Application of SET Theory in the Study of Oraon Festivals

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ABSTRACT

The Oraons of two localities of North 24 Parganas are observing their festivals in the light of modernization. It is seen in the study that a huge number of urban cultural traits have already entered into and enlightened their way of life. The present study of the Oraon festivals has now been reviewed and explained with three interesting elements and three SET theory of Mathematics. These sets are denoted as 'Family festivals SET {A}, Community festivals {B} and Clan Festivals {C}. The elements of the SETs are denoted as x, y & z and the notions are presented as A={x,y,z}, B= {x,y,z} and C= {x,y,z} . The notions of the three elements have represented as x for ideal type, y for modern type, and z for the neighbor invitation.

Keywords: *Venn diagram, festivals, Urban Oraon, Set theory, Anthropological Mathematics*

INTRODUCTION

Anthropology is the chief and core science of human activities. Anthropological thought and theories could be much more developed if the researcher uses mathematics as a tool for his study. According to Xalxo (2007) that Oraons have been observing various festivals irrespective of their life situation. He has also stated that most of the festivals of 'Oraons' are seasonal involve the whole village community and are deliberately engaged in agricultural activities. In such a manner, they represent themselves as belonging to the members of the indigenous community. Xalxo (2007) has described that the festivals of the Oraon community can be divided into five categories, namely, hunting festivals, forest festivals, agricultural festivals, cattle festivals, and socio-religious gatherings.

Singh (1982) has mentioned that the major festivals of the agriculturist tribe Oraons of Chhota Nagpur are connected in agricultural operations. At each stage of agricultural operations, they assuage their gods and divinity to seek their favor as their economy is mainly reckoned on agriculture. In the Bengali month *Baisakh*, they sow the seeds and celebrate a festival named 'Dhanbhuni' when seeds of the paddy germinate and push-out into new shoots, and they worship 'Hariri' at the time of transplantation of paddy seedlings. Bangari is celebrated in *Asarh*; when the rice grain in the month of *Bhadra*.

Stanley and Kumar (1996) have explained that the religious feasts and festivals of the Oraons of Chhota Nagpur in central India are also of importance as an entertaining and joy-making part of their religious customs. Oraons seek to ensure safety and prosperity in the village community as a whole at each new stage in the animal cycle of its people's economic pursuits and the feasting and rejoining and social reunion that mark their successful termination. These pursuits are mainly food gathering and hunting festivals connected with cattle and agriculture. Every festival includes appropriate dances, songs, and stories that reflect the mythology of the people. The story attached to the festival explains the beliefs and practices to be adopted by a certain person or a group as also the importance of the sacred performance and the festivals.

The Oraon is one of the Dravidian-speaking people of India. They were agriculturalists and distinctly the lower aboriginal tribe. The Oraon is divided into sixty or more exogamic totemic clans, named after animals and plants. The descent is seen as followed by the male line.

MATHEMATICAL ANTHROPOLOGY

According to Ballonoff (2000), anthropology is the hard science that is Anthropology can do and should make testable predictions like any other science". Mathematics is one of the best convenient tools for this work. Ballonoff (2000) described that the Rules Bound System or RBS is a tested mathematical theory that connects

descriptions of certain cultural structures to predictions of measures be found on empirical systems using those structures.

According to Meur and Gottcheiner (2000), for how mathematical models may are applied in the study of kinship, he classifies kinship systems through under the term as a potential perspective kinship system and they made it clear why some marriage rules are more frequent than others. They expressed the meaning of a prescriptive kinship system' suddenly referred to as PKS, which means the partition of society in classes,

Leaf (2000) explained," For the debate on peasant rationality, no one has asked whether peasant have the kinds relatively complex formal models that rational calculation requires, and if so, whether they use them and whether they produce the results they seem to predict." "The answer is "yes" in all categories, and the model can be elicited and displayed as a computer spreadsheet", he said. Further, he also pointed out that this paper could provide and demonstrate such models from two farms in one area in eastern Maharashtra, India, that researchers or readers examine on their own.

Bennardo and Read (2005) have written that an "algebraic account of the Tongan kinship terminology (TKT) provides an insightful journey into the fabric of Tongan society. They begin with the ethnographic of a social event. The account presents the activities of that day and the centrally of kin relations in the event, but it does not inform one of the underlying logics for the conceptual system of kin relations that participants bring with them."

White (2010) has described is that the "features of Dravidian kinship terminology are typical that the male line on the "egos' side marries and called their 'affines' relative in the set of opposing male lines. The egocentric versus socio-centric debate in anthropology over the social network implication of Dravidian terminology is resolved with proof of a single theorem:"

White (2010) says that for a connected network of A of marriages between consanguineous, including only the additional ancestral relatives leading back to the consanguine ancestors of those couples, then if the kin of the couples is consistently sided egocentrically, according to Dravidian kinship terminology, then all relatives in network A are consistently sided socio-centrally whether sides are defined through opposing V of male kin, U of female kin or both. He said again that other two theorems have

proved that if all the consanguine marriages in network A are the same generation (same number of generations back to the common ancestor for the husband as for the wife) then if sidedness is V then all of its marriages are same generation and marriage structure of A is one of implicit alternative – generations moieties, as in a Karieera Kinship network."

McConvell (2013), proposed that the "bio-genetic motivations of societal exogamy as being the avoidance of 'inbreeding depression: Over many years similar motivations have been highlighted by anthropologists, although some socio-cultural anthropologists have been less attracted to this idea. However later in the paper ecological motivations for exogamy are advanced that pressures towards exogamy arise from a 'food crisis' which makes sharing of a range of resources in different territories desirable, even essential. How these two factors are reconciled and the proposed link between mechanisms to promote exogamy and 'firestick farming' remains problematic."

OBJECTIVE

The paper endeavors to focus the Anthropological Mathematics, and it shows that how a simple mathematical rule can be used in anthropology? The mathematical simple rule is manifested as a language of anthropology in this paper. From this point of view, Anthropological mathematics has appeared. This paper does not say the Mathematical Anthropology research to some extent. The Anthropological Mathematics on that point is separated from Mathematical Anthropology indeed.

- Special purpose of the study is to find the link between Anthropology and mathematics.

- To research 'anthropological mathematics' and how to use mathematics in anthropology.

METHODOLOGY

Two localities have been selected for the present study. The village Dhalani is located under the Panchayet Koniara-1 in North 24 Parganas and the other is Sardapara, Ward Number-1 in Gobardanga Municipality in West Bengal. A total of 528 Oraons were studied of which 272 are male (52%) and 256 are female (48%). The study has been carried with 121 families, out of which eighty families are small in size, 29 are medium families and twelve are large. Out of 272 males, 161 are married and 108 are unmarried and 3 widowers. In the case of

females, 153 people are married, 83 are unmarried's, 19 are widows and one is divorce.

According to the census 2011 report, Munda (55,538), Oraon (38,628) & Bhumij (34,387) are the three major tribal groups of North 24 Parganas. However, the present study was conducted upon only 528 Oraon which is about 1.37 percent of the total Oraon population concerning the 0.26 percent of the total tribal population of North 24 Parganas. They might have migrated from Chhota Nagpur plateau for doing Railway track work & cutting jungles under the moneylenders from 120 to 150 years ago. For the present study, several popular anthropological or the method and techniques of social sciences have been applied. The data set which is presented in this paper was collected by genealogy, case study, observation, and interview. Although in terms of the objectives of the present paper, the early stage of mathematical and graph theories have been applied.

RESULTS AND DISCUSSION

Biswas (2017) has given a detailed ethnographic account of urban Oraon festivals. Though, the study does not contain any mathematical application. The present study states that the villagers of 'Urban Oraon' celebrate two major parts of festivals, that is, the ideal type and the modern type. 'Ideal type" refers to the traditional festivals and the festivals that are borrowed from the larger society are termed as 'modern type". The traditional or ideal type festivals are Kharian, Dangri, Veloafari, Sahrul, Sohrai, Murgipaithya, Maghe basi, and Karam. The modern festival refers to the worship of Durga Puja, Kali Puja, Jagadhatri Puja, Lakshmi Puja, Sitala, and Saraswati. It is observed that the typical traditional festivals are not worshiped by the presently studied people. The study is focused that the villagers classify their festival into three categories that are, family, clan, and community. It has also been observed that the traditional festivals are *Veloafari* and *Lakshmi Puja* (preferred as 'family' festivals). The family festivals are considered to maintain the structural & functional legacy at the family level and along with others of the society. For this reason, they have included Lakshmi Puja at their family level. Maghebasi puja is a 'clan festival' and hence, they include 'Manasa puja. "Karam" is the greatest festival and it is regarded as a 'community' festival.

So every category of the festival of 'Urban Oraon' is worshiped and united by two nature of festivals that is, ideal and modern type.

Characteristics of the Nature of Festivals

- Nature of festival can be classified into two categories, that is, ideal and modern. (**fig:1**)
- Ideal festivals are concerned with tradition and indigenous continuity.
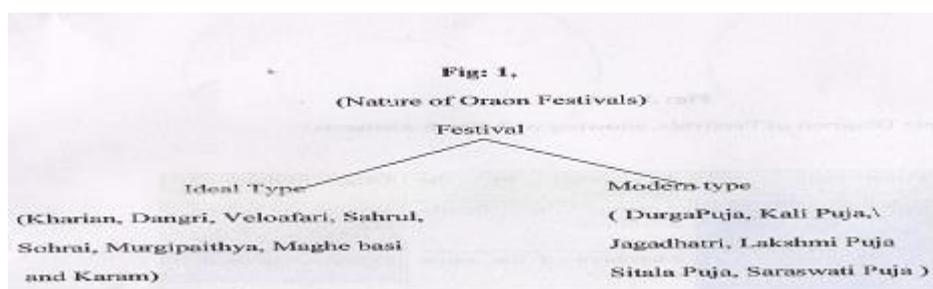- Modern festivals are incorporated by communicating with others.

Figure1.

The study has investigated that the festivals of urban Oraon can be divided into three categories, that is, family festival, clan festival, and community festival (fig: 2)**.** Now the categories of festivals are described here.
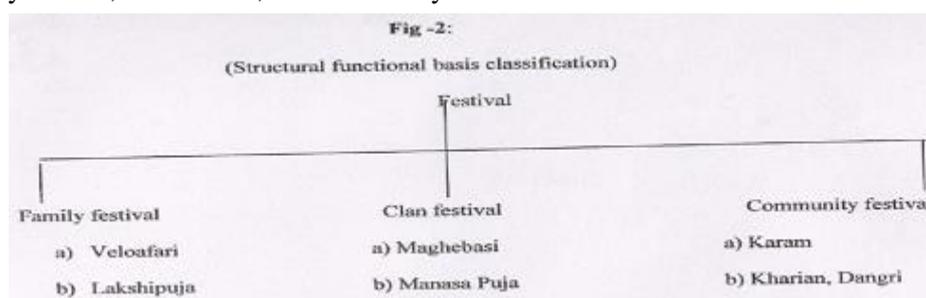

Figure2.

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Family Festivals

Veloafari

It is a family festival. They first choose an open space or "*Thaan*" (the place where the deity is observed by tribal people) in a room in their own house. However, it is not a permanent place or arrangement. The selected space is decorated with cow dung ingredients. Vermilion, incense sticks, a fine brand of part boiled rice ("*Atap Chal*"-in *Bengali terminology*), egg, the bark of trees, and the brownish-red residual ashes accumulated under pots are kept here. The place which has already been marked and purified by the use of cow dung (it is the place that usually considered as auspicious during rituals and to propitiate gods or nature), there, a lesser alter of mixing has been made by rice and flour. A handful of rice is placed in the middle and an egg is kept upon it. Once the alter dries up the whole place is smeared black by the 'Pahan' or priest with the incinerated ashy remnants accumulated at the bottom of the clay vessel. Next, the 'pahan' or priest uses flowers to carry on the ritualistic process with the accompaniment of the holy chanting (Mantra)

According to some scholars '*Veloafari*' sometimes is called '*Veloafari'*. It is a special day while Oraons have entered the house for the first time they worship or when a new baby has its birthing ceremony.

Lakshipuja

The word Lakhsmi is derived from the Sanskrit word, *Lakhsme*, meaning 'goal',i.e. the 'goal' of life, which includes worldly as well as spiritual prosperity. She has several incarnations, and is personified as the goddesses of wealth, purity, chastity and generosity. She is depicted as seated or standing on a lotus flower, wearing red clothes with golden coins and holding lotuses in her hands. The coins falling from her hands represent her distributing wealth and prosperity. The four hands represent the four ends of human life, namely, *dharma* (moral right), *karma* (desire), *artha* (wealth), and *moksha* (liberation). The two elephants on either side denote name and fame, associated with health

Clan festivals

Maghebasi

The *Maghebasi* festival is traditionally related to agriculture, which is celebrated in the month Bengali month Magh (December to January). This festival is celebrated at the beginning of the New Year. All clans altogether arrange this ritual and at the same time, they organize a cultural program.

Manasapuja

This is the Snake Goddess and she is the daughter of *Kasypa* and *Kudru* and the sister of the lord of serpents, *Vasuki*. She is also a gracious aspect of *Parvati* known particularly in Bihar, Bengal, and Assam. She stands upon or is shaded by seven-headed snakes. (Chandra 2001)

Community festivals

Karam

The most important festival is Karam, which is celebrated on the eleventh day of the lunar month of Bhadra (August-September) when the paddy is standing in the fields and as not yet come ear. The Karam festival, as the symbol of productivity and fecundity, represents the good future of the Oraon tribe which is continued by maidens who have been engaged and will be married during the ensuring session especially. (Xalxo.2007: [P-57])

Durga

This goddess represents the power of the supreme. Being who preserves order and righteousness. Durga in the Sanskrit language means a fort or a protected place; difficult to reach. Durga is also called the divine mother, who protects mankind against evil and misery by destroying the evil anger, hatred, jealousy, etc. She is a multidimensional goddess with many names and facts. (Gupta 2004)

The villagers say that *Karam, Maythan, Maa puja* are considered as '*Parab'*. Villagers also believe that Karam to be as high as Durga Puja and regard it as a 'national festival'. According to them '*parab'* is that festival celebrated by the different clans and they all meet at a particular place.

The family festival is usually worshiped in their own house. Clan festivals are celebrated only among the members of the same clan. The Oraons invite the local people to participate and include them as a committee member of "community" and "clan" festivals respectively. The study exerts the new concept of "structural-functional basis classification of urban Oraon" festivals which are possessed the following characters:

- Traditionalism has been maintained in the light of modernity.

- They do not obliterate traditional entity or genuineness.

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- To make a relation between migrated Oraon and Oraons of nativity or cradle house.

- A peaceful or amicable co-operation with larger people of their neighbours.

- To indemnify the solicitation of the new generation that means; 'young' Oraon people always yen to worship modern festivals like Durga or Kali puja. However, the present study on the festival of urban Oroan elevates such approaches in the field of structural-functional classification of the festival.

Set Theory

Hausdoroff (1957) introduces the term 'set as follows', "a set is formed by the grouping together of single objects into a whole. A set is a plurality thought of as a unit. A Set can consist of natural numbers (positive whole numbers) of objects, or not; it is called finite or infinite accordingly,"

The concept of a set and that of "being an element of "will not be defined, these notions will be considered fundamental. In general, Sets will be denoted by Roman Capitals A, B C…. and elements will be denoted by lower case letters x, y……. if A is a set with every conceivable thing or object x it is true either that x belongs to A or that x does not belong to A, and in the latter that x is not an element of A. These possibilities will be denoted x ∈ A and x ∈ A, respectively.

*(Source book: Hanjnal & Humburger. London Mathematical Society, Page-5)

SET: A = {x}, A= {x,y}, A={x,y,z}, these are the sets with containing of the element x, the two elements x,y , and three elements x,y,z respectively. Hence in **fig: 3**, the notions: x, y and z are the elements of the sets A (family types), B (community festivals), and C for clan festivals respectively.

Nature of the Festivals	Functional and Structural types	Celebrated by the members	Others invitation
	Family {A}	Among the family members	Invites neighbors (z)
Ideal type (x)	Clan {C}	Members of the same clan	Other not invited
Modern type (y)	Community {B}	All members of the community	Invites neighbors

Figure3

- A set consists of elements. Notation: x ∈ M means that x is an element of a set M (belong to M). Hence Ideal type and Modern type both festivals are denoted as x and y respectively (elements), and it is also said that x ∈ A (A= Family festival SET) and: x ∈ B (B= Community Festival SET) and C= Clan festival. So therefore, the three SET of festivals have been found. These three SETS of festivals have three elements each: Ideal type, Modern, and invite neighbor type is another.

- A set A is a Subset of a Set B. (A⊂ B) is each element A is also an element of B. in this case B is called a *superset* of A. The elements (x, y and z) of {A} Set are also elements of {B}, so it can be written that Set A⊂ B: that means Community festival can be called *Superset* festivals of family festivals.

- Two sets A and B are equal (A=B) if they consist of the same elements (i.e. A⊂ B & B⊂A). If A is a subset B and A≠B then A is called a proper subset of B (A ⊊B). According to set theory, it is written that Family and Community festival are equal because both contain the same elements, afterward it can be said that *family festival* is a subset of a *community festival*. But concerning the clan festival, A ⊊ C,and B ⊊ C that means A and B ⊊ C i.e. *family* and *community* festivals both A=B≠C. So that A and B are the proper subset of C.

- The empty Set Ø (also called a null set) contains no elements. It is subset of a any set.

- The *intersection* A ∩ B of two sets A and B consists of all elements that belong both to A and B

  A ∩ B = {x,y,z |x,y,z ∈ A and x,y,z ∈ B}
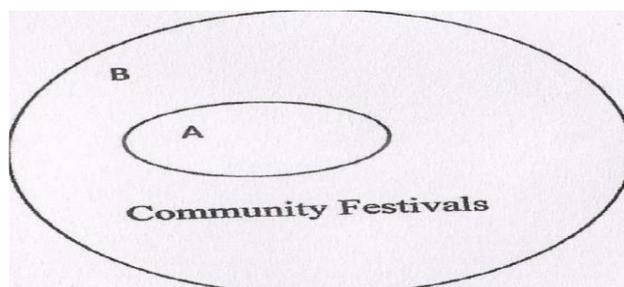
Venn diagram

Figure4.

Figure5.

A convenient way of illustrating sets and relations between them is provided by the Venn diagrams. The idea is to represent a set by a simple plan area, usually bounded by a circle.

In the following diagrams, **figure-4** illustrates a Set A, and **figure -5** illustrates the situation A⊂ B, where B is the area inside the larger circle A is the area inside the smaller circle. So, it can be said the *superset* Community festival or {B} holds a larger circle and *subset* family festival or set {A} is constructed smaller circle. (Leung &. Doris, 1967)

CONCLUSION

The study examines that the villagers of 'Urban Oraon' celebrate two major parts of the festival that is, ideal type and modern type. 'Ideal type" refers to the traditional festivals and the festivals which are borrowed from another society that is called as 'modern type". These two objects are the main elements of the set. Three types of festivals can be classified on the structural-functional basis of the studied people. These three festivals may be illustrated as three- set that is family, clan, and community. All sets are denoted as {A} family. {B}Community and {C}clan. The elements are as follows x) ideal type y) modern type and z) invites neighbors. It can be represented as A{x,y,z}, B{x,y,z} and C{x,y,z}. Community festivals can be called *superset* festivals of family festivals. The *Family festival* is a subset of a *community festival*. No null set has been found. In the case of clan festivals or set C, it has only two elements that 'y' (neighbor invitation) was not found. Traditionally, Oraons had not been observing clan festivals which were explained by several scholars. In the case of the present study 'clan' festivals is a new practice by them. {A} and {B} are the proper subsets of C because in set {C} the element of y is not found. At the same time, no definite intersection is detected. The study exerts that Oraon festivals are analogically governed by the rules of set theory in the light of mathematics.

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