

# POLYANDRY AMIDST THE DOMINANCE OF MONOGAMY: AN EXPLORATORY MODEL WITH REFERENCE TO SIKKIM, INDIA

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Modern development discourse and modernity, though changing continually, remain uncertain regarding diversity of marital, familial, and related social arrangements. Modernity and marriage as social arrangements accept monogamy as moral backed by legal framework, 'polygyny as reasonable (even enviable)' and covertly accepts polygamy. However, polyandry has been treated as misleading at worst and ambiguous at best. However, irrespective of these interpretations, polyandry has been, in every case, pushed into obscurity. However, the polyandry is still a social reality and does coexist, though among miniscule number of societies, with dominant marriage system of monogamy. An attempt has been made in this paper to verify the sustainability of polyandry in large and precisely in Lachung valley of Sikkim, India that is located in the Eastern Himalayas. Adverse sex ratio emerged as one of key components for the sustenance of polyandry marriage system and given the scarcity of resources, limited opportunity to improve the economic wellbeing and sub-division of property, the polyandry has emerged as biological, economic, and ecological compulsion for the pastoralists of Lachung valley.

## Introduction

The evolution and institution building of every society depends on the economic, political, social, and cultural factors of a region. The admixture of all these factors in turn shapes a new society with its own socio-economic, cultural-politico specificities. Thus, as economic factors being the measures of the basic needs of a societal change, it influences every other factor to bring in concomitant changes in non-economic factors resulting in a cycle of changes among societies across regions. If marriage is an institution, it is obvious that

marriage institutionalizes relationship between males and females (Murdock, 1949; Stephens, 1963; Lee, 1982). Modern development discourse, though changing continually, remain unclear regarding diversity of marital, familial, and related social arrangements.

A cursory look at human civilisation adequately reveals that a man with wealth preferred multiple wives, and this practice is termed as polygyny. According to Murdock's *Ethnographic Atlas* (Hartung, 1982), among 1170 societies, this practice was prevalent among 850 societies. Economists argued that a male with more resources preferred multiple female partners in comparison to male with lesser wealth. Inequality in wealth generates inequality in the number of wives (Becker, 1991; Boserup, 1970; Grossbard, 1976). The literature in the economics of marriage is limited and bounded. (Jacoby, 1995; Becker, 1991; Boserup, 1970; Goody, 1983), within the realm of an agrarian setup showed that polygyny is positively related to the increasing productivity of women in output markets. (Becker, 1991), further added that the difference between the marginal productivity of men and women in the production of children rises with development, which reduces polygyny in advance countries. The decline in polygyny with the decline in male inequality was highlighted by (Lagerlof, 2003; Kanazawa & C.Still, 1999). The level of polygyny was explained by using imbalanced sex ratio which might be an outcome of natal sex ratio, the capturing of female slaves, male labour migration, the higher male mortality rate from disease, warfare, and dangerous occupations such as hunting and fishing (White & Burton, 1988). (Betzig, 1991) and (Alexander, 1974) preferred to correlate monogamy with development, egalitarianism, and social solidity, which is a requirement of modern industrialized economy.

However, how monogamy prevailed over other terms of marriages has remained unanswered. Economists, by introducing the concept of a skilled wife and demand for rearing skilled child at a lower cost have tried to resolve the issue of monogamy in a competitive marriage market of a developed economy (Gould Eric, Moav, & Simhon, 2008). Industrial revolution in Great Britain and Europe, the transition from feudalism to capitalism (Betzig, 1995), urbanisation and emergence of cities, emergence of well-defined private property rights and inheritance law, and evolution and expansion of Western modernity made the other forms of marriage systems redundant and monogamy emerged almost universally in the marriage market of advanced economies.

Hitherto, modernity and marriage-(as social arrangements)-overtly accepted monogamy backed by a legal and moral framework. 'Polygyny was treated as reasonable (even enviable)', and society covertly accepted polygamy.

However, 'polyandry has been treated as misleading at worst and ambiguous at best (Berreman, 1980)'. Polyandry is considered as unusual, precisely devoid of morality and does not constitute a form of marriage (Fischer, 1952; Kephart, 1981; Lee, 1982; Eshleman, Allyn, & Bacon, 1985). However, polygyny - an indicator of male sexual promiscuity - has never been questioned, rather treated as legitimate marriage by the scholars who routinely rejected polyandry (Levine & Sangree, 1980).

### **Prevalence of Polyandry and the Objective of the Study.**

It is noted that there are 28 polyandrous societies located in the area of the Himalaya Mountains touching upon India, Nepal and Tibet as well as the Marquesas Islands in the South Pacific (Starkweather & Hames, 2012). More precisely, the societies who practice polyandry are the Tibetans (Lowie, 1925; Linton, 1936; Opler, 1943; Malinowski, 1962; Peter, 1963; Stephens, 1963; Goldstein M. , 1978; Levine & Sangree, 1980; Lee, 1982; LiU-Shen-Chi & Tsung-Lien, 1953; Peters, 1982; Peters & Hunt, 1975; McLennam, 1970; Ross J., 1984); the Todas of Southern India (Lowie, 1925; Linton, 1936; Murdock, 1949; Kardiner, 1939; Opler, 1943; Malinowski, 1962; Stephens, 1963; Nimkoff, 1965; Levine & Sangree, 1980; Lee, 1982; Murdock 1934, 1949; Rivers, 1967; Köhler & Milstein, 1975), and the Marquesans of Polynesia (Kardiner, 1939; Opler, 1943; Murdock, 1949; Peter, 1963; Stephens, 1963; Levine & Sangree, 1980; Lee, 1982; Handy, 1923). Two Brazilian societies, the Kaingang (Stephens, 1963; Henry, 1941) and Shirishana (Peters & Hunt, 1975; Peters, 1982; Lee, 1982) practice polyandry discretely. The Paharis of Nepal also fall in this category (Berreman, 1980; Lee, 1982; Goldstein M. , 1978).

Westermarck in 1926, first tried to identify various determinants of Polyandry such as skewed sex ratios, resource limitation, geographical circumscription, and prolonged absence of husband from home. The Tibetan fraternal polyandry which is the most widely researched has been dictated by the rationale of preserving and increasing productive resources of the families across generations. As pointed out by (Goldstein M. , 1978; Beall & Goldstein, 1981) polyandry allows maintaining the concentration of labour and precludes the division of a family's land and animals among the 'male coparceners.' Harsh environment, finite resource base, limited production possibilities, self-sufficient scattered settlements, and agro-pastoral subsistence level of economy and incapacity to sustain high population prompted them to adopt social customs such as polyandry and monastic life (Chatterjee, 1987). There is a huge contradiction, which prevails in the occidental way of looking at development and social structure including marriage as an institution and

oriental way of life. Western scholars exceedingly failed to perceive that 'the identification of the genetic father is usually not as important in non-industrial cultures' of the East 'as in the industrial societies' of the West. Determination of a child's kin group membership is important. In the process, the child will automatically be placed 'in the web of interlocking rights and obligations'. Therefore, identification of biological father becomes insignificant (Cassidy & Lee, 1989).

Therefore, polyandry is still a social reality and does coexist, though among a minuscule number of societies, with the dominant marriage system of monogamy. An attempt has been made to verify the sustainability of polyandry in Lachung valley of Sikkim, India which is located in Eastern Himalaya. A mathematical formulation has been made based on secondary data sources, on-the-spot observations, and anthropological references to test the plausibility of the continuation of polyandry system in Lachung.

### **Lachung Valley of Sikkim**

The area of study is Lachung valley of North District of Sikkim (Figure 1). Sikkim is a small mountain state and is located in the Eastern Himalayas. Prevalence of polyandry in Lachung has a close link with the Tibetan fraternal polyandry. The linkage between the Tibet and Sikkim was established way back in fifteenth century. A fleeting glance at the early history of Sikkim revealed that Sikkim before the beginning of the seventeenth century was under the complete domination of migrant Tibetans. The Lepchas and Limboos - the original inhabitants of Sikkim- were marginalised culturally and partially economically by the Tibetans. The process was started before the fifteenth century. However, it gained momentum in the late fifteenth century. Among the early immigrants, Tibetan graziers and lamas who belonged to the 'Red Hat' or Nyingmapa sect were the first to reach Sikkim. Graziers were in search of new grazing pastures, and Tibetan lamas were on a mission to spread Tibetan Buddhism in Sikkim (Chakrabarti, 2012). Pastoralists of Lachung valley are the descendant of Tibetan graziers, and a small segment is still in the realm of polyandry marriage system.

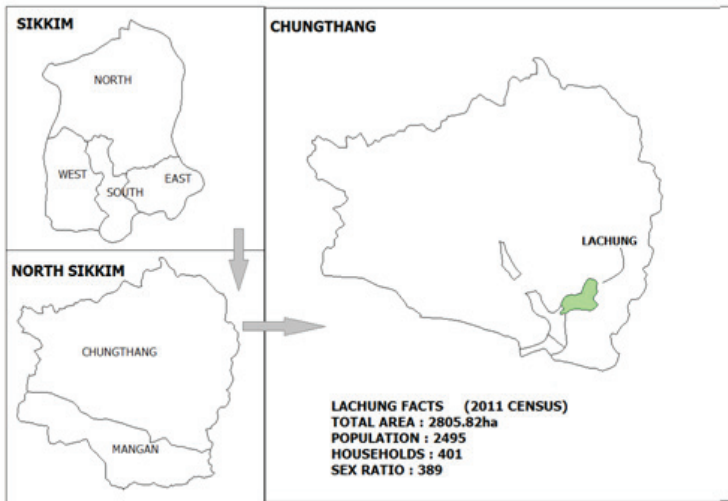
The state is administratively divided into four districts: North, East, West and South. North district is the largest in the area and the least populated. The State of Sikkim is surrounded by vast stretches of the Tibetan plateau, with Nepal on the west, Bhutan and Chumbi valley of China (Tibet Autonomous Region) on the east and Darjeeling District of West Bengal in the south. Being a part of the inner ranges of the Himalayas, Sikkim is entirely a hilly and land-locked state (Chakrabarti, 2009). The topography of Sikkim is characterized

by great variation in elevation, ranging from 250 m to 8,598 m. North Sikkim occupies an area of 4226 sq-km, about one-third of the total geographical area of the State. The total population of the district stands at 41030, which is around 8 per cent of the State's population (Census of India, 2011). Among them, the majority of the people belong to the Bhutia community. North district has two sub-divisions – Chungthang situated at an elevation of 5150 ft. and Mangan, which is also the district headquarter at an elevation of 3960 ft.

Further up, northwards, on the east, 51 km away from Chungthang, the valley of La-chung is located at an elevation of 8160 ft. The inhabitants of Lachung recognise themselves as La-chungpas (Lall & Modie, 1981). The area is thinly populated because of inhospitable terrain characterized by very steep slopes and high mountains with dense forests accompanied by rocky cliffs covered with snow. In Lachung, which is having a population of 2495 (Census of India, 2011), around 30 per cent people are involved in pastoral activities and live a sedentary life. Many of these families are polyandrous. Resource scarcity, especially low availability of agricultural land (Table 2), and much-skewed sex ratio are the two most important attributes that the Lachung valley is experiencing over time. As per Census 2011, the sex ratio of Lachung is 389 (Table 1) which is abnormally low in comparison to the State of Sikkim and India.

This sex ratio has been used as major precursor in the mathematical formulation to prove the sustainability of polyandry marriage system in Lachung valley.

Figure 1: Sikkim and Lachung Valley



**Table 1. Changing Sex Ratio Among the Districts of Sikkim and Lachung**

DISTRICT/YEAR	1971	1981	1991	2001	2011
East	791	797	859	844	873
West	937	906	915	929	942
North	853	789	828	752	767
(Lachung)	(NA)	(NA)	(NA)	(406)	(389)
South	909	854	892	927	915

Source: Census of India, various years

Note: Sex ratios of Lachung of North Sikkim have been shown in parentheses.

**Table 2. Distribution of Total Geographical Area Among the Districts of Sikkim (In Percentage)**

DISTRICT/AREA	East	West	North	South	Total
Total Geog area	13.4	16.4	59.6	10.6	100
Total area under forest	10.3	14.4	68.4	6.9	100
Area under agriculture	30.8	29.1	13.5	26.7	100
No. of Landholdings	38.5	27.3	9.7	24.5	100

Source: Sikkim: A Statistical Profile 2004-05, Directorate of Statistics, Monitoring & Evaluation, Government of Sikkim

### Livelihood Pattern of the People of Lachung Valley.

Around one-third of people, mostly belong to Bhutia community derive their livelihoods from agro-pastoral activities. The pastoralists of Lachung valley practised seasonal cyclic movements, where herds and herdsman together move from lower altitude to higher altitude during summer and come down to lower altitude during winter. Pastoralists in Lachung have two-pronged strategies to earn their livelihoods. First, they churn milk for butter and curdle it for cheese (*churpi*). Dehydrated cheese (*supari*) is sold in the market. For pastoral people of Lachung, yak, a multi-purpose animal yields valuable products - milk (maximum 1 kg per animal), meat (200- 300 kg per animal), fur, dung manure, hides, and the like. Sale of yak and sheep also helps them to earn. A sale of yak generally brings Rs. 4000-8000 and a sheep bring around Rs. 600-1000. The fur of yak from different parts of the animal is used for different purposes - belly fur for making tents, moulted fur for tents and ropes etc. Horns are used as decorative showpieces. Animals are their only source of income with no other avenue for additional earnings. Smoke-dried meat is also preserved for winters to supplement the food requirements when heavy snowfall renders the area inaccessible to the rest of Sikkim.

On the other hand, women who stayed back grow a potato, wheat, barley

in mid-winter and cabbage, pea, radish etc. in summer to meet their food requirements. Therefore, their earnings only ensure low-level subsistence. With this backdrop, the following mathematical formulation has been made.

### **The Possible Explanation of Low Sex Ratio**

The polyandry had been observed among Tibetan groups (Goldstein M. , 1976; Goldstein M. , 1978; Ross J., 1984; Crook & Crook, 1994; Childs, 2003) and declined fertility levels in Tibetans were also found (Goldstein M. C., 1981). The sex ratio of a population displaying a pivotal function because of its influence on births, deaths, and marriage and the other way round which might originate many problems such as social, health, and behavioral problems (Gautam R., Jhariya, & Kumar, 2015).

Behavioral, socio-cultural and economic stand points play characteristic determinants to human population from which observational studies have been performed to procure data (Vitzthum & Wiley, 2003). Non-pregnant women residing at sea level had a lower progesterone levels during the luteal phase of the menstrual cycle in comparison with non-pregnant indigenous women habitat at a high altitude (León-Velarde, et al., 2001). Acute hypobaric hypoxia causes higher plasma progesterone concentrations of women during the luteal phase (Takase, et al., 2002). The lower fertility detected at a high altitude and when defective follicles ovulate it leads to the lower fertility (Viñoles, et al., 1999). Oxidative stress related to hypoxia without implementation of antioxidant vitamins affects anatomy and function of corpus luteum (Parraguez, et al., 2015)(Parraguez, et al., 2013).

Maternal and fetal hypoxias have been observed during development of pregnancy causing risk of intrauterine growth retardation (IUGR) (Kramp, et al., 2000). Incidence of IUGR occurring at high altitude might be resulted from socio economic aspects (Jensen & Moore 1997; Giussani, et al., 2001; Mortola, et al., 2000). IUGR is approximated at 6.0% at low altitude area whereas IUGR is calculated at around 17% at high altitude area (Keyes, et al., 2003).

Hypoxia related to oxidative stress at the time of early pregnancy accomplishes through phagocytic activity of the trophoblast (Schilesinger & Koren, 1975; Pavia, 1983). Reactive oxygen species conciliate phagocytic activity of the trophoblast (Gagiotti, et al., 1996). Embryo development might be influenced by excessive oxidative stress (Herrera, et al., 2014). The high altitude hypoxemic environment for long and short-term exposures originates disorders in maternal ovarian steroidogenic function that influence embryo-fetal growth at early pregnancy stages adversely (Parraguez, et al., 2015).

Low sex ratio or adverse sex ratio is probably one of the determinants



of having a kind of polyandry marriage system in some parts of high altitude area. The low sex ratio acts like a precursor in polyandry marriage system in those areas. Surprisingly female population lies within 300 to 400 in number in comparison to 1000 males in those high altitude areas. There might be some possible reasons for prevalence of such data. There might be some socio-economic, cultural, behavioral, and physiological as well as biological reasons behind the incidence of declined number of females in community residing in high altitude but due to inadequate extensive field study of high altitude population it is not possible to substantiate concrete explanation. On field studies are required for proving the findings.

### Mathematical Formulation of a Polyandry System

A simple algebraic model has been developed to prove the sustainability of polyandry system, and the assumptions have been made from the outcome derived from secondary data sources, on-spot observations, and anthropological references.

For the simplicity of the model and is known that the polyandrous people are having low fertility, it is assumed that each wife in polyandry society unskilled and is producing a single child with no expectation of acquiring skills in future and they do not earn on their own. The sex ratio remains extremely adverse over time, and hence it is assumed that the ratio of a female in comparison to male is much less than one. Polyandrous families reside in high altitude with limited land available for cultivation and having the very low opportunity cost of land, since they solely depend on pastoral activities with the limited market accessibility of their produce, the present income level and bequeathed income at a very low level. It is further assumed that consumption does not change with changes in income or average propensity to consume (APC) and Marginal Propensity Consume (MPC) remain almost constant. Hence, consumption is highly income inelastic.

$\beta M = F$  such that  $\beta \leq 0.4$  (Since sex ratio stood at 389 as per 2011 census)

$\alpha =$  Ratio between female (F) and male (M)

A man's total income or expenditure is denoted by  $I$  and can be expressed as

$$I = c + n(y + b) \quad (1)$$

$c$  and  $y$  are consumption expenditure of one man and each of his wives.

$n$  is number of wives he marries.

$b$  is the bequest received by men from his parents and represents a physical transfer of resources to the children of each wife. From Equation 1, we can write



$$n(y + b) = I - c \quad (2)$$

In this model,  $b$  is very low, since pastoralists are surviving on the very low level of income and therefore, inherited wealth is bound to be low. Since wives do not earn and since they are producing unskilled children, therefore, bequeathed income is very low or zero will not be spent on children for acquiring the skill. Therefore, the wife's income is nothing but the consumption expenditure incurred by the husband, so wife's income can be written as follows:

$$y = b + c$$

As  $b \rightarrow 0, y \rightarrow c$  or  $y = c$

The equation (2) can be rewritten as

$$nc = I - c$$

$$\text{Or, } n = \frac{I}{c} - 1$$

$$\text{If } n \geq 1, \text{ then } \frac{I}{c} - 1 \geq 1$$

$$\text{or, } \frac{I}{c} \geq 2$$

Therefore,  $I \geq 2c$

The above result shows that if the income of a man becomes twice the consumption expenditure he incurs, then he may have at least one wife or more. This possibility is ruled out because the pastoral people survive on a very low level of subsistence income with a narrow consumption basket. Therefore, the likely scenario to prevail is  $n < 1$  and  $I < 2c$ . This implies that polyandry to sustain and the possibility of monogamy or polygamy to occur is very low.

To substantiate that polyandry system is most likely to sustain, two extreme situations are considered. First, there are only unskilled men and unskilled women exist within the society, and second both skilled and unskilled men exist, and women are all skilled and unskilled men are not going to get wives except the skilled men and in both the cases, sex ratio continues to be much less than one. Will polyandry break down or can polyandry move towards monogamy?

**Proposition 1:**

In a polyandry system, the unskilled man who is having no intention to have a skilled wife and children will continue to have wife less than one in number if the prevalent sex ratio continues to remain much less than unity; in other words, polyandry will sustain.

Extending the model by assuming a situation that unskilled man will get an unskilled wife and will produce unskilled child ignoring the presence of skilled male and skilled female and possibility of having a skilled child, the equation can be written as follows:

$$\Theta n_{iu} + (1 - \Theta)v = \beta \text{ [where } \beta \leq 0.4 \text{]} \text{-----(3)}$$

$\Theta$  = Proportion of skilled husband and this implies that  $(1 - \Theta)$  is the proportion of unskilled husband.

$n_{iu}$  = number of women with skill level  $i$  that skilled man may marry, and they will produce an unskilled child

$v$  = the number wives an unskilled man marries and produce an only unskilled child

Assuming that no wives are skilled, i.e.  $n_{iu} = 0$ ;

Equation 2 will become

$$(1 - \Theta)v = \alpha$$

$$v = \frac{\alpha}{(1 - \theta)}$$

$$\text{If } \frac{\alpha}{(1 - \theta)} < 1$$

$$\alpha < (1 - \Theta)$$

Since  $\Theta$  is low,  $(1 - \Theta)$  is high; hence it is natural that  $\alpha < (1 - \Theta)$  holds.

This implies,

$$v < 1$$

In other words, each male will get less than one wife. Hence, it is proved that if sex-ratio continue to remain low, as it is found in Lachung where sex ratio  $\alpha \leq 0.4$ , polyandry will remain a reality if a situation that unskilled man will get an unskilled wife and will produce unskilled child persists.

**Proposition 2:**

In a polyandry system, if both skilled and unskilled male exist, and women are all skilled and unskilled males does not get wives, if only skilled men get skilled wives, then also skilled men will get wives less than one if the prevalent sex ratio continues to remain much less than unity; in other words, polyandry will sustain.

$$\Theta n_{iu} + (1 - \Theta)v = \beta \text{ [from equation 3]}$$

Assuming unskilled man is not going to get wives, we can put  $v = 0$  in the above equation and it can be rewritten as

$$\Theta n_{iu} = \alpha$$

$$n_{iu} = \frac{\alpha}{\Theta}$$

The fraction of skilled male ( $\Theta$ ) is small, but sex ratio ( $\alpha$ ) is smaller, i.e.  $\alpha < \Theta$  or  $\alpha < (1 - \Theta)$ .

Therefore,  $n_{iu} < 1$  and this implies that before all skilled men are getting skilled wives, skilled female shall be exhausted and part of skilled men and all unskilled men will not get any wife. The conclusion follows that part of skilled men and all unskilled men will remain unmarried or they have to be part of polyandry system.

Now let us consider a relatively likely scenario fraction of female in comparison to male ( $\alpha$ ) is greater than unskilled married men ( $1 - \Theta$ ) and less than skilled married man ( $\Theta$ ), i.e.

$$\Theta < \alpha < (1 - \Theta)$$

[Or,  $(1 - \Theta) < \beta < \Theta$ , this will be just the symmetric case; we will however use the first case].

Diving both sides of equation (3) by  $\alpha$

$$\frac{\Theta}{\alpha} n_{iu} + \frac{(1 - \Theta)}{\alpha} v = 1 \tag{4}$$

Replacing  $n_{iu} = A_1$  and  $v = A_2$  in equation [ this is for algebraic convenience],

$$\Theta A_1 + (1 - \Theta) A_2 = \beta \tag{5}$$

Dividing both sides of equation 5 by  $\alpha$ ,

$$\frac{\dot{E}}{\dot{a}} A_1 + \frac{(\dot{E}^-)}{\dot{a}} A_2 = 1 \quad (6)$$

Let us call

$$\frac{\dot{E}}{\dot{a}} = r_1 \text{ and } \frac{\dot{E}^-}{\dot{a}} = r_2$$

Then eq (6) becomes:

$$\frac{r_1}{r_2} A_1 + A_2 = \frac{1}{r_2} < 1 \quad (7)$$

Thus we get the important relation:

$$\frac{1}{r_2} < 1 \quad (8)$$

Since,  $\frac{(\dot{E}^-)}{\dot{a}} > 1$ , hence  $r_2 > 1$  or  $\frac{1}{r_2} < 1$ , this was also a natural expectation from given relations.

Also,  $A_1, A_2$  are all  $> 0$ .

Hence  $A_2 < 1$ .

Now let us see the significance of the above deductions.

Let us try with a small value of  $A_2$ , say 0.2.

Then, from eq (7), we get:

$$\frac{r_1}{r_2} A_1 < 1 - 0.2 = 0.8$$

Now  $A_1$  will be  $\geq 1$  if  $\frac{r_1}{r_2} \leq 0.8$ .

That is to say, for every unskilled person if there is less than or equal to 0.8 skilled people, then only every skilled person will not be involved in a polyandrous relationship.

It seems quite possible, but then this is only valid for a precondition, where  $A_2$  is very small, i.e., the number of wives married to an unskilled man is very less; which may be an unrealistic situation.

The more realistic situation is where  $A_2$  is much higher, say 0.4. In that

case for a skilled person to avoid a polyandrous relation, the ratio between the skilled and unskilled person has to be  $\leq 0.6$ . It may not be a reality in a general case.

Now from eq (7), we have:

$$\frac{r_1}{r_2} A_1 + A_2 = \frac{1}{r_2} < 1$$

$$\text{Or, } \frac{r_1}{r_2} A_1 < (1 - A_2)$$

$$\text{Or } A_1 < (1 - A_2) \times \frac{r_2}{r_1}$$

Now,  $A_1 < 1$ , only if :

$$\frac{r_2}{r_1} < \frac{1}{1 - A_2} \quad (9a)$$

$$\text{But, } \frac{r_2}{r_1} = \frac{1 - e}{e} \text{ [from the definition of } r_1 \text{ and } r_2 \text{]}$$

Hence from equation (9a), we get:

$$\frac{1 - e}{e} < \frac{1}{1 - A_2}$$

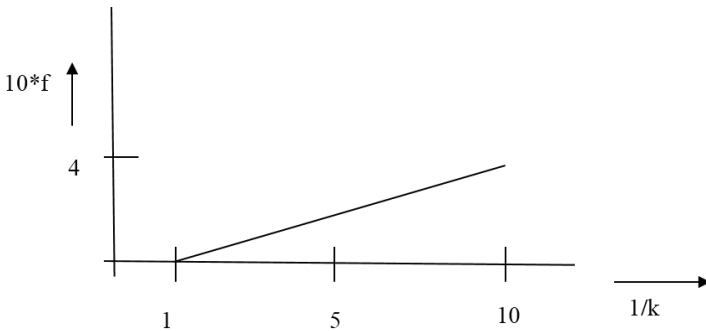
$$\text{Or, } 1 - e - A_2 + A_2 e < e$$

$$\text{Or, } (1 - A_2) < 2e + A_2 e$$

$$\text{Or, } e > \frac{1 - A_2}{2 + A_2} = \frac{\frac{1}{A_2} - 1}{\frac{2}{A_2} + 1} = f \text{ (say)} \quad (9b)$$

The variation of (10\*)f against various values of is shown in the Figure2 below.

Figure 2: Variation of "F" With "K"



We see from the figure that for the lowest value possible  $\frac{1}{A_2}$ , i.e., when  $A_2$  is 1,  $f$  is 0. As  $\frac{1}{A_2}$ , increases and reaches a reasonably high value 10 (for  $A_2 = 0.1$ ),  $f$  is 0.45. Hence for a wide ranging value of  $\frac{1}{A_2}$ , value of 'f' stays bounded within small intervals. Hence  $e$  can always be made  $> f$ , and hence from equation (9a),  $A_1$  can be made  $< 1$ .

### Conclusion

The paper concludes that sex ratio is one of the most important attributes for the sustenance of polyandry system. If the prevalent sex ratio continues to remain much less than unity and unskilled man who does not have a desire for skilled wife and children, polyandry system will sustain. If it is assumed that both skilled and unskilled male exist and women are all skilled and unskilled males do not get wives, and only skilled men get skilled wives, which is an unlikely scenario for the pastoralists of Lachung, then also skilled men will have to enter into polyandry system. Given the scarcity of resources, limited opportunity to improve the economic well-being and sub-division of property, the polyandry is a biological, economic and ecological compulsion for the pastoralists of Lachung valley. Improvement of skill, which is an offshoot of the modern development process, is unlikely to change the scenario unless the number of females per thousand males increases and reaches closer to unity. However, at the hind side, the serious question is to be raised regarding modern development discourse and its failure to encompass the marginal people who are living in the margin and bounded by a traditional socio-cultural system which has been discarded by the institutions of modernity.

### *Endnotes*

1. According to Gerald Berrman (1960:774), ‘the lower Himalaya mountains between Western Kashmir and eastern Nepal are populated by peoples sharing common and distinct cultural, linguistic, and historical traditions. The population of this area, collectively termed pahari (“of the mountains”)’
2. Sex ratio implies the number of females per thousand males.
3. According to Census of India, 2011, the sex ratio of India is 940.

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