

## Austro-Asiatic Numeration

**Kumari Mamta**

Department of Linguistic and Cultural Evolution, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany



**ABSTRACT:** This paper is an attempt to exhibit the commonalities as well as variations present in the numeral systems of four Austro-Asiatic (AA) languages of India, namely Khasi, Pnar, Santali and Mundari. Khasi and Pnar are classified under the 'Mon-Khmer Branch' of AA family, while languages Mundari and Santali fall under the 'Munda Branch' of the same. This study assays the structure of counting systems in detail while simultaneously compares it with systems in other languages of the family. The paper not only analyses the cardinals and their structure, but also sheds light on other types of numerals and on the interaction of numerals with NP. The numeral classifier also has been discussed in this paper as the languages, Khasi and Pnar are numeral classifier languages.

**KEY WORDS:** Numerals, Morpho-syntax, Cardinals, Numeral classifier

### 1. INTRODUCTION

Numerals are very intriguing in nature. When we see numerals typologically, it is very clear from the existing works on numerals that some numeral systems have a restricted system while some are productive (in the sense of recurring base). Tally mark system and Body-part system have been exhibited by many languages worldwide. Numerals also vary depending on the base and arithmetic system. According to (Wiese,2003:58) "Natural number is infinite", as recursive principle applies in the formation of more and more complex numbers, therefore, this recursivity helps in the process of making numbers infinite."

Eugene Chan (2015), " The surviving thousands of the world's ethnic groups use a variety of different numeral systems: duodecimal systems, decimal systems, quinary systems, quaternary systems, ternary systems, binary systems, incomplete decimal systems, mixed systems, body-part tally systems and so on. Certain South American indigenous languages even only distinguish the numbers one and many." As Eugene Chan proposes languages differ by base systems, so it's to be seen whether base systems have a part to play in the variations in numeral systems across languages. It has been seen that recent languages worldwide are progressing towards the decimal system which is afflicted by traits of the dominant language. So, it is imperative that the traits of these languages be preserved, which is the plan here in this linguistic endeavour.

From the existing literature of Adam (1989), Diffloth(1976), Sidwell(1999), it is clear that the numeral systems of Austroasiatic languages vary to a great extent, whether it is intra or in inter language families.

The definition of numerals as given by Harald Hammarstrom (2009),

"...spoken normed expressions that are used to denote *the exact number of objects* for an open class of objects in an open class of social situations with the whole speech community in question."

In Indian languages, base 10 or combined base decimal-vigesimal is a common system. So many morphosyntactic processes exist for the formation of complex numerals, i.e., suffixation, prefixation, compounding etc. Atoms, base, and the arithmetic operations forms complex numerals with the process of Packing strategy which includes Augend, Addend, Multiplier and Multiplicand. Recursivity which is also called Serialization is a process on which numerals are based on. By recursivity, infinite complex numerals can be created from limited numbers of atom with the help of base.

The hierarchy of operations in the construction of complex numerical expressions:

Addition>multiplication>subtraction/division

As Von Mengden describes (2010;30) "The sequential arrangement of some constituents of the combined numeral forms allows us to distinguish between constants and variants in the underlying arithmetic operations, then we might infer from this description that the two elements of an arithmetic operation perform different roles. In linguistic numeral systems however, the two constituents of such a combination, in addition to the underlying arithmetic operation, also stand in a morphosyntactic relation to each other. That is, the element order of the two values in addition and in multiplication is potentially, though not necessarily, significant. It therefore makes sense to distinguish between the variables within a sequence of additions- which we call 'addends' - and the respective constants- referred to as 'augends'."

E.g. - Fourteen-  $4+10$

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Eighteen- 8+10

Here, 4 and 8 are addends and the basic numerical value 10 is the respective augend. The distinction is necessary as explained by Von Mengden (2010:31), “for combinations based on multiplication, the given terms are ‘multiplicand’ and ‘multiplier’ for the sequence of multiplications. This distinction implies that, within a multiplication, the ‘multiplicand’ is the constant and the ‘multiplier’ will be the variant in the form of the recurring sequences of atoms”.

E.g- Four hundred- 4\*100

Eight hundred- 8\*100, i.e, n\*100

Here, numerical value 4 and 8 are multipliers and the constant form is the multiplicand.

So, basically this study tries to answer the question: how the numeral systems of these languages are similar and at the same time unique and different. AA languages have rich morphosyntax of numeral systems. Further, in this paper we will see how Mon-Khmer branch is different from Munda branch in features related to the counting system.

## 2. METHODOLOGY

In surveying numeral systems, the methodology involved follows the working definition of numerals as given by Hammarström (2010: 10): "spoken, normed expressions that are used to denote the exact number of objects for an open class of objects in an open class of situations with the whole speech community in question."

Primary data has been presented in the paper. Interview and Questionnaire method have been used. The data has been collected with the help of Interview Method employing a custom-designed Questionnaire based on Sjeff Barbier's questionnaire, which was further extended to incorporate the objectives of this study.

## 3. CARDINALS

As Von Mengden (2009) elucidates Cardinal numerals are the part of a larger class of expressions which all specify the size of a set. There lies a critical difference in definition of number and numerals, number conveys the quantity or the order, while numerals represent the quantity. The morphosyntactic properties of cardinal numerals can be classified in three ways. First, the variation can be seen within counting sequences. Second, an element of the counting sequence of one and the same language can vary in its syntactic and inflectional behaviour depending on the context and on some properties of quantified noun, most of all its countability. And, third, the morphosyntactic properties of cardinal numerals can be seen to vary across the languages.

**Table 2. Cardinal numbers of four Austro-Asiatic languages**

Numbers	Analysis	Khasi	Pnar	Santali	Mundari
Zero	0	-	noɔ	-	-
One	1	wɛi/si	wɛi	mit'	mijəd
Two	2	ar	ar	ba:r	bərija
Three	3	lae	le	pə	əpija
Four	4	sao	so	pon	upuna
Five	5	sən	sən	mɔ̃ɽɛ̃	moɽeja
Six	6	ɦnriju	ɦnru	turui	turija
Seven	7	ɦɲɔ	ɦɲəu	eae	Eja
Eight	8	p <sup>h</sup> ra	p <sup>h</sup> ra	irəl	irəlija
Nine	9	k <sup>h</sup> indaɪ	k <sup>h</sup> inde	are	əreja
Ten	10	sip <sup>h</sup> əu (1*10)	tʃip <sup>h</sup> au (1*10)	gəl	geleja

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Eleven	10+1	k <sup>h</sup> atwei	k <sup>h</sup> ətwi	gəl mit'	gəl mijəd
Twelve	10+2	k <sup>h</sup> atar	k <sup>h</sup> ətar	gəl ba:r	gəl bərija
Thirteen	10+3	k <sup>h</sup> atlae	k <sup>h</sup> ətle	gəl pə	gəl əpija
Fourteen	10+4	k <sup>h</sup> atsao	k <sup>h</sup> ətso	gəl pon	gəl upuna
Fifteen	10+5	k <sup>h</sup> atsən	k <sup>h</sup> ətsən	gəl mōṭṭē	gəl moṭeja
Nineteen	10+9	k <sup>h</sup> atk <sup>h</sup> indaɪ	k <sup>h</sup> ət <sup>h</sup> inde	gəl arə	gəl əreja
Twenty	2*10	arp <sup>h</sup> əu	arp <sup>h</sup> əu	ba:r gəl	hisi
Thirty	3*10	laip <sup>h</sup> əu	lep <sup>h</sup> əu	pə gəl	mijəd hisi gəl 1*20+10
Forty	4*10	saop <sup>h</sup> əu	sop <sup>h</sup> əu	pon gəl	bər hisi (2*20)
Fifty	5*10	sənp <sup>h</sup> əu	sənp <sup>h</sup> əu	mōṭṭē gəl	bər hisi gəl (2*20+10)
Sixty	6*10	hinriju <sup>h</sup> əu	jinru <sup>h</sup> əu	turui gəl	əpi hisi (3*20)
Seventy	7*10	hiṅjōp <sup>h</sup> əu	hiṅjəup <sup>h</sup> əu	eae gəl	əpi hisi gəl (3*20+10)
Eighty	8*10	p <sup>h</sup> rap <sup>h</sup> əu	p <sup>h</sup> rap <sup>h</sup> əu	irəl gəl	upun hisi (4*10)
Ninety	(10*1)-100	k <sup>h</sup> indap <sup>h</sup> əu	k <sup>h</sup> indep <sup>h</sup> əu	are gəl	upun hisi gəl (4*20+10)
Hundred	1*100	sɪspa	tʃɪspa	mit sae	mod sə/mōṭṭē hisi
Thousand	1* 1000	sɪ həzar	tʃɪ həzar	mit hədʒar	-
Lakh	1*100000	sɪ lak	lak	mit la:k	-
Crore	1*100000000	sɪ krɔr	klur	mit krɔr	-

Daladier (2011) observes that, AA cardinal number systems are compared to “grouping” number systems and have probably emerged under contacts with Hindu and Chinese trades and more locally in the Assam corridor with Tai and Bodish trades, around the beginning of our era.

In Khasi, one can see from the Table 2 that the base of the counting system is decimal. 1-10 are primitives. Numeral ONE has two variants: /wei/ and /sɪ/, the distribution of these two forms will be seen later. Then, moving towards teens, 11-19 are derivatives of primitives (1-9) with the prefixation of base, but with the different form of the same base, i.e., while /k<sup>h</sup>ət/ is the cardinal 10, the base used for derivation of multiplicatives is /p<sup>h</sup>əu/. The crowns 20,30,40.....90 are formed using the atoms 2,3,4 respectively with the base, and are called Decimal Multiplicatives. Running numerals 21 to 99 are formed with the rule: Base+Atom, by compounding process and the arithmetic operation involves only addition and multiplication. The morphological structure of formation of cardinals in Pnar is same as Khasi.

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In Santali cardinal numerals are also based on decimal system. As in Khasi, the first 10 numbers are primitive and rests are derivatives with the affixation of the base. The same rule (Base+ Atom=Complex Cardinal Numeral) applies here too. This particular base generates a large number from the finite set of simple numbers, and higher numbers are multiple of tens or of twenties, adding the necessary units. When Santali modifies noun, the form gets a change, it co-occurs with a classifier /-ʈen/ for 1, /-eja/ for 2-4 and then for further /-gotetʃ/. As a modifier:

- 1- mit'-ʈe /ʈen
- 2- bar-eja
- 3- p-eja
- 4- pon-eja
- 5- mɔ̃rē gotetʃ/gotɛn
- 6- turui gotetʃ/gotɛn
- 7- eae gotetʃ
- 8- irəl gotetʃ
- 9- a:rɛ gotetʃ
- 10- gel gotetʃ

E.g.; 1) mit'-ʈen kuɖa

One. CL boy  
"One boy"

2) bar-eja b<sup>h</sup>ɪɖɪ

Two. CL sheep  
"Two sheep"

3) p-eja kuɖɪ

Three-CL girl  
"Three girls"

Norman Zide (1978:1), 'presumably Proto-Austroasiatic as well as old Indo-Aryan and Dravidian (old and modern) lacked vigesimal counting systems, but both Munda and modern IA use them. Whether the IA vigesimal systems "come from Munda" – as has been claimed – is questionable.'

Mundari has a combined base system of decimal /gel/ and vigesimal /hɪsɪ/. 1-10 are primitives and further complex numerals are formed of decimal and vigesimal multiplicatives with necessary units attached basically at the atoms. How arithmetic operations are involved and how the multiplicatives are formed with the help of both the bases is shown in the above table (Table 2). Addition and multiplication are used to form complex numerals which combines base and atom. In crowns 50, 70 and 90 in Mundari, we can see how the combined base system works with the help of arithmetic operations. For example:

4) bər hɪsɪ gel = Fifty

$$2 * 20 + 10 = 50$$

5) əpɪ hɪsɪ gel = Seventy

$$3 * 20 + 10 = 70$$

6) upun hɪsɪ gel = Ninety

$$4 * 20 + 10 = 90$$

One very important point to observe here is that the numeral classifier /eja/ of Santali appears on the Mundari numerals as well with 2,3 and 5-10, but here as a part of numeral itself.

The lexeme for thousand, lakh and crore, in all the four languages are borrowed from the Indo-Aryan. In all these four languages arithmetic operations applies in a same manner, they have additive compound, multiplicative compound and multiplicative-cum-additive numerals.

## 4. ORDINALS

The morphologically derived form of corresponding cardinal numerals is called Ordinals. These are formed by various morphological processes, most commonly by the suffixation or prefixation. In some languages however, as Von Mengden (2009: 118) observes "another method of indicating the ordinal as opposed to the cardinal is by a change of word order. However, ordinal marking is a morphological process which in principle is exerted exclusively on all numerically specific cardinality expressions and thus a central property of cardinal numerals. Describing ordinal numerals thus implicitly reveals properties of cardinal numerals."

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**Table 3. Ordinals of four AA languages**

Ordinals	Khasi	Pnar	Santali	Mundari
First	nɪŋkoŋ/ banɪŋkoŋ	nɪŋkon	pəhɪl	sida
Second	ba-ar	wə-ar	dosər	eta?
Third	ba-lae	wə-le	tesər	-
Fourth	ba-sao	wə-so	pon-ak	-
Fifth	ba-sən	wə-sən	mɔ̃r̥ɛ-ak	-
Sixth	ba:-hɪnrɪju	wə-jnru	turui-ak	-
Seventh	ba:-hɪŋʝo	wə-ŋjəʊ	eae-ak	-
Eighth	ba:-p <sup>h</sup> ra:	wə-p <sup>h</sup> ra	ɪrəl-ak	-
Nineth	ba:-k <sup>h</sup> ɪnda:ɪ	wə-k <sup>h</sup> ɪndɛ	are-ak	-
Tenth	ba:-sɪp <sup>h</sup> əu	wə-tʃɪp <sup>h</sup> əu	(mit') gel-ak	-

Ordinals in Khasi are formed by preceding the respective cardinal numbers with the proclitic /ba/, and the same goes for Pnar with proclitic /wə/. But this is not so, with numeral ONE. ONE is idiosyncratic in all the four languages discussed here, and they have suppletive forms. In Santali, first three ordinals are borrowed from Indo-Aryan and the rest are transcribed by adding suffix /-ak/ to their respective cardinal numbers. Mundari does not have ordinals beyond first two, which have their allocated names. Other than ONE, in all the languages ordinals are derivatives of the cardinals with some affixation. Here, ONE differs from rest of the pack. See the table below:

**Table 4. Suppletive form of FIRST in Khasi, Pnar and Santali**

	Predicted forms of FIRST	Existing forms of FIRST
Khasi	bawəɪ	nɪŋkoŋ
Pnar	wəwəɪ	nɪŋkoŋ
Santhali	mit'a:k	pəhɪl

However, the existing forms are not derived from their respective cardinal, but have a suppletive form. Rest are transcribed as per rule: either Prefix + Cardinal Number(Khasi) and (Pnar) or Cardinal Number + Suffix (Santali) .

Therefore, the languages here which belong to Khmer branch use proclitics in the formation of ordinals while the Munda language (Santali) uses suffixation. Mundari also exhibits a restricted ordinal system.

## 5. MULTIPLICATIVES

Alexander Coupe (2007) states that Multiplicatives are used to indicate the number of episodes of the same incident. It is used to describe how many times and/or how many folds.

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**Table 5. Multiplicatives of four AA Languages**

Multiplicatives	Khasi	Pnar	Santali	Mundari
Once	si-sen	tʃ <sup>h</sup> i-sən	mit' domn'	mi-sa
Twice	ar-sen	ar-sən	ba:r domn'	bər-sa
Thrice	lae-sen	le-sən	pe domn'	əpɪ-sa
Four times	sao-sen	so-sən	pon domn'	upun-sa

For the formation of multiplicatives, Khasi and Pnar takes particle /sen/ and /sən/ respectively, followed by cardinal numbers. This is a process of compounding where there are two roots, i.e. /ar/ 'two' and /sen/ or /sən/ 'times', which combine prosodically into a single word /arsen/ and /arsən/ to mean 'two times' or 'twice'. Santali multiplicatives are just the derivatives of cardinals with the particle /domn/ which again means 'times' or 'repetition'. Mundari takes the first syllable of cardinals with suffix /sa/ which also means 'times'. The rule is: Cardinal numbers + particle for lexeme 'times. Numeral ONE is not in idiosyncratic form unlike Ordinals.

## 6. FRACTIONS

Fractions are now an integral part of any numeral system, as quantity defined in this term is in prevalence. Previously, not every language made use of the fractional system, but now with the rapid development in languages and in the development of societies this system has been introduced in almost every language. However, this system does not need to be too rich, as some languages may only have use for three or four fractions. Other languages may have morphological constructions for making fractions; for example, using affixes and/or the numerator and denominator part of the fraction. While, some other languages choose to directly borrow from the dominant languages. Half (1/2) is a very common fraction that is used in every language, followed by 1/4 and 1/10. These are some fractions that language generally possesses but when we search for 3/4, 2/5, 1/3 they cannot be found so commonly.

**Table 6. Fractions of four AA Languages**

Fractions	Khasi	Pnar	Santali	Mundari
1/2	sɪteŋ	sɪteŋ	ətra/tala	tara
2/3	-	-	a:r hatĩnre pe hatĩn	-
1/4	sɪpəwa/ kaba sao bjnta	tʃ <sup>h</sup> ɪpəwa	Pawa	-
2/7	-	-	a:r hatĩnre eae hatĩn	-
1/8	sɪteŋ pəwa (1/2*1/4)	-	a:reak hatĩn	-
1/3	kaba lae bjnta	-	pea:k hatĩn	-
1/10	kaba sɪp <sup>h</sup> əu bjnta	-	gela:k hatĩn	-

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Fractions can be divided into two parts: Simple and Complex. Simple fraction includes, 'a part from whole' like  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ,  $\frac{1}{10}$ ,  $\frac{1}{12}$  etc., and Complex fraction includes, 'a part of part from whole' like  $\frac{2}{3}$ ,  $\frac{3}{7}$ ,  $\frac{2}{8}$  etc. so when we look at fractions from the perspective of these two parts, we can say that the Khasi derives simple fractions but not the complex ones. Interesting to see here is the formation of  $\frac{1}{8}$  is ( $\frac{1}{2} * \frac{1}{4}$ ) in Khasi, where it involves arithmetic operation, while, the rest are transcribed in a similar form with the rule (for Simple fractions only): [kaba, cardinal No.(denominator), bjnta]

E.g. 7)  $\frac{1}{3}$ - kaba lae bynta

In Pnar, half and one fourth are common fractions, i.e., their names are allocated to them. No complex fractions are found in both the languages, even Pnar does not have simple fractions apart from these two as shown in table 6.

Santali has both common (for  $\frac{1}{2}$  and  $\frac{1}{4}$ ) and transcribed forms ( $\frac{1}{8}$ ,  $\frac{1}{3}$ ,  $\frac{2}{7}$ ,  $\frac{2}{3}$ ) of fraction and within that also it has different forms for transcribed ones that is, simple ( $\frac{1}{4}$ ,  $\frac{1}{8}$ ,  $\frac{1}{10}$ ) and complex ( $\frac{2}{7}$ ,  $\frac{2}{3}$ ):

Rule for Simple Fractions: [Cardinal No.(Denom.) Suffix(-ba:) hatm]

Complex Fractions: [Cardinal No.(Num.) hatmre Cardinal No.(Denom.) hatm]

Examples are given in the table above.

Mundari does not have fractions. Only lexeme for 'half' that is /tara/ is present. And, when they need more fractions to fill the gap, use of fractions from Hindi (sometimes English) are employed, because of influence of Hindi on the language.

## 7. NUMERAL CLASSIFIER LANGUAGE

Aikhenvald (2006:466) explains numeral classifiers as, "morphemes that only appear next to the numeral, or a quantifier; they may categorize the referent of a noun in terms of its animacy, shape and other inherent properties". "They are additional words that co-occur with a noun when it is enumerated and reveal the semantic classification of nouns in a particular language."

The basic two types of numeral classifiers are generally defining, that is mensural and sortal classifiers. "A mensural classifier individuates in terms of quantity" and "A sortal classifier individuates whatever it refers to in terms of kind of entity that it is" (Lyons 1977:463). Most, if not all, language have mensural classifier, while the worldwide distribution of sortal classifier is more restricted (Gil, 2013). In his article, "The Interaction Between Numerals and Nouns", Hurford (1998:12) states that, "the central case of numeral classifiers construction involves just three constituents, the numeral, the classifier, and the case noun. These constituents may occur in any order, except that the numeral and the classifiers are (almost) always adjacent, forming a middle level constituent of the whole construction. For e.g., In Bengali, duto č<sup>h</sup>ele (numeral, classifier, noun). The choice of classifiers in these languages depends on which property of the noun is in focus. Numeral classifiers are always morphologically realized in one of the following three forms: (1) They may be independent lexemes (especially with isolating languages) (2) They may be affixes or clitics, attached to or fused with numeral. (3) They may be attached to or fused with the head noun, which is an extremely rare situation." AA languages are Numeral Classifier language. Allan (1977:286-288) termed numeral classifier languages as "the paradigm type" and says that, "these are languages like Thai, where the classifier is obligatory in many expressions of quantity. The classifiers in these languages may also occur in anaphoric and deictic expression." According to Unterbeck (1994): "Classifiers are obligatory element in counting contexts and they immediately precede or follow numerals."

Among the languages dealt in this paper, Khasi and Pnar are numeral classifier languages. Khasi has 2 Sortal classifiers: /ɲut/ and /tɪlɪ/. /ɲut/ occurs with [+Human] and /tɪlɪ/ with [-Human] feature. These classifiers follow the numerals that is followed by a noun. They are obligatory with numerals used with the noun, their deletion results in an ungrammatical sentence. In terms of the inherent properties of the noun like animacy or shape, these classifiers categorizes. They do not have specific meaning of their own. They are used with quantifiers too. The word order is: [Numeral-Classifier-Noun]. Examples are as follows:

- 8) ar ɲut kɪ-kənt<sup>h</sup>əɪ [+Human] \* ar kɪ-kənt<sup>h</sup>əɪ  
Two CL Pl.girl  
"Two girls."
- 9) lae ɲut kɪ-ʃ<sup>h</sup>ɪnra:ŋg [+Human] \* lae kɪ: ʃ<sup>h</sup>ɪnra:ŋg  
Three CL Pl.boy  
"Three boys."
- 10) sən ɲut kɪ-k<sup>h</sup>on [+Human] \*sən kɪ-k<sup>h</sup>on  
Five CL Pl.child  
"Five children."
- 11) ar tɪlɪ kɪ-bləŋg [-Human] \* a:r kɪ-bləŋg  
Two CL Pl.sheep  
"Two sheep."
- 12) sao tɪlɪ kɪ-kalɪ [-Human] \* sao kɪ-kalɪ  
Four CL Pl.car  
"Four cars."

/kɪlo/ is a mensural classifier of Khasi and it also accompanies numerals.

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- 13) ar kɪlo ɔk<sup>h</sup>ao  
Two kilo rice.  
“Two kilo rice.”

Interesting to see here, that numeral ONE does not take sortal classifiers rather it is accompanied by the respective gender agreement markers that the noun takes.

- 14) ka-weɪ ka-kənt<sup>h</sup>əɪ  
F.Sg.-one F.Sg-girl  
“One girl.”
- 15) u:-weɪ u:-ʃ<sup>h</sup>mra:ŋg  
M.Sg.-one M.Sg.-boy  
“One boy.”

Khasi has lexically two distinct forms for numeral ONE: /sɪ/ and /weɪ/. They occur in complementary distribution. /sɪ/ comes with mensural classifier and does not take gender agreement.

- 16) sɪ kɪlo uk<sup>h</sup>ao  
One kilo rice  
“One kilo rice.”

Pnar is also a Numeral Classifier language, having same classifiers as Khasi with the same properties and functions. It has 2 sortal classifiers: /ŋut/ for [+Human] and /tɪllɪ/ for [-Human]. Numeral ONE does not take any classifier.

Santali has system of classifiers that only occur with numerals but do not categorise the inherent properties of the noun. They are as follows:

a) ten- used with ONE

- 17) mɪt'-ten kuɟɪ  
One.CL girl  
“One girl.”

- 18) mɪt'-ten ola  
One.CL bag  
“One bag.”

b) eja- used with numerals from 2 to 4 and for 20.

- 19) bar-eja kuɟa  
Two.CL boy  
“Two boys.”

- 20) pe-ja kuɟɪ  
Three.CL girl  
“Three girls.”

c) gəten- used with number from 5 to 10 and rarely used with numeral ONE.

- 21) mɔ̃ʃɛ-gəten ɟarɪ  
Five.CL tree  
“Five trees.”

- 22) eae-gəten kuɟɪ  
Seven.CL girl  
“Seven girls.”

These classifiers do not have a specific meaning but are obligatory to attach with numerals. Without these classifiers, the sentences will be ill formed. They are attached with the numerals and are categorized on the basis of the same. The word order is same as Khasi: [Numeral- Classifier- Noun].

Santali is a noun class language that does not classify all nouns and several classifiers may be used with one kind of noun with a change in meaning. Hence, this language is not numeral classifier language.

## 8. INTERACTION OF NUMERALS WITH NP

**Table 8. Dem Det of four AA Languages**

Dem. Det.	Khasi	Pnar	Santali [+H] [-H]	Mundari
This	ne	kə-nɪ	nur noa	en
That	to	kə-tæ	uni hana	ne



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These	ne	kɪ-nɪ	nuku noako	en
Those	to	kɪ-tu	unku hanako	ne

Numerals, when used in noun phrases, interact with other elements of the noun phrase. In these languages, demonstrative determiners have independent morphemes for proximal and distal forms. Some languages do have their different forms for plurality as well, like Pnar and Santali. The plural marking varies from language to language. Some mark it with the flexibility when used in NP and some languages do not even mark it. Santali has two varieties of dem, one for [+Human] feature and another is for [-Human]. They have different morphemes for both proximal and distal as well as singular and plural. The reverse order of first two consonants of proximal dem forms the distal dem in [+Human]. In [-Human] the distal dem are formed by suffixing /ko/ to the proximal form. Some languages mark definiteness with the numerals and in some it is unmarked. Nurit Dekel (2014) states an absence of agreement in definiteness between the numerals and their following nouns. He further states the irrelevance of definiteness in case of numeral ‘one’ as it is never definite in the spoken language. Instead, the numeral drops and a definite demonstrative determiner is attached to the noun.

In Khasi, Pnar and Mundari definiteness is unmarked.

Definiteness is marked by the demonstratives in Santali. The plural marker /kɪn/ is only used with the [+Human,+Animate,+Plural] feature, except for numeral one, and plurality is not marked with either [+Human] or [-Human].

The word order for all the four languages is [Num N] in NP with Cardinals and Ordinals both.

### 9. APPROXIMATIVES AND INDEFINITE NUMERALS

Approximation in these languages, is shown with the use of a word ‘approximately’, which either follows the noun or precedes the noun.

So, to show approximation, these languages do use lexeme for ‘Approximately’ except Mundari, that might have been marked in another way which is beyond the scope of this paper.

‘Approximately’ in Khasi- kumba

Pnar- kəmwa

Santali- motamotr (borrowed from Indo-Aryan)

Indefinite numerals like ‘few, many, more and some’ are indicators of amount. ‘Few and many’ are like adjectives, that modifies the number.

**Table 9. Indefinite numerals of four AA Languages**

Ind. Numerals	Khasi	Pnar	Santali	Mundari
Some	-	k <sup>h</sup> əjdʒək	adom	-
Many	bo:n	bo:n	aema	-
Few	k <sup>h</sup> ɪndʒat	k <sup>h</sup> ədʒək	t <sup>h</sup> oɖa	-
More	s <sup>h</sup> o-ja	tʃ <sup>h</sup> o	hoɾ do	oɾɪ

### 10. SUMMARY

**Table 10. Features of numeral systems of four AA Languages**

Features	Khasi	Pnar	Santali	Mundari
Base: Decimal	+	+	+	+
Vigesimal	-	-	-	+
Arith. Oper.: Addition	+	+	+	+
Multiplication	+	+	+	+
Subtraction	-	-	-	-
Ordinals : Suffixation	+	+	+	+

## Austro-Asiatic Numeration

	Prefixation	+	+	-	-
	First Suppletion		+	+	+
	Multiplicatives: Suffixation		+	+	+
	First Suppletion	-	-	-	-
Fractions:	Common		+	+	+
	Transcribed		+	-	+
Dem. Det.:	Sg Proximal		+	+	+
	Pl Proximal		-	+	+
	Sg Distal		+	-	+
	Pl Distal		-	+	+
	Numeral Classifier Language:		+	+	-
	Number with Pl marker: [+Human]		+	+	+
	[-Human]		+	+	-
	Word Order [Num N] :		+	+	+
	Definiteness (M or Unm.) :		-	-	+
	Approximative Numerals:		+	+	+
	Aggregative Numerals:		-	+	-
	Indefinite Numerals :		+	+	+

## 11. CONCLUSION

This study has basically tried to answer the question: how the numeral systems of languages are similar and yet, unique and different at the same time within the same language family. I have tried to discuss the aspects of numeral systems in each language mentioned above. However, some parts may have been omitted in one or two languages because of a lack of linguistic knowledge among the informants about the system of numerals. In some languages, there are parts that do not exist like fractions or ordinals; or they have another way of representation which may not have been highlighted through the questionnaire, leaving some features out of study. The morphology and syntax of counting/numeral system is very rich and varied. This was an attempt made to understand the same. It was seen that the processes involved are similar, although, slight variations could be seen when the languages belong to a different branch of the same family.

The paper presented an overview of the numeral systems of four Indian languages of the AA family. Mon-Khmer branch is different from the Munda branch in many characteristics when counting systems are in question. Mon-Khmer languages are decimal based while Munda has both decimal and vigesimal systems. Complex numerals are derived in AA languages by the process of compounding involving addition, and multiplication. Numeral ONE is different from the rest of the numbers that we can see in the formation of ordinals where 'first' is in suppletive form. In Numeral Classifier Language, where again numeral ONE is different; by not taking any classifier. With rest of the numerals, classifiers are required when counting nouns (in some of) these languages and to form grammatical sentence. Unlike Dravidian languages, AA languages prefer procliticization rather than suffixation for the formation of Ordinals. They all have demonstrative determiners as independent morphemes for proximal and distal forms. For fractions, names are already allocated to them, some complex fractions are transcribed. Word order is [Num N]. Definiteness is only marked in Santali by dem, rest are unmarked. These languages also have some borrowed lexemes in numeral systems because of the contact with Indo-Aryan languages. Therefore, they somewhat influence the basic lexicon.

## Austro-Asiatic Numeration

The numeral system of many languages are becoming endangered. Many languages are shifting their numeral systems to a predominantly decimal base or adapting to the dominant language spoken in the region. As a result many uncommon systems are quickly vanishing along with the incredible mathematical insights they hold. Numeral systems store crucial information and help provide an insight into the human cognition, while also painting us an idea of their socio cultural background. Losing them would be like losing a part of our history which will consequently cripple our shared linguistic future.

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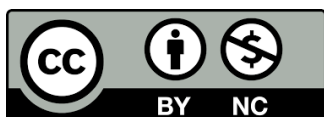
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