. Cultural Anthropological Perspective of Mystical Phenomenon Behind Sundanese Numerology

The construction of belief in traditions of indigenous people is a significant object of study in anthropological studies. It doesn't only show the uniqueness of identity in the local cultural environment, but also reflects its construction which goes on along with the construction of socio-cultural identity. Community identity is constructed continuously through life experiences in and when interacting with the world. It means that throughout his life humans are constructing their culture [32].

Here are some examples of conversations between the author and the respondent. Respondent Tetty Melya changed her name because she was often sick when she was a toddler. her parents explained that they had often taken medical treatment, but every time she recovered from illness, she soon got sick again. Until one day they were told by neighbors to consult spiritually. The results of the consultation said that the parents had to bequeath a new fitting name.

P : *Why did you change Miss Mel's name in the past??*

- R_k : *Hmm, Mel used to go to the doctor every week. It's boring! heal one sick then get sick again another one.*
- P : *Then how come you change the name? is she healed After changing the name?*
- R_k : *Yes, so the story was that at that time I was returning home from Cirebon, then my parents told me to go to someone who said they could treat me, my parents were told by the neighbors. The story is that I came to Ciamis to my parents and then I told them about the children's problems. After counting, it turned out that the child didn't match his name, so I was given instructions to change his name with conditions like this... I forgot what It was.*
- P : *Did it go well?*
- R_k : *Yes, thank God until now she is healthy, that means she doesn't often get sick anymore (Currently she is in college and now she is 20 years old)*

Authors obtained some data from respondents who were directly involved with the experience of Traditional Sundanese calculating lucky names and determining the time to hold a certain sacred event. In general, the data is displayed as follows:

Table 8. Respondents Experience with the Change of Name

Name	Grammatical Value	Res	New Name	Grammatical Value	Res	Reason for Name Changing
Melly	18	0	Tetty Melya	41	5	Often sick when she was a toddler
Wartinah	20	2	Entin	10	4	Because of getting married and aim for matching numbers
Siti Rukmi	36	0	Emi	17	5	Often Sick
Saripin	24	0	Sarpin	21	3	Naughty as a child
Yaya Sukaya	55	1	Tarya	22	4	Fussy
Suryanto	31	1	Yanto	22	4	Often Sick
jaja Warkusa	49	1	Marku	22	4	Often Sick
nana Sukarsa	26	2	Maman Sukim	47	5	Often Sick
Siti Warsinah	36	0	Nani	4	4	Because of getting married and change the name to be a blessed family
Odah	8	2	Mariah	22	4	Because of getting married and change the name to be a blessed family
Nani Kartini	19	1	siti karti	28	4	Often Sick
Suwarda	25	1	Waryoman	41	5	Because of getting married and change the name to be a blessed family
Wastina	19	1	Pipah Watijah	53	5	Because of getting married and change the name to be a blessed family
Ai Siti Nur'aeni	24	0	Siti Nureni	23	5	Often Sick
Asep Maman	43	1	Nana Herman	23	5	Often Sick

Cep Hasan	14	2	Ahmad Hasan	29	5	Often Sick
Asep Sudedi	30	0	Jaja Juliana	52	4	Naughty as a child
Wawan Suryana	44	2	Herdiana	11	5	Fussy
Asep Gilang Permana	68	2	Asep Permana	40	4	Difficult Matchmaking
Iwa Ruswa	24	0	Jaja Oja	40	4	Quiet type

Source: Data of Research

The respondents who had experienced the phenomenon of changing names, it was identified that there were many variations that underlie the change of names and most of them were children who often got sick when they were young, which was believed to be due to mismatch calculations.

Other variations caused by trust in mismatch calculations, among others, have an impact on the character of children who are fussy, naughty as children, quiet, difficult to match, and some of them are not even because there was a problem, but they confidently change their names to pursue matching numbers with their partners. for long-lasting happiness.

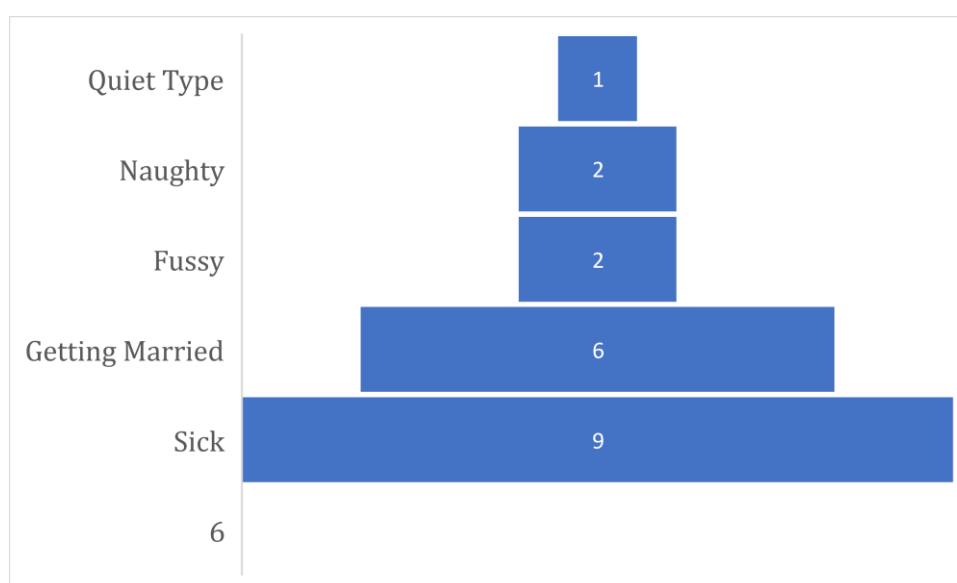


Figure 5. Some Reason for Name Changing of 21 Respondents

In cultures that believe in numerology, numbers are believed to have an influence on human life. For example, in ancient times, the Greeks believed that certain numbers had supernatural powers [33]. Then a similar number mythology also occurs in the Romans and British[34] believe that

breaking a mirror would be unlucky and for the human body to renew it takes time ... and the taboo of the number 13 for the British as an unlucky number that led to the history of the death of Jesus. At the last supper, Jesus gathered 12 of his followers for a special meal, but, including him, there were a total of 13 people at

the table. Therefore, the number is associated with the traitor, Judas, the thirteenth disciple of Jesus (hlm. 516-517).

Furthermore in Babylon the numbers 1 to 60 were associated with various gods [19]. This doctrine has been started since the time of Pythagoras (550 BC) which was written in a major work entitled *All is Number* so that a large religious sect was formed and the practice of its worship involved mathematics substantially [35]. Even the historian of mathematics, Carl B. Boyer [19], writes "never before or since mathematics played such a large role in life and religion as it did among the Pythagoreans" [p. 7]. In other words, there was a time when mathematics became an important part of theology.

History has also recorded substantial theological contributions of mathematics. For example, mathematical calculations to determine the Gregorian and Hijri dates contribute to determining religious holidays [36, 37]. This kind of work has previously been performed by the Jewish philosopher and theologian, Moses Maimonides (1135-1204), in his masterpiece *On The Computation of the Moon* as a mathematical arrangement for the church calendar [19]. Then Islamic scientists such as Al-Khwarizmi, Al-battani, Al-biruni, and Ibn Yunus also developed a scientific method to determine the direction of Qibla in the golden period of Islamic glory from the VIII to the XI centuries [38].

The concept of ethnomathematics was also born as a mathematical approach from a cultural perspective that views mathematics as a broader and more flexible study of science than just what is taught in schools. Ethnomathematics was popularized by D'Ambrosio in international congress [39] which was later developed by Barton in his writings "ethnomathematics: Exploring Cultural Diversity in Mathematics" [40] and Gerdes with his writings "ethnomathematics and mathematics education" [41]. Then the results of ethnomathematical research quickly developed with various approaches, one of which was intensely researched by Rosa & Orey [5, 26, 28, 30, 42, 43].

The main purpose of Sundanese using the calculation of auspicious days is to get smooth during the celebration. Another purpose of the community to consider certain auspicious days before holding a celebration is so that the values of safety and goodness contained in the calculation of auspicious days occur in family life in the future. Based on the results of the interview, it can be analyzed that, some of the Sundanese Village strongly believe in the calculation of auspicious days, the purpose of the bride and groom to determine auspicious days is because this is a tradition and concerns the future, abstinence must be obeyed considering this has been taught. hereditary. Every rational action as described by Weber which has certain goals that are used as a reference for consideration. Both the collective goals and the goals of everyone.

The motive of purpose also underlies the Indigenous using the calculation of lucky days [24]. There are certain goals that they want to achieve when using the calculation of the auspicious day, the goal is to obtain safety and goodness both at the time of the celebration and in later life. Furthermore, joy and fortune are also the hope of the people who use the calculation of auspicious days. The purpose of the people to use the calculation of lucky days is because they do not want to be considered forgetting the traditions that have been passed down from generation to generation as well as a habit

of the Sundanese traditions. As rural communities who still uphold ancestral values, it has become their duty to remind each other of the importance of using auspicious days. For the Sundanese, the calculation of auspicious days has become a hereditary tradition and is an obligation to use before holding a celebration. If one member of the community ignores the calculation of auspicious days, it is considered to have forgotten the ancestral tradition [44].

This result of research is in line with the [45], people believe that the calculation of auspicious days is very important in a wedding event, auspicious days are certain times that are considered to bring safety and smoothness when they want to hold a wedding celebration. The community interprets the preservation of this tradition as an effort to obtain safety as well as a form of respect for ancestors.

4. Conclusion

The results of the study show that there are many different numerological methods for calculating "lucky names" in the Sundanese tradition that depend on the epistemology of the science of Kasepuhan in their own culture. Most of the calculations involve the concept of integer (modular) operations where each 'remainder' represents its own philosophical meaning. Although mathematically the methods of calculating "lucky names" can be learned by everyone, the practice of these calculations is in fact only carried out by people who are considered to have been established from the aspect of science. The mystical phenomenon behind the numerology of the Sundanese tradition cannot be calculated arbitrarily by anyone, people trust more in the numerology calculations performed by Kasepuhan according to their epistemological of science.

The results also show that the reason the Sundanese people still believe in calculating auspicious days in marriage is that this belief has been around for a long time and is inherited from their ancestors. They believe that by determining or looking for lucky days with numerology all intentions at the wedding party will get good luck, good luck in the smooth running of the celebration event, luck in terms of sustenance, and other luck for the bride and groom. Determining auspicious days for the Sundanese people is the main thing that must be considered before carrying out sacred events and determining the newborn child's name. Sundanese people consider the use of auspicious days as a form of effort to obtain smoothness and safety in the family. A family background that is still tied to the Malay tradition is the fundamental reason for using the calculation of auspicious days. Then the Sundanese people think that if the tradition of calculating good days is not carried out, they will have bad luck in the future, the procedure for determining good days, good days are calculated by Kasepuhan who is considered very understanding of this, calculated from looking at the month, date, and day. The Sundanese do not want to violate existing traditions, they believe that practicing traditions is part of respecting their customs and ancestors. That way they will get clean and avoid misfortune.

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