Dynamics of Subsistence and Reproduction among the Majangir: Preliminary Report on Demographic Reconstruction[1]

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1. Introduction

The purpose of this paper is to show fertility and its change among the Majangir, shifting cultivators living Southwestern Ethiopian forest (Gambela, SNNPR and Oromiya Region) and to discuss factors which influence them. The author has conducted research on life history among the Majangir since 2002 to 2007, and collected data on births and deaths, marriages and marriage dissolutions, and moving histories of males and females who were born since 1900. Among these data, I pay special reference in this paper to childbirth histories of 204 females born during the 1900s-1970s to examine (1) general pattern of females' fertility since early 20th century and (2) temporal dynamics of fertility, especially before and after villagization, then place (3) their fertility pattern in comparison with other small scale societies in the world, and consider (4) historical context and factors which influence their fertility pattern.

How different are childbirths patterns of small scale societies such as hunter-gatherers or shifting cultivators from sedentary agriculturalists or modern industrial societies? When do women in small scale societies generally start to give birth and how many children do they have in their life? Although there are several detailed case studies, many questions on their general patterns and variations among societies are not solved yet. Especially, disputes has been continuing about questions on whether fertility differ or not among hunter-gatherers, horticulturalists and intensive agriculturalists or whether or not sedentary life change childbirth patterns, or ultimately, what factors influence fertility most. This paper keeps these disputes in mind and pays special attention to socio-economic factors including settlement patterns or

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sedentarization.

As for hunter-gatherers, pioneering study of Howell (1979) on demography of the !Kung (Bushmen), and biologically sophisticated study of Hill and Hurtado (1996) on Ache in Paraguay are well-known. Contrary to former image on hunter-gatherers in which each woman gives a lot of births among which few children survive, Howell showed a real condition of the !Kung demography in which the total fertility rate[3] is no more than 4.7. In contrast, Hill and Hurtado described very different demographic pattern of Ache people in which TFR is as high as 8.1 and occasional population crush cause damage to its demographic structure. What factors cause the difference, and to what extent we generalize these results as demographic patterns of small scale societies are not yet clear.

Despite of accumulation of studies on the relationship between subsistence and fertility during the recent two decades, it doesn't appear to reach a conclusion to date. Campbell and Wood (1988) made statistical analyses on fertility of tens of sample societies and concluded correlation was not found between subsistence and fertility. Hewlett (1991) also stated that although there was a difference between foragers and shifting cultivators/pastoralists, it was not statistically significant. Bentley *et al*. (1993a; 1993b), on the other hand, argued there was a significant difference between agriculturalists and other subsistence (foragers and horticulturalists) if ambiguous samples were excluded (Table 1). Sellen *et al*. (1997) in which they made statistical analyses considering historical relationship among populations to solve the 'Galton's probrem' showed an interesting result that 10% up of dependence in subsistence on agriculture makes 0.4 up of TFR value.

Table1: TFRs of foragers, horticulturalists and agriculturalists

Subsistence Regime	Mean value of TFR	Range	n
foragers	5.6	3.5-7.9	12
horticulturalists	5.4	3.0-6.9	14
agriculturalists	6.6	3.5-9.9	31

(Source: Bentley *et al*. 1993b: 779)

There are also unsettled disputes on relationships between fertility and settlement patterns. Although Lee (1972) and Roth (1985) pointed out that sedentarization of foragers and nomads raises fertility, Hewlett (1991) states sedentarization itself doesn't correlate to fertility.

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[3] Total fertility rate (TFR) actually equals to the average number of children each woman has in the population.

Kramer *et al*. (2005), based on biological theory of life history, recently made interesting discussion that it is not sedentarization or agriculture itself but children's contribution to family budgets that influence fertility.

These argues on definitive factors on fertility has been mainly made based on statistical analyses of many sample populations, but to examine them exactly, it is necessary to prepare detailed information of sample population about several factors which may influence demographic patterns. When we discuss sedentarization, for example, we need to consider many immediate factors such as changes of nutritional condition, disappearance of causes pressing settlement moving, changes of marriage and divorce patterns which could influence fertility increase strongly.

To solve these problems, I have been collecting life history data of the Majangir people who have experienced great socio-political changes since the early 20th century by long interviews to them. Using these data to show fertility of different generations and crosscheck them with historical context, this paper makes a preliminary examination on factors deciding fertility of the Majangir.

2. The Majangir

The Majangir is one of surmic groups who live in Southwestern forests. Their habitation area ranges from South of Gurafarda to small forest around Metu. High trees such as *Aningeria altissima*, *Cordia africana*, *Celtis zenkeri* characterize forests they live. They extract many kinds of resources from forests, being engaged mainly in swidden agriculture, honey collecting which targets lots of honey plants, and hunting of forest animals such as bushbucks, duikers and bush pigs.

Before late 1970s, they had traditionally opened forests for small settlements consisting of only a few households and often moved to another places abandoning settlements after several years to decades of years (Stauder 1971). Their resettlement had both patterns in one of which only one or a few households in the settlement moved, and another of which all members of the settlement moved (namely, complete abandonment of the settlement). There were several causes which resulted in complete abandonment of settlement, and typically they were caused from various kinds of social friction: deaths of *tapa* who were ritual experts and regarded as having peace keeping power; raiding from neighboring ethnic groups; conflicts between clans; sorcery (Sato 2003).

Especially before the mid 20th century, the Majangir had been put in condition with many social insecurity such as raiding, slave capture and blood revenges among intra-ethnic clans. Settlement

abandonment on the occasion of deaths of *tapa* also means people would come together in the places where powerful *tapa* lived because they were believed to keep peace. One of people's primary desires was to live peacefully without encountering any conflict or disease. Although frequency of raiding decreased and slave captures ceased up to 1960s, conflicts among clans often caused settlement abandonment yet.

Emergence of the Derg government in 1970s changed conditions around the Majangir greatly. One of the greatest was their acceptance of villagization policy in the late 1970s. They made several administrative villages in the forest which typically consists of hundreds of people. In Godare wäräda, where I have been continuing observation since 1992, villagization started in 1978, several sedentary villages was made and village head was appointed in each village. At the same time as villagization process, people accepted evangelical Christianity and made churches in the center of villages (Sato 2002). Primary schools were set up in several villages in the mid 1980s. Though schools were closed in the late 1980s because of the civil war, they were reopened in 1994 and the tide of socio-political change has been basically continuing up to the present. In Kumi village where I conducted research, there are a primary and junior high school and a clinic now. In 2000 weekly market started in the village and people's dependence on market economy has greatly been increasing.

3. Methods of data collection

Samples of this analysis are females of the Majangir who live in Kumi administrative village, at present one of administrative villages in Godare wäräda, Gambela Region. Since the mid 1990s, population in Kumi village has been greatly increasing as a clinic and a junior high school were found.[4] I excluded recent immigrants from other villages and settlements many of whom moved to go to school, and dealt with people who had been in Kumi or neighboring settlements before villagization, or their close relatives. In fieldwork of about four months during August 2002 and March 2007, I conducted long interviews duration of which is approximately 15 minutes to 90 minutes individually, to ask life history information such as marriage and marriage dissolution, childbirth and migration as well as the same kind of information of parents, grandparents, brothers and sisters. I have interviewed about 450 people of both sexes to date, and adding reliable data about their sisters and brothers, I made life history files of about 770 people. In this paper, I use

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[4] According to the census, population of Kumi in 2003 is 1435 including immigrants from highlands while 523 in 1994.

the data of about 290 women born before 1990 who already reached their reproductive periods.

As I mentioned above, acceptance of villagization in the late 1970s was an epoch-making event which caused great socio-political change in the Majang history since the early 20th century. So when we examine their fertility and its temporal dynamics, we must consider to what extent reproductive period of each woman overlaps to that of villagization to verify how villagization influenced fertility. Table 2 shows relationships between generations and villagization.

Table2: Classification of generations

Year of birth	Number of samples	Reproductive period	Possibility of influence of villagization on reproduction
1900-1939	29	already passed	no
1940-1944	17	already passed	partly yes
1945-1949	23	already passed	partly yes
1950-1954	6	already passed	partly yes
1955-1959	21	already passed	partly yes
1960-1964	30	nearly passed	yes
1965-1969	35	not yet passed	yes
1970-1974	23	not yet passed	yes
1975-1979	20	not yet passed	yes
1980-1984	53	not yet passed	yes
1985-1989	34	not yet passed	yes
total	291		

One of the most difficult problems to solve in demographic reconstruction of small scale societies is age estimation. As in cases of many small scale societies that had been relatively autonomous from modern states, there is no document which record childbirth of the Majangir. To solve the problem, at first I tried to complete relative age lists of each generation. During interviews I asked informants about relationships between their own ages and those of people who were brought up in the same or neighboring settlements. I also asked several senior people who lived in the same area and know childhood of informants well. They express two or more people who were born in the

same year and brought up together in the same settlement as '*saakom* (the same generation)' or '*kaar agut omong* (going together)'.

Contradictions are often found in their statements. For example, some people say 'Alajar is older than Kusiyen', 'Kusiyen is older than Tabakune' while others say 'Tabakune is older than Alajar'. In those cases, I documented all the statements people did and finally made a relative age lists as there are least contradictions.

At the same time as I made those lists, I also made a list of events which I could identify exact years they happened and checked them with birth time of informants to specify their birth years. For example, an anthropologist Jack Stauder lived in Gelese settlement near Kumi to conduct a fieldwork during September 1965 and September 1966. An woman who was memorized to be born then and to be a small infant crawling during Stauder's stay is estimated to be born in 1965. These age estimations are to be relatively unreliable as going back to the past, especially time before the Italian conquest.

Another problem of life history investigation is uncertain memory about childbirth. In most cases mothers can remember their own records of childbirth exactly, but there is still uncertainty about memories of childbirths who died in their infant age. They sometimes omit those children from their childbirth history. To improve the accuracy, I interviewed mothers and fathers separately, and when possible asked uncles and aunts, sisters and brothers as well to crosscheck later. When I found contradiction of data, I made an interview again. Actually 52% of women who were samples of TFR analyses in this paper were interviewed twice or more.

4. Fertility of the Majangir in 20th century

TFR (total fertility rate) is often used as one of the best index of fertility. TFR is a summarized index of period fertility and actually means the average number of children a woman has in her life. The value of TFR of 106 Majang women who were born before 1962 and can be regarded as completed their reproductive period is 3.6. This value is one of the lowest among those of small scale societies.

Figure 1 shows frequency distribution of the number of live birth each woman gave. The mode is four women (17.0%), and five women (4.7%) gave more than 10 live births on the one hand, there are 14 women (13.2%) who didn't give any birth on the other hand. Women who have no children are possibly primary sterility, but cause of low fertility of the Majangir cannot be attributed only to problem of fecundity because as many as 39 (36.8%) of them have only one to three children.

Figure1: Parity distribution of total live birth for the Majangir women who reached age 45
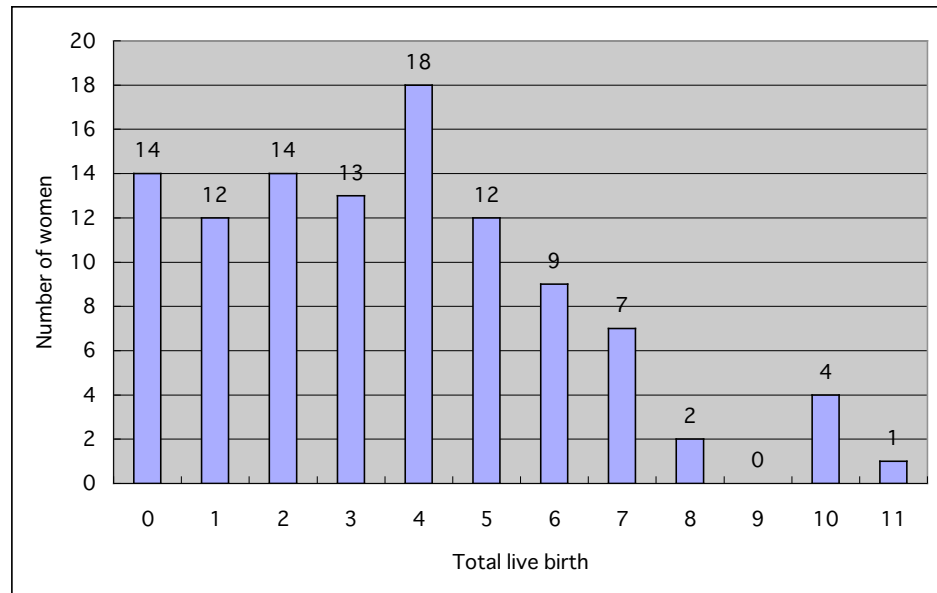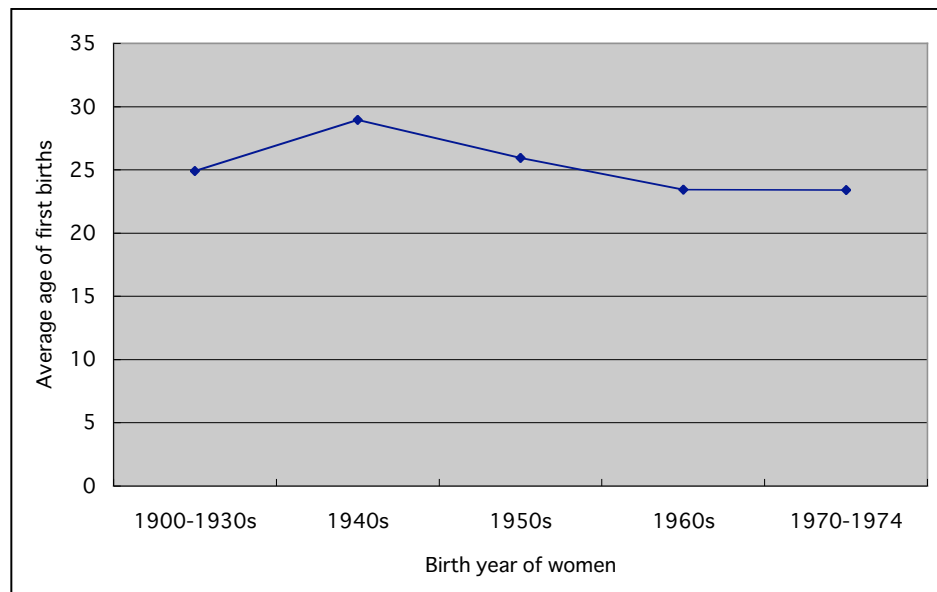

Figure2: Average age of first birth by generation

Next I show difference of fertility by generation. The problem is that it is insufficient to deal only with the data of women born before 1962 when we want to know whether or not fertility changed after villagization. To solve the problem, I dealt with distribution of age of the first childbirth in each generation. It is because age of the first childbirth is generally regarded as one of the factors which influence fertility most. Figure 2 shows the average of age of the first birth of each generation (The total average of all generations is 24.7 years old). It appears that age of the first birth was lowered after generations born after 1960s whose

reproductive period was overlapped with villagization. Actually, the result of Mann-Whitney U test showed significant difference between groups born before and after 1960. This indicates fertility possibly increased after villagization.

Although not indicated in Figure 2, I can add the data which suggest lowered age of the first birth in generations born after 1980 who were brought up in sedentary villages since their birth. Many Majang women of older generations married and gave the first birth after their age of twenty. For example, only five in 36 women (13.9%), who was born in 1970s and already gave birth, gave birth in their teenage. However, as many as 23 in 36 (63.9%), who were born during 1980-1984 and already experienced childbirth, gave birth in their teenage.

I compared fertility of the Majangir with those of some other small scale societies about which detailed research had been made (Table 3). TFR of the Majangir is the lowest and average age of the first birth of them are the highest among the four societies. Even the TFR of the !Kung, who are regarded as a type of low fertility hunter-gatherers, is 4.7. Considering that, some explanation must be necessary about causes of low fertility of the Majangir. But we should also keep it in mind that the average age of the first birth is especially high in women born in 1940s as well as there is a difference of TFR between women born in 1940s (TFR=3.3) and born in 1930s or before (TFR=4.6). It is unclear so far whether low fertility of the Majangir had been a normal state before early 20th century, or it was a specific state of a shorter period.

Table3: Comparison of TFRs and average age of first birth among small scale societies

Name of ethnic group	TFR	Average age of first births
Ache	8.1	19.5
!Kung	4.7	18.8
Agta	7.0	20.4
Majangir	3.6	24.7

(Source: Hill and Hurtado (1996); Howell (1979); Early and Headland (1998); the author's investigation)

5. Contexts of low fertility in the 20th century

I showed above values of TFR and average age of the first birth as data to examine fertility of the Majangir, but I should also pay attention to other factor which influence fertility, such as birth spacing. Majang people have some norms about reproduction and childcare. One

of them is sexual taboo after childbirth. They prohibit sexual intercourse during a few years after childbirth before weaning of the baby. They express 'the baby will be spoiled (*mojeng*)' if mother gets pregnant before her baby is weaned, especially in age of less than two. They say ideal birth interval is three to four years. It is unclear to what extent this norm had been kept. This norm must have been often violated because customarily men lead sexual negotiation among them. However many Majang men say that usually wives cannot reject husbands' request to make a sexual intercourse *except* the case in which the wife has a baby.

Is there any reason why they have such a norm? They point out need of quick moving as one of the reasons why adequate birth intervals are necessary. They say, 'a mother cannot move trails in forest having two babies or more' or 'How can we escape from Anywaa's raiding with several babies?' As I wrote above, they frequently abandoned their settlement before villagization, and in many of the cases it was because of social friction including raiding by Anywaa who live in neighboring savanna. If there was such a factor in the background of the norm, it may possibly change after villagization which decreased the frequency of rading.

We also consider issues of marriage and marriage dissolution as one of the causes of low fertility. In their society, divorces frequently happen. 56% of women born in 1950s, 66% born in 1960s, and 61% born during 1970-1974 experienced at least one divorce. Considering cases of losing spouses by death, very many women experience marriage dissolution. Though many of them married again, it is possible that lowered marital rate because of frequent marriage dissolution results in general low fertility among the Majangir. Examination of more exact data about marriage and marriage dissolution is necessary for this issue, and it is a problem to be solved in the future.

6. Concluding remarks

Based on the discussion above, I would like to state several points below as concluding remarks.

(1) Data both of TFR and age of the first birth showed very low fertility of the Majangir since early 20th century up to present. This can be said basically through all the generations, but when comparing before and after villagization, the average age of the first birth was clearly lowered after villagization, and we can guess increase of TFR as a result.

(2) As I reviewed in the first chapter, whether subsistence regimes or sedentism influence fertility is not clear and some researchers deny the correlation. But as Sellen *et al.* (1997) pointed out, there are several

problems in methods of past analyses, so we should pay more effort to detailed temporal analysis of a society to solve the problem. The result of examination in this paper supports the opinion that fertility increases with sedentism.

(3) Factors of low fertility of the Majanigr possibly include long birth interval. It might have been sustained by norms on sexual activity and childcare, frequency of marriage dissolution, late marriage.

(4) There was a social anxiety in the context of low fertility among them. Fertility increase after villagization might be happened because these problems has been partly solved through villagization.

Although I examined and discussed historical context of the 20 century among the Majangir as a background of low fertility of them, we also need to examine whether it is possible or not to explain it from other dimensions such as their life cycle. I suppose their patterns such as delayed marriage or reproductive regimes relate strongly to their developmental process and learning process of subsistence technology for forest life. I want to discuss later on this issue.

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