LINEAGE IN STRAIGHT LINE:
AN ELEMENTARY STUDY IN SOCIAL ANTHROPOLOGY

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A B S T R A C T

The paper contains some field data from the Oraons and attempts at the formalization of lineage relations. The purpose of the study simply wants to draw an abstract parallel between lineage relations and straight line geometry. There are sporadic references to Western scholars, including Harary and White's "parental graph" and W.H.R. River's "genealogical method". The study derives from "physics" and applies them to the anthropology of kinship for reasons that "Physics is the study of matter, energy and motion. For the reason in kinship by inheritance system like descent everything is transmitted. The word "Everything" means mass, matter and energy. Like culture trait, property is the examples. The present paper also exerts the concept of Straight line social anthropology.

Keywords: Axis, Culture, Energy, Geometry, Lineage, Patrilineal, Social anthropology, Straight line.

INTRODUCTION

The present paper is an introduction of Straight line social anthropology. Some relevant measurements of physics are applied in lineage. The objectives of the paper simply desire to focus an initial relation between Anthropology and Physics. The paper also describes a new approach of social anthropology which may be termed as Anthropology of Physics. Geometric points may move along straight lines in one of the two possible directories. A straight line with a chosen direction is called an axis; the chosen direction will be called positive, and the opposite direction will be negative. A direction is common feature of the whole family of straight lines which are parallel with given (Vaisman, 1963). Hence, analogical representation has been studied.

A Lineage, meaning primarily a line of descent, is now taken also to mean a unilineal descent group, all members of which trace genealogical relationship back to a founding ancestors. If the lineage system is patrilineal (or agnatic), the members consist of men, their children and their sisters, and trace their descent

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through male lines: normally to an original male ancestor. If the system is matrilineal, the members consist of women, their children and their brothers, tracing descent through females, normally to original ancestress. Such groups are usually exogamous. Groups of lineage types usually tend to form sub-groups by division, in what has been called segmentation (Firth, 2007). Pritchard (1940) stated that the 'The Nuer' genealogy segments of a clan as its lineages. He wrote in his book entitled "The Nuer" that the relationship of any member of it can be exactly stated in a genealogical terms and therefore also his relationship to members of other lineages of the same clan can be traced. A clan is a system of lineages and a lineage is a genealogical segment of a clan. He also noticed that "One might speak of the whole clan as a lineage but he prefer to speak of lineages as segments of it and to define term as such alternatively one may speak of a lineage as on (Pritchard, 1940). The feature of Dravidian kinship terminology is typically that male lines on ego's "side" marry and call their "affine" relatives in a set of opposing male lines (Douglas, 2010).

In the Journal of Mathematical Anthropology and Cultural Theory (MACT) and several other studies were published on Mathematical anthropology. A preference

has been given to the studies which are encouraged to investigate the study lineage and straight line. Jorion (2000) described that kinship networks are here envisaged with the emphasis put on their capacity of representing the transmission of information flows. Meur and Gottcheiner (2000) stated that 'a perspective kinship system is the partition of a society in classes, that is , the mention of a list of names from which one and only one will be given to any member of the society, accompanied by a series of perspective marriage rules of the kind' (Douglas, 2010).

METHODOLOGY

For conducting present study we have taken genealogical method extensively. The genealogical method was invented by W.H. Rivers (1864-1922) during the Torres straits expedition. He described its most fully *Notes and Quarries* on Anthropology (1912), after which it became standard procedure in social anthropology. The method required extensive interviewing of named individuals in order to (i) collect vital statistics among a non-literate population, and (ii) record their pedigrees, which reflected rights and responsibilities relating primarily to descent succession and inheritance (Barnard and Spencer, 2009).

Descents Inheritance: The oraons are divided into sixty or more exogamic totem clans, named after animals and plants. No descent from these is claimed, but they are supposed to have aided or protected the clan-ancestors in some way. Descent is apparently in the male line. Quite strict taboos are in force among the members of a clan in regard to the totem, and not only will an Oraon himself abstain from killing , eating or using his totem, but he will attempt to prevent others doing so in his presence (Dixon). The oraons are patrilineal A man belongs to the clan of his

father and a women, after marriage, gets into her husband's clan. They are patripotestal i.e. the supreme authority of the family is vested on male member – the husband. On the death of the head of the family the property devolves on his sons and in the event of partition, the eldest son receives a slightly larger share than his other brothers (Chakraborty and Mukherjee, 1971: 159).

STUDY AREA

The present studies is carried out on Sardar Para, a hamlet of Village Dhalani, under the block Bagdha, 3 No Konira-1 Panchayet in North 24 Parganas, West Bengal.. The hamlet of the observing village is allegedly composed with homogonous people, belongs to the tribe oraon. Basically, agriculture is the main occupation. Needless to say, they work as agricultural laborers or day laborers. Though agriculture related work is their primary occupation but this type of occupation could not satisfied their necessities. For this reason they have to accept different secondary occupations as and when available from their society. They had been living since more than hundred years.. There are 134 Oraon families live here. All families are selected for the investigation. Dhalani is the midsized village located in the district of North 24 Parganas in the state of West Bengal in India.

It has a population of about 2799 persons living in around 578 families. At present there are 69 families studied. The total population is 282, out of them, 158 female and 124 male.

Family Size: The investigation focuses that the Small family is seen 81.15%. The middle size family or medium family has placed after the Small family with 15.95 % and last 2.9 % i.e. large family (Chinmay and Manas, Elixir Applied Math, 2013: 17224-17231). The following table has shown the detail picture.

Table 1. Clan and Family Distribution of Dhalani Village.

SL No	Clan	No of Family	%
01	Tiriki	33	47.14
02	Toppo	29	41.42
03	Panna	01	1.43
04	Kerketa	01	1.43
05	Dhanua	01	1.43
06	Miz	03	4.29
07	Khalko	01	1.43
08	Lakra	01	1.43
Total		70	100

Source: Based on Data from: Biswas and Roy, 2013, North 24 Parganas, Bagdha Block, Dhalani, West Bengal.

Clan Distribution: Several types of clan have found in this Hamlet or Sardar Para. These are namely Tirki, Toppo, Panna, Kerketa, Dhanua, Miz, Khalko etc. The following table shows the clan distribution in the respect of presently studied families.

Population and Clans distribution: It has found that 132, 115, 12, 04, 03, 04, 05, and 07 persons are belonged to clans Tirki, Toppo, Miz, Khalko, Panna, Kerketa, Dhanua and Lakra respectively. The next table describes a detail account on Sex wise clan distribution.

Table 2. Clan and sex wise population of Dhalani Village

Sl No	Clan Name	Male	Female	Total
01	Tirki	78	54	132
02	Toppo	63	52	115
03	Miz	06	06	12
04	Khalko	-	04	04
05	Panna	01	02	03
06	Kerketa	02	02	04
07	Dhanua	04	01	05
08	Lakrar	04	03	07
Total	08	158	124	282

Source: Based Biswas and Roy, 2013; North 24 Parganas, Bagdha Block, Dhalani, West Bengal.

CONCEPT OF DIRECTED LINE SEGMENT AND LINEAGE

Technically, a lineage consists of two or more generations of persons consanguineously related through one sex. Thus a man and his children or women and her children form a lineage. In all the unilineal descent-oriented societies, such group is purely operational. In other words, the specific tasks are carried out on by this group. This is called minimal lineage. A minimal lineage expands over generations when it occurs, major segments may develop, finally, when a number of major segments unite together the form of lineage is known as maximal lineage. A lineage is (a) regardless of size; (b) lineage of 20 persons is equivalent to a 200-members lineage; (c) a localized descent group; (d) characterized by perpuity and (e) each lineage changed. Anthropologists such as Fortes and Pritacherd have extensively written on how perpetuity is maintained (A.R.N Srivastava, 2013).

Let 'L' be a straight line of indefinite lengths. Take two points A and B on L. Then portion of L, which is bounded by A and B is called a line segment AB or BA. Now let us direct this line by calling A, the initial point, and B, the terminal point. Then the segment becomes directed line segment (written as AB). Directed from A to B but if we take B as the initial point and A , the terminal point in

then the line segment is directed from B to A, written BA, see that AB or BA is undirected line segment , but AB is a directed line from A to B. having direction.

A ●————————————→ B

Figure 1. Vector AB, a directed Line segment,

In this study first a straight line is to be drawn from Generation- 1 to Generation –VII. Hence, generation -1, member no 1 is an apical ancestor or ancestral point i.e. initial point and generation VII-1(member) is denoted as terminal Point. Now, it has drawn for better understanding in next.

Analytic Geometry is a branch of mathematics which uses algebra and the co-ordinates system to solve Geometric problems. Descartses. R, (1954), (first edition was published by Dover Publication} described his first book on the subject entitled "La Geometrie". The Book was first published in 1954 by Dover Publication, Library of Congress Catalog in New York. He demonstrated that he could solve problems in geometry by using the processes of Algebra. He was the first one to use this method and has been called the father of Analytic Geometry.

Directed and Undirected Line Segment: Given a line P determined by two direct points A and B (see Figure 02). We denote the line segment as AB or BA. In general, a line segment is a set of points in between them

A ● B ●
————————————————

Figure 2

When a line segment is measured in a definite direction, the line segment is said to be directed. The direction is indicated by arrow head as shown in figure 04. The distance between two distinct points on a directed line segment is called a directed distance. The symbol AB is used denote the distance from A to B (figure 03). If we designate the directed distance to positive, them BA is directed as negative, hence AB= − BA

Figure 3

When a line segment is measured in a definite direction, the line segment is said to be directed. The direction is indicated by arrow head as shown in figure 04. The distance between two distinct points on a directed line segment is called a directed distance. The symbol AB is used denote the distance from A to B (figure 03). If we designate the directed distance to positive, them BA is directed as negative, hence AB= − BA

If A, B, and C are three distinct on a line, the following relation holds as fun property of directed line segment.
R1 …..AC= AB + BC
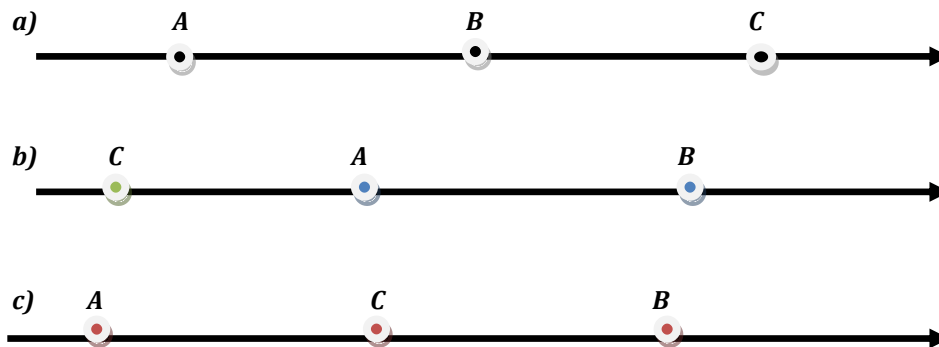R1, is true regardless of the relative positions of the points on a directed line.

Figure 4

From the figure, we have

$$AB+ BC = AC$$

Since from figure

$$CA = AC \text{ and } CB, \text{ we have, } AC + AB = BC, \text{ which give,}$$
$$AC + AB = BC.$$

Geometric points may move along straight lines in one of the two possible directions (e.g. East-West). A straight line with a chosen direction is called an axis; the chosen direction will be called positive, and the opposite direction will be negative.

A direction is a common feature of the whole family of straight lines which are parallel with a given. Sometimes, it is necessary to refer to a couple of opposite direction (e.g. East-West and West-east) as to mathematical object. This object is identifiable with a family of parallel straight lines. We will refer to it as an unmarked direction. If no special mention is made, all our directions will be marked (Izu Vaisman, 1963). The tangent of an angle which a line makes with positive direction of the X- axis is called the slope of the line. It also called gradient of a line.
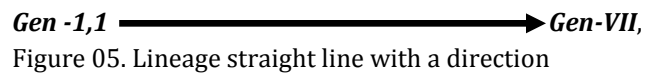
Gen -1,1 ⟶ *Gen-VII*,

Figure 05. Lineage straight line with a direction

This straight line is drawn on the basis of kinship genealogy. It could be considered as the line which has an unique direction from ancient to present and future. Now a lucid explanation of the following genealogy is discussed. Thus, It is important to mention that the properties of vector is not completely support for the concept.

ANALYSIS AND EXPLANATION OF THE STUDY

Let, the following genealogical chart has taken from the study for understanding the straight line lineage. Genealogy of Clan Tirki of Oraon tribe Based on data from: Biswas and Roy, 2013; North 24 Parganas, Bagdha Block, Dhalani, West.B has been shown in Chart 1.
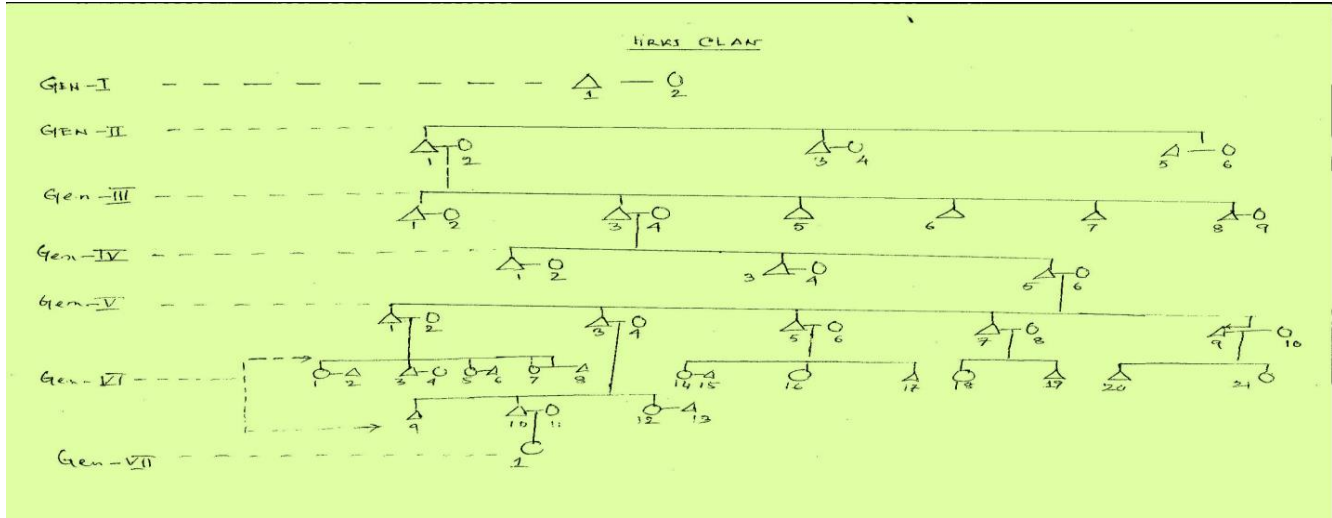
Chart 1. Genealogy of Clan Tirki of Oraon tribe
Sources: Based on data from: Biswas and Roy, 2013; North 24 Parganas, Bagdha Block, Dhalani, West.B

Chart2 (description of genealogy)

Genealogy inhabits			
1. No of Total Generation = 07		5. No. of Married Couple	= 22
2. No of Total Individuals = 54		6. No. unmarried Male	= 06
3. No of Total Female = 26		7. No of Unmarried female	= 04
4. No of Total Male = 28		8. No of Individuals achieved Titki Clan = 42	
		9. No of Individuals who lefts Titki Clan = 12	

The genealogy remarks the theoretical impression of Low of clan purity i.e.

- Females must have changed their Clan after marriage.
- The same clan marriage is prohibited.
- The clan is transmitted through the male line. The social or cultural traits like property, functions   etc. are all objects also inherited towards the male in generation wise.

Lineage both Patrilineal and matrilineal, exist implicitly in any kinship system, but it is only in some system that the solidarity of the lineage group is important feature in the social structure. So therefore, the actual lineage of prescribed genealogy, chart-1., is having the following members, listed below.

Table 3. Living Members or Actual Lineage;

Members	M	F	M	F	M	F	M	F	M	F	M	F
Individual No	-	-	-	-	-	--	5	-	1,3,5,7,9	2,4,6,8, 10	2,3,9,10,17,19, 20	4,11,16,18, 21
Total Members	0	0	0	0	0	0	1	0	05	05	07	05

The lineage started from Gen-I**,** 1, 2 to Gen-VII, 1 (see chart-2). The members of the lineage are;
(a) Gen-**I**, individual no.1 and 2
(b) Gen-**II**, individual no. 1, 2, 3, 4 and 5
(c) Gen-**III**, individual No. 1, 2, 3, 4, 5, 6, 7, 8, 9
(d)Gen-**IV**, individual no.1, 2, 3, 4, 5 and 6 (
(e) Gen-**V,** individual no., 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10
(f) Gen. **VI**, individual no, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, transmission legacy. Here it has been focused that the actual lineage resembles with directed line segment at a particular time and space.

13, 14, 15, 16, 17, 18, 19, 20, 21 and end Gen-**VII**, Only One Individual no.1. The actual lineage of the study is completely focused and members are noticed in table-4... Only living male members and spouses with their son-wife and unmarried daughters are controlled by the same lineage rules. The transmissions of several socio-cultural properties have always been observed in living members in male line. Thus actual lineage is a portrait of Now, at the beginning the Structural Model in Anthropology, Hage. P and Harary.F (1983: 1) explained that "Anthropology is fundamentally the study of sets of

social and cultural relations whose diversity and pervasiveness is illustrated by such terms as "exchange", "hierarchy", "classification", "order", "opposition", "mediation" "inversion" and "transformation". Parental relationships (arcs) have been studied by Harary and White in their P-System in. This system somewhat help to present study, so we listed in below in the opinion of Haray & White to support the study at hand.

THROUGH P-SYSTEM ANALYSIS

A-P System is neither a graph nor a digraph, as it may have three types of nodes representing a single female , 0, a single male-1, or a reproducing couple, 01,. It has however, only type of arc, as in ore's genetic digraph. Furthermore P-system has two levels of nodes. Each node at level -1 in a p-system contains a graph at level-2 (Haray and White, 2001).

1. 0--- 0 = Mother to daughter	Code 0 = female
2. 0---1 = Mother to son	Code 1 = male
3. 0---01 = Mother to married daughter husband	Code 01 = Married (Female + Male)
4. 0---10 = Mother to married Son.	Code 10 = Married (Male + Female)

Like that they illustrated 16 parental relationships. If one considers it on lineage system, he/she can found two generation code 10 or code 01. In case of patrilineal it is 10 and in matrilineal 01.

(A) 10—01 = male-female married couple to unmarried son

(B) 10—0 = male-female married couple to unmarried daughter.

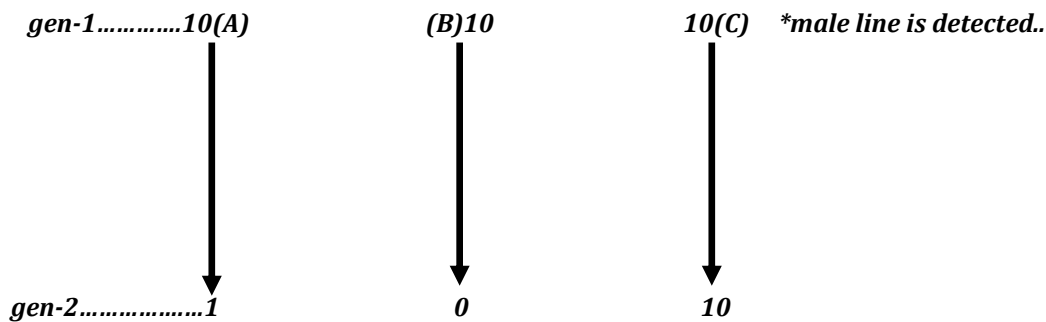(C) 10—10 = male female married couple to married son-wife

gen-1.............10(A)   (B)10   10(C)   *male line is detected..

gen-2...................1   0   10

Figure 6. Node and Generation

Source: Based data from: Biswas and Roy, 2013, North 24 Parganas, Bagdha Block, Dhalani, West Bengal.

Actual lineage: The actual lineage had been started from the Gen-Iv, individual no 5 to Gen-VII, individual No.01, because all members of these generations are presently living here. This is termed as minimal lineage (Pritchard). No minimal lineage is formed without maximum lineage. It is said that married couple and all male member and unmarried females belong to same lineage.

P- System: According Harry and White (2001), in a p-system there are three types of nodes: females (coded-0) males (coded- 1), and couples (coded, 01 for female-male pair or 10 for a male-female pair, as convenient to simplify the diagram, or coded 2= {0, 1} = {1, 0} if the order of the pair makes no differences). Conventionally, couples will be married, a relation of parentage may exist between any pair of nodes regardless of type giving sixteen possible combination of node joined by arcs. The following analogical P-system graph is drawn. Now the following analogical graph shows the pattern of clan heritance from Gen-I to Gen-VII with member Gen-I, 1 to

Gen-VII, 1. Hence every successive generation those are consisted with a number of apical ancestors which have remarked as parental stalk. The parental stalk are marked with no. of 1, 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and14 (figure 7). Through the parental stalks and by the male members, the clan system is transmitted. Here it is seen that an initial point and a terminal point are exclusively present and having a direction. Thus gen-1 is common ancestor which is represented as Initial Point and Gen-VII, 01 is terminal point in a particular time and space.

In the discipline of P-System the Patilineal lineage inhabits the following possible character or arcs. These arcs might have supported the concept of directed line segment.

1. Father to son-(1-1)

2. Father to unmarried daughter (1-0), no longer

3. Father to married son with wife (1-10)

4. Mother to son (0-1)

5. Mother to married son with wife (0-10)

6. Mother to unmarried daughter (0-0)

7. Father-mother to son (10-1)

8. Mother –father to son (01-1)

9. Father-Mother to married son with wife (10-10)

10. Father-mother to unmarried daughter (10-0) no longer

11. Mother –father to unmarried daughter (01-0) no longer.

Now the following figure shows the maximum and minimum Lineage of the study.Gen-1 to gen-VII is the maximum lineage and from generation–IV to Generation-VII, minimum. Lineage. Let, Gen-1 represents Initial position and Gen-VII represents as terminal position. These positions are fixed but persons are changed (the structural continuity). Let it can be drawing as;
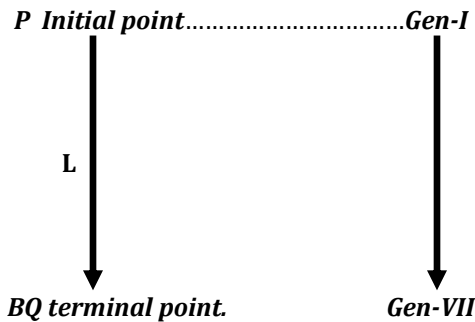
P Initial point……………………………**Gen-I**

L

BQ terminal point.   **Gen-VII**

Figure 07. Showing Diagram in Relation to Straight Line.

Let 'L' be a straight line of indefinite lengths. Take two points P and Q on L .Then portion of L, which is bounded by P and Q is called a line segment PQ or QP. Now let us direct this line by calling P, the initial point, and Q, the terminal point. Then the segment becomes directed line segment (written as PQ). Directed from P to Q but if we take Q as the initial point and P , the terminal point in then the line segment is directed from Q to P, written QP, see that PQ or QP is undirected line segment , but AB is a directed line from P to Q. With PQ directed line segment PQ line attributes 'three' characteristics.

Let, likes figure 8, we get from the analogical P- graph, N-numbers of directed line segments,

Example;

(1). Gen-I, 1 to Gen-II, 2

(2) Gen-II, 2 to Gen-III, 3

(3) Gen-III, 3 to Gen-IV, 4

(4) Gen-IV, 4 to Gen-V, 5, 6,7, 8, 9, 10

The oraons are living here, practiced eight successive clans. The clans are sib or lineage pattern in nature. The clans are also exogamy. Analogically they represent the similar line support. No marriage is found in the same clan. Therefore, each segment of lineage is parallel in nature and succeeded generation to generation. At the same time, the member of the two different sib or clan or lineage can choose their spouses.

ASPECTS OF SOCIAL AND CULTURE LIFE OROANS

Some aspects of social and cultural life oraons have represented under the concept lineage and directed line segment.

Clan: The tribe is divided into number of exogamous totemic clans (gotra). A clan again subdivided into a number of maximal lineages which are further subdivided into a number of major lineages which are structured of ultimate social unit's viz. families. According Dalton the oraons are divided into tribes , the family or tribal names are usually those animals or plants , and when this is the case , the flesh of some part of the animal or fruit of the tree is tabooed to the tribe called after it.The study area is contained the same values. Today they are practiced the same. In reference to Dalton, study on oraon in 1972, there the clans which were presented by him today those are also present in the study. Hundreds years the totemic clans likes Tirki, Lakra & kirpotas etc. are transmitted through the male line. That means it was traveled from Gen-1 to Gen-VII.The following figure shows the nature of new approach. The clans are transmitted from A to B (Gen-I to Gen-II). A is the initial point and B is terminal point and it is maintained a direction through the male line. The point A &B is coded with 10. Thus, it observes that a straight directed line would be measured. All members of the same lineage would practice the same taboo and social sanctions in certain time and space. The terminal position "B" (present situation or contemporary) will be continued after marriage and will be represented as initial point like A in future.

A1 A2 _A3   A4 A5 A6   A7   A8   *Initial positions (A)*

B1 B2   B3   B4   B5 B6   B7   B8
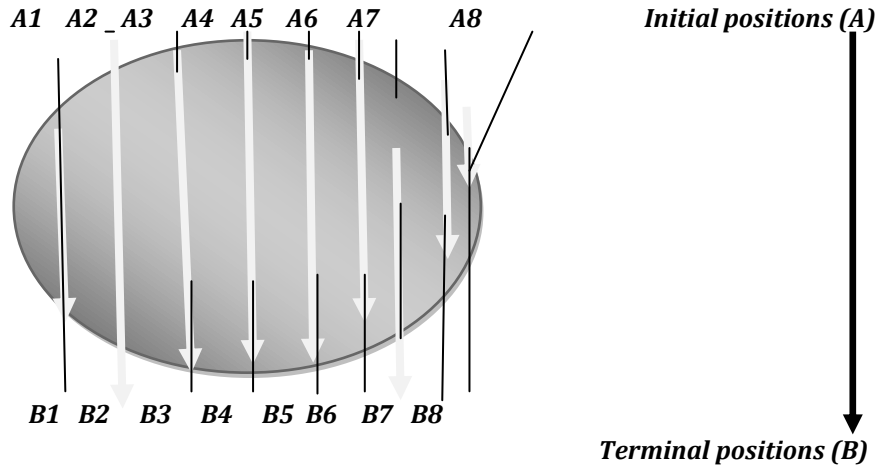
Terminal positions (B)

Figure 08. Schematic Diagram of Lineage straight Line
(A1 to B1= Tirki, A2 to B2 = Lakra, A3 to B3= Toppo, A4 to B4= Kerketa, A5 to B5= Miz, A6 to B6= panna, A7 to B7= Khalko, A8 to B8= Dhanua.

The result is that" time" controlled the nature of terminal point regarding its lineage locus.

The study represents that A is connected with Gen-I and B is connected With Gen-VII. Now I further represent it as the following figure.

Gen –I, (A) ⟶ *Gen-VII (B)*

Figure 09. Directed Straight line.

The oraons follows the characters through the above mentioned figure.

- The members could not marry outside but are always expected to marry within the group.
- The division has been perfectly observed here. Maximum and Minmal lineages have been recorded
- Same clan marriage is not practiced even today
- The study emphasized that the totems are not worshiped. Descent is patrilieal as the clan name passes from father to son. Each clan is strictly exogamous.

CONCLUSION

The actual lineage is consisting of living members, in a particular time and space. Genealogy represents a complete structure of lineage-space and a directed line segments in a particular indigenous community. The present study re-examined that every lineage or segment or clan is transmitted through married couple to the next. The couple or family of procreation is denoted as a parental stalk and as well as an apical ancestor. While males and unmarried women are belonged to same lineage from their parental stalk, that is termed as Patrilineal and opposite as matrilineal. During investigation it has been found a huge no of parental stalk is present in every lineage. In fig: that Gen-

I, 01, Gen-II,1 If we are drawing a line from early to present situation on genealogy where a straight line may be originated which consists an initial position and terminal position, having a direction. At same time on this straight line where," generation wise parental stalk," means apical ancestors have also been observed. And if we connect every parental stalk , we get, N-numbers of segmented straight lines which have same direction. So every fragmented but linking part of a lineage's straight lines contains the similar characterization of directed line. Through this pathway, the present paper resembles that the lineage or sib is evolved as under the discipline of directed straight line. In response to social system,, the lineage is analogically reviewed with Directed straight line resembles with same sense and direction. Here "sense" means unidirectional and "support".

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