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**Gender asymmetry in household relationships
in a bilinear society: the Sereer of Senegal**

by

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Abstract

The mean size of households in Senegal, about 9 persons, is one of the largest in the world, and is by far the largest in DHS surveys taken in sub-Saharan Africa. The mean size of compounds, the residential unit, is even larger, about 14 persons. The study focuses on the structure of households and compounds, with special attention to gender asymmetry, among the Sereer, the second largest ethnic group of Senegal. The Sereer society is bilinear, where polygyny is widely prevalent. Data came from a census taken in 1983 in Niakhar, the site of a long-lasting demographic surveillance system covering a population of 30 villages. Three types of links were used at the census: children to mothers or caretaker, wives to husbands, other adults to the head of household or compound. This enabled to reconstruct biological units, and to explore the basic structures of the compounds. Results show that large Sereer compounds are built primarily with blocks of biological units (mother and children, usually with husband), and that these biological units are linked to each others in three ways: vertical (2 or 3 generations), horizontal (brothers and sisters), and oblique (uncle - aunt/nephew-niece and their children), the most common being the maternal uncle / uterine nephew link. The most frequent and most important quantitatively were the vertical structures, and the combination of vertical structures with others, underlying the strong agnatic base of the kinship system. However, in various instances the maternal side was shown to play a role, in particular by the presence of uterine nephews, and by the residence of young girls and never-married women with a matrilinear kin. A regression model allowed to quantify the contribution of each structure to the size of compounds. The effect of each structure was additive, each adding 3 to 4 persons on the average, and polygyny added similarly about the same number of persons. Results are discussed in light of the structural theory.

Keywords: household-size, household-structure, compound, kinship-system, bilinear-society, polygamy / polygyny, Sereer, Senegal, Niakhar, sub-Saharan-Africa.

Introduction

Size and composition of households and families have been the source of extensive debates in the social sciences literature. For instance Laslett (1972) argued that in most societies, from Europe to China, the family has always been small (3 to 6 persons on the average) and kin-based, that is the biological family and a few other persons. Goody (1972) develops a similar argument for Africa. However, Flandrin (1976) and Shorter (1977) report many instances of large families in Southern and Northern Europe, most of them agnatic, and many of them including servants not related by blood to the rest of the family. Furthermore, family structures varied significantly between urban and rural areas, and with social class, wealthier families and rural families being larger (Shorter, 1977). The record of large agnatic households in Europe seems to be held by the famous "Zadruga" of Serbia and the "Gesind" of Courland, where average family size far exceeded 10 persons (quoted for instance by Shorter, 1977). However, census data throughout the world have generally confirmed the overall statement of small mean size of households (Burch, 1967 and 1972), though with marked variations, partly because of variations in definitions, and partly because of complex kinship systems and polygyny existing in certain parts of the world, in particular in Africa.

Families as a residential domestic group (as opposed to family as a network of kins) do include three dimensions: a residential unit (people living together in the same dwelling), a consumption unit (people sharing the same budget, eating together), and a reproduction unit (husband, wife and children). Sometimes the production unit has been considered as a definition, but rarely implemented (Goody, 1972). In Europe and in most societies the three units are usually identical, although exceptions have been noted, such as the Zadruga in Serbia, and extended non-nuclear families in historical Southern and Northern Europe. In the Zadruga, the family could include three generations (the stem family) as well as married brothers and sisters, and, what was very rare in Europe, uncles and aunts.

The pattern of predominant nuclear family is not the most common in many societies of sub-Saharan Africa, where a residential unit (the houseful) may include several consumption units (the households), and several reproduction units (couples with children). In West Africa in particular, people often live in large compounds (residential units) separated in several households (kitchen or consumption units). Because of widespread polygyny and complex residence rules, a compound or a household may host many couples with children. In addition, universal and early marriage and natural fertility, which was the rule until recently, tended to further increase the size of households.

In Senegal, the most Western State in West Africa, the size of compounds and households appears as particularly high, even by African standards. For instance, in the 1988 census, the average size of households was 9.0, with only minor variations by regions. The mean size of households can also be compared to censuses and sample surveys conducted in the 1960's and 1970's in African countries, reviewed earlier (Garenne, 1981). In this review, the mean of households was 4.50 (range

2.3 to 6.2), and the mean size of compounds was 7.43 (range 3.3 to 18.3). One of the surveys was conducted in Senegal in 1960 and was analyzed by Martin (1970). The mean size of compounds ranged from 9.2 (Wolof in urban areas) to 14.4 (Sereer in rural areas).

Senegal has also conducted a series of DHS surveys, which provide independent estimates of household size: 9.0 in 1986, 9.1 in 1993, and 9.3 in 1997. This very high value, rather increasing over time, is far away from the range of household sizes in other DHS surveys conducted in sub-Saharan Africa, which goes from 3.8 (Ghana, 1993) to 6.8 (Sudan, 1989). Among the 46 DHS surveys conducted in sub-Saharan Africa between 1986 and 1999, not counting Senegal, the average size of household was 5.5 and the standard deviation 0.7. The case of Ghana, 1993 was rather an exception, not confirmed by other surveys in Ghana, and outside of this case all estimates of the mean size of household ranged between 4.4 and 6.8. Therefore, Senegal appears as an exception in sub-Saharan Africa, with extremely high mean size of households, stable over time for at least the past 40 years. This high value is independent from problems with definitions, since DHS surveys apply similar criteria for household definition. Compared to other DHS surveys, the average size of households was higher in Senegal for two reasons: less households of small size (less than 7), and in particular much less households of size one (isolated persons), and many more households of large size (20 persons or more), 11 times more than the average in DHS surveys. Senegal was also the only country where very large households were common, and more than half the households of 40 persons or more found in all African DHS surveys originated from Senegal. Most DHS surveys deal only with households, and do not consider larger units such as compounds in West Africa. However, the 1986 DHS survey of Senegal also measured compound size: 15,3 persons on the average, way above most other estimates from similar sources.

The first aim of this paper is to explore the composition of those households, to try understanding how they can reach such a large size. For this, we will take the example of a single ethnic group, the Sereer, the second largest in Senegal, where the mean size of compounds is about 14 and the mean size of households about 9, typical values for the country. Since household composition is the product of several forces: marriage, fertility, mortality, migration and residence rules, and since these are quite different for males and females, the second aim of this paper is to describe the various asymmetries in household composition with respect to gender. In European societies, most households are small, based on reproductive couples, with husband, wife and two children, well balanced between the two sexes, even though there are differences at the beginning (single people) and the end of adult life (widows). As we will see, the case of Sereer compounds and households is far more complex.

Concepts, data and method

Study population

The study population, that of the Niakhar population observatory, lives in the Fatick region in Central Senegal, about 150 km east of Dakar, the capital city. It includes the whole of the Ngayokheme district (*Communauté Rurale*) and the northern part of the Diarère district (Diohine) (Garenne and Cantrelle, 1997). This part of Senegal has been populated for centuries almost entirely by a single ethnic group, called the Sereer. The formation of the Sereer ethnic group goes back to the 13th century, when a group came from the Senegal River valley in the North escaping Islam, and met near Niakhar another group from Mandinka origin, called the Gelwar, who were coming from the South-East (Gravrand, 1983). The actual Sereer is a mixture of the two groups, which may explain their complex bilinear kinship system (Dupire et al. 1974). The Sereer now live in several areas in the country, and the most important groups are in the Sine near Niakhar (Sereer Sine-Sine), in the Petite-Côte near Joal-Fadiouth, in the Baol near Bambey, the North-West near Thiès (Sereer Ndout), and in various places of the Saloum (especially around Kaffrine), and in the Terres-Neuves near Koumpentoum, the last two groups being mostly constituted of migrants from the Sine in the 20th century.

The Sereer are bilinear. Descent includes both the patrilineage and the matrilineage. From the paternal side, people inherit their paternal name (*kurthiala or simangol*), their social status (nobility, caste), land, housing, and a variety of personal qualities such as courage. From the maternal side, they inherit a maternal name (*tim*), wealth (cattle, other domestic animals, furniture, jewels), and a variety of magic powers. Both lineages bear a strong symbolic value: the patrilineage is associated with the cult to the ancestors (*pangols*) and the matrilineage with the breast milk, to which various prohibitions are associated.

Marriage is quasi universal for both men and women, and polygyny is widespread. The marriage process includes the payment of a bride price by the groom or the groom's family. This delays considerably the age at marriage for men, since it takes several years of work to cumulate enough money and goods for the bride price. Sometimes marriage is celebrated before the complete bride price is paid, but the bride has to wait several months or years before she can join the husband's compound when all compensations have been paid. Residence is almost always virilocal for the first marriage: usually the wife moves to live with the husband, although this is the opposite for the preferential marriage, when the groom moves first, long before marriage, to his maternal uncle in order to marry later his cross-cousin. In case of polygyny, co-residence is not always the rule, especially in case of levirate (remarriage of widows with a patrikin of the deceased husband), a practice quite prevalent among the Sereer. Marriage is endogamic in terms of ethnic group (cross

ethnic marriage is rare), social class (marriage between cast-persons and others is exceedingly rare), and regions (most people from the Sine take their spouse in the same region). Marriage is exogamic in terms of lineages, so that marriage is prohibited between children of two men belonging to the same matrilineage and between children of two women belonging to the same patrilineage, which is basically between parallel cousins (Guigou, 1992; Lericollais, 1999). Preferential marriage is therefore between cross cousins, and in particular between a man and his mother's brother's daughter. The kinship system is therefore of the Iroquois type (Héritier, 1981), where father's brother is classified as a father and mother's sister is classified as a mother and their children as brothers and sisters.

The system of production is based on agriculture and stock farming. Farmers grow millet and maize as staple food and peanuts (groundnuts) as a cash crop. They have herds of cattle that often graze far away from home because of the scarcity of grazing land. Population density is high, about 100 inhabitants per square kilometer in 1983, land is scarce and access to land difficult for young adults. Levels of income generated by traditional systems of farming are low, and families rely more and more on remittances from migrant workers to the city (Dakar in particular), or to newly cleared lands in the Eastern province (*Terres Neuves*).

Inheritance of land is traditionally in the patrilineage, and mostly attributed to men (from father to son), although women can also own land, and sometimes people inherit land in the matrilineage. Inheritance of land is often a source of long lasting negotiations, sometimes conflicts, in families (Guigou, 1992). Owning land is almost compulsory to become head of household (*ngak*), since a head of household will be responsible for allocating the supply of cereals from the granaries to the persons in charge of cooking. Since land is scarce, young adult males often have to wait for many years before they can become heads of their own household, usually until the death of the father, although sometimes an older man will share his land among his heirs before his death in exchange for food security from his sons and nephews.

Fertility was natural in 1983, and fertility control was still very limited 18 years later. The total fertility rate averaged 7.9 in 1983-1986, a slight increase from earlier years. High level of fertility is a major component of family size and family composition, since children account for about half of the total population.

Residence rules are a key determinant of household and compound composition. Children are breastfed until about age 2, and therefore live with their mother, unless she dies prematurely. After weaning, most children continue to live with their mother, exception being fostered children, usually in the matrilineage and often girls. At time of schooling, around age 7 to 8 years, children may be sent to a relative living close to a school, although most parents will prefer to keep their children with them if they live at an acceptable distance from school. Children who do not go to school may be sent elsewhere. Boys are likely to become herders, and to leave if the family has a herd far away. Girls are likely to become servants, and to leave the family to work for a relative elsewhere, or to become a maid (*bonne*) in Dakar. In case the couple splits, boys are more likely to stay with their father, and

girls to go with their mother. In terms of sleeping arrangements, young children and unmarried daughters usually stay in the same hut with their mother, whereas boys must go away from the mother's hut when they reach age 7 or 8 years. After they leave, and until they can start their own household, they usually stay with a paternal kin, often an older brother, unless they go to work for their maternal uncle (*Tokor*) and stay with him. Living arrangements therefore appear as asymmetrical between males and females.

Basic units and typology

To analyze the composition of large households and compounds (some exceed 100 persons) requires a typology, and a decomposition into smaller units. The basic unit of all households in the world is the reproduction unit (the family nucleus): parents (at least one of them, usually the mother) and children, with or without the other spouse. Note that in case of polygyny, a same husband may be shared by several wives in the same household. The reproduction units are then articulated in the same household by kin relationships. Levi-Strauss (1949 and 1973) argued that four major relationships, which he termed the “atoms of kinship”, cover most of the cases of household relationships: husband/wife; parents/children, brother/sister; maternal uncle/uterine nephew. Therefore, to develop a typology of Sereer households four types of structures were first considered, based on main relationships among ever-married adults:

- Nuclear: biological parents;
- Vertical: three 3 generation families, whether married adults host their own parents, or an older patriarch or matriarch rules over married adults;
- Horizontal: siblings (brothers and sisters) living together;
- Oblique: uncles and aunts with nephews or nieces, whether married adults host their uncles or nieces, or an older persons host their nephew and nieces, most of which being maternal uncle / uterine nephew relationships.

Of course, there are other cases, which tend however to be rare in most societies. They include second degree cousins (sons and daughters of uncle and aunt), and kin relationships of higher order (cousins of various types) and persons not related by blood. This last category is rare in traditional societies, but tend to be more frequent in cities.

The second dimension of the typology is the type of marriage: whether monogamous or polygamous.

The third dimension of the typology is the other dependent children (or their absence), with or without dependent nephews, other children or isolated ever-married adults.

The last dimension of the typology is isolated persons, not member of a reproduction unit. This includes two types of dependents: children and never-married young adults, and other adults who

are either no longer married (widows, divorced) or do not leave with their spouse and who do not have any child living with them.

Levels of analysis

There are three levels of analysis considered in this study. The first level is the compound (houseful), called *mbind* in Sereer. This includes all persons resident in a single compound. A compound is a set of huts, usually well delineated in the space by a fence (the residential unit). A compound is ruled by a chief, called *yaal mbind* in Sereer, who has various social, economic and symbolic functions. Every person in the study area will belong to a *mbind*, and there were only a handful of cases out of 25 000 surveyed where persons will move back and forth between two compounds. Most people do spend the night within the compound walls. Some young herdsmen may spend the night outside in the bush, however they will clearly belong to the *mbind*, since they eat from one of its kitchen, unless they are in a far-away migration with the herd.

The second level is the kitchen (the household), called *ngak* in Sereer. This includes all persons eating from the same cooking pot. Belonging to a *ngak* is generally well defined. There were however rare cases where decisions rules had to be somewhat arbitrary in the census, such as the case of an older man, no longer the head of the compound, staying with two of his married sons who had their separate kitchens, and who used to eat alternatively from either kitchen. Kitchen are sometimes recomposed or grouped during the culture seasons, since time is short for women who work for long hours in the fields. This was not considered in the census, which was conducted in the dry season, when kitchen are stable for about nine months of the year.

The third level of analysis is the family nucleus. In this study, the family nucleus was defined as either a woman with children (almost always ever married), whether or not living with her husband, or a married women without residing children, whether or not she had had children already. Of course, the resident husband and the resident children were included in this unit. There is no local concept which will match precisely this demographic definition. The closest would be the "*ndok yaay*", which means the mother's hut, and include the mother and children sleeping with her in the same hut. However, "*ndok yaay*" does not include the husband.

Demographic data

The data used for this analysis were gathered in 1983, at the time of the extension of the study area, part of a long lasting demographic surveillance system (Garenne and Cantrelle, 1997). The data are based on a comprehensive census of the whole population of the 30 villages of the study area. During this census, an innovative way of coding intra-compound relationships was tried. The aim of

this new coding was to reconstruct basic nuclear units in order to analyze family structures. The data were collected the following way: all children were linked to their mother; wives were linked to their husbands; adult men were linked to the head of household; other dependents were linked to the head of household; head of households were linked to the head of compound. This came in addition to basic demographic data, in particular, age, sex and marital status, with details on polygyny (number of wives or wife's rank). This allowed to reconstruct the biological units (mother, children and possibly husband), to organize the basic structures (vertical, horizontal, and oblique), to classify other dependents, and to separate polygamous from monogamous compounds. A polygamous compound was defined as a compound with at least one man in polygamous union. Otherwise the compound was classified as monogamous. Data on patrilineage come just from the paternal name recorded at the census. Data on matrilineage were asked systematically on a subsample of 8 villages centered around Ngayokheme since 1962. Relationships within the household normally made a distinction between the paternal and the maternal side, since two different words would be used in Sereer, although for distant cousins this was not always recorded.

Results

1) Study population

At the 1983 census, the size of the population of the study area was 22 480 persons, after cleaning various inconsistencies. About 96% were from the Sereer ethnic group, the others being from Wolof, Tukolor or Laobé minorities or from a few families from other origin (7 Mauritanian, 1 Syrian, 1 Socé, and 1 Beninese). The families from non-Sereer origin were ignored, and the final analysis was restricted to 1600 Sereer compounds accounting for 21905 persons.

2) Size of units

The size of compounds ranged from 1 to 101. The mean size of compounds was 13.7 persons (standard deviation = 10.7), amongst the highest ever found in Africa. Similar very high sizes of compounds are found primarily in West Africa, in countries such as Guinea, Mali, Burkina-Faso and Benin (Garenne, 1981). In Niakhar, the size of households ranged from 1 to 35, with a mean size of 8.80 and a standard deviation of 4.85, here again way above most other estimates from Africa. The size of nuclear units ranged from 1 to 13, with a mean of 3.60 and a standard deviation of 1.82. This value is consistent with the size of nuclear units in high fertility populations.

3) Typology of compound structures

Sereer compounds were distributed according to our three-tier typology: basic structure (nuclear, vertical, horizontal, oblique, mixed), presence of polygamy, and presence of dependents. The diversity of situations appears remarkable (tables 1, 2 and 3). The nuclear or single family, with or without children, so prevalent elsewhere in the world, accounts only for 10.1% of compounds and 3.6% of the population. The most common type of structure is the vertical family (the 3-generation family), whether alone or with other imbedded structures, whether with or without other dependents: it accounts for 68.1% of the compounds and 80.7% of the population. In the detailed typology, the most prevalent type of structure is the vertical, monogamous family with children, which accounts for 11.0% of the compounds and 6.5% of the population; however somewhat more people live in the vertical, polygamous family with children, which accounts for 7.4% of the compounds and 6.6% of the population because of a larger family size (12.1 against 8.2 persons). The largest sizes were found in the most complex structures and in the polygamous compounds, where all vertical, horizontal and oblique types were present (mean size of 32.1 persons on the average). Note that some combinations were not existent or very rare, in particular polygamous compounds with no dependent, or single persons with dependents. Purely oblique compounds (uncle / nephew) were rarely found (2,5% of compounds), and oblique types were usually imbedded in another complex structure with a vertical type (79,5% of all oblique types and 87,9% of the corresponding population). Similarly, the horizontal type (brothers and sisters), though more frequent than the oblique type, was more likely to be in association with the vertical type (76.3% of compounds, 85.1% of population) than alone (18.2% of compounds, 10.2% of population), or with an oblique type (31.8% of compounds, 43.1% of population). Therefore, Sereer compounds appear to be structured more along the agnatic line (older parents with married children), with or without married brothers and sisters (usually from the second generation), and less frequently with nephews or nieces (usually a married uterine nephew).

Polygamy was found to be widespread. About half (47.8%) of compounds have at least one polygamous person, and about two third of the population (64,4%) lives in polygamous compounds. Polygamous compounds tended to be larger than monogamous households, about twice as large, and this was true whatever the structure. Furthermore, polygamous compounds tended to have more complex structures, in particular more vertical and horizontal, more vertical and oblique, and much more vertical, horizontal and oblique.

Dependents were in great majority own children of a family nucleus. In about half of the cases (50.6%) there were only children and in the other half there were also nephews and nieces (15%), other children or never married adults (9.3%), other ever-married adults (7.9%), or a mixture of those. The mixed pattern of dependents was found primarily in complex structures of polygamous compounds (more than one vertical, horizontal, or oblique), and to a lesser extent to complex structures of monogamous compounds. Largest compounds (average size = 38 persons) were found among the polygamous, complex structure (vertical, horizontal and oblique), with children and other

married, or with a mixed pattern of dependents (average size = 36 persons). Compounds without dependent were rare (2.6%), and primarily constituted of single persons or nuclear families without children.

The average age of the household head was 55.3 years, with a standard deviation of 14.9, way above the average age of the population (23.5 years). However, the average age had only a weak relationship with household structure (see table 3), and a weak correlation with the mean size of the structures ($r = 0.347$), and even with the size of households at the household level ($r = 0.337$). If heads of polygamous households were older than heads of monogamous households, the difference was relatively small (8.8 years). Within monogamous households, more complex structures were headed by slightly older men by a few years (2.0 years), but the single households were primarily older men living alone. Within polygamous households, vertical structures tended to have older heads, as could have been anticipated, but here again differences were relatively small (7.9 years).

4) Additive effect of basic structures

To show the additive effect of basic units, a regression model linking the compound size to the number of units of each type and to the number of polygamous husbands was ran. Results indicate that each unit of each type or each additional polygamous husband adds basically a nuclear family of 3 to 4 persons on the average (table 4). The regression equation explained 81.3% of the total variance of compound sizes. This additive effect shows that our basic structures have a large explanatory power, and that other dependents play a relatively minor role (only 12.1% of the population is living outside a nuclear unit).

5) Household structures

The mean size of households (kitchen) was 8.8, with a range from 1 to 35 and a standard deviation of 4.85. The household structures were basically the same as the compound structures, since compounds are simply one or a juxtaposition of several households (1.56 on the average). As for compounds, the most common type was the vertical family, accounting for 58.1% of the households and 67.3% of the population, and the least common the oblique family, accounting for 17.2% of the households and 20.3% of the population. The largest sizes were found in the polygamous mixed households (vertical + horizontal + oblique), with an average size of 17.8 persons.

More interesting is the relationship of the head of the household to the head of the compound (table 5). The most common relationships belong to horizontal structure, the brother/sister relationship (37.4%), and primarily the two brothers relationship (305 out of 334 cases), and the oblique structure, i.e. the uncle-aunt/nephew -niece or cousin relationships (45.7%), and primarily the paternal nephew (163 out of 408). Note that the paternal nephew is often a consequence of the most common structure:

two brothers were living together in the same compound with married children, one dies, so one of his son takes over the household, and his relationship becomes paternal nephew of the surviving brother who is the head of the compound. This does not require a change in residence, only the death of an older man. This is probably why the case of maternal nephew, which requires a change in residence, is less frequent (only 21% of the cases). Similarly, second degree cousins may only be the sons or daughters of former uncle or aunt who staid in the same compound after a death of a grandfather or a grandmother. Last, note that allied persons (wife or in-laws) account for only a small fraction of the head of secondary households (5.3% of cases), usually as widows or persons related to a widow, and that non-kins account only for two cases of secondary households out of the 892 total.

Summarized by lineage (table 5, bottom part), these relationships show the overwhelming importance of bilinear relationship (brother/sister or son/daughter), that is the family nucleus, and the predominance of the paternal lineage over the maternal lineage (almost twice as much).

6) Co-residence of spouses

As noticed in table 3, it is primarily polygamous households that have a very large size, above 15 on the average. However, it does not seem that it is only because of polygyny that they are large. In the regression equation, polygyny added only 4 more persons per polygamous man, less than one would normally have anticipated. This is because co-residence between husband and wife is almost universal for monogamic couples, and for the first wife, but less so for the second wife, and rather rare for wives of higher order (table 6). In fact, most often higher order wives (3 or more) are cases of levirate, which do not imply co-residence, unless the two brothers were living together beforehand.

7) Lineage symmetry

As mentioned above, Sereer people inherit two names: a patrilineal name from their father, and a matrilineal name from their mother. Since most people have a common origin going back to a few families who arrived at the turn of the 13th century, the number of paternal and maternal names is limited. In their extensive search for all names among all the Sereer groups, Becker et al. (1982a and 1982b) found only 207 paternal names and 128 maternal names. If one assumes that the mean age at maternity is 28 years and the mean age at paternity is 39.5 years, as observed in 1983-1989, only 28 female generations and 20 male generations separate the current population from the founding fathers and mothers. In the study area, only about 60 paternal names and 60 maternal names were found among the persons from Sereer descent. Moreover, the first 30 paternal names accounted for 97,3% of the population, and the first 30 maternal names for 97,0% of the population. Concentration curves could be drawn by computing the proportion of the population accounted for by the leading lineages, ranked by size (figure 1). Both concentration curves, paternal and maternal, had basically the same

shape. This underlines the remarkable symmetry of the lineages among the Sereer. Concentration was somewhat higher for patrilineage (the first 10 names accounted for 76.0% of the population) than the matrilineage (the first 10 names accounted for 64,2% of the population). This could be due to differential age at birth for mothers and fathers. However, this symmetry in the two lineages did not translate into symmetry for household structures. This seemed primarily due to the fact that residence rules are not the same for males and females.

8) Gender asymmetry

Gender asymmetry was computed in a variety of ways, usually as the differences between males and females in the proportions of persons of the relevant age group belonging to certain categories. The statistical differences were tested with standard T-test (table 7).

Most heads of compounds were men (97.4%), as most heads of kitchen (93.9%). At age 40 and more, 59.5% of men were head of compounds and 80,4% were head of households, and only 1,4% and 5,2% of women respectively. Belonging to a nuclear unit varied very much by age and sex: young males aged 15-24 were usually not married, and most of them were living outside a nuclear structure (91,8%), whereas more than half the women were married or living with their mother, therefore a majority were in a nuclear structure (67.3%). These proportions of persons living in a nuclear structure quickly changed with age, as more men married, and some women became widowed or divorced, so that at age 45-54 the proportions were the same for both sexes, and even reversed at older ages.

For children, residence with mother also had an age gradient: no difference for children under the age of 3 years (most of them are breastfeeding), a slightly higher proportion of fostered girls at age 3-7 years (14,3% against 10,5% for boys), no difference at age 8-17, and more boys living outside the mother's compounds at age 18-29 (33.7% against 26,0% for never married girls). Co-residence with father was quite similar for young children, since both parents are likely to live together. However, there was a tendency towards more co-residence of boys with their fathers after age 8 compared to girls. Children not living with their parents, neither mother nor father, were more likely to stay in the matrilineage. However, this pattern was more pronounced for girls (74,1% at age 0-11 years, and 65,6% at age 12-29 years) than for boys (68.8% and 56.8% respectively).

Most ever married adults were living in their own nuclear unit, men as head of compound (41,2%) or hosted by a close kin, and women as the wife (80,5%). For adults whose living arrangements were different from the typical family (husband head and wife), men were usually living with their own parents (73,9%), usually the father, or in the patrilineage (12.7%), less so in the matrilineage (8.5%). Women, on the contrary, were more likely to stay with their own children or grandchildren (38,0%) if older, or with their own parents (33,7%) if younger. Contrary to men, they were more likely to stay in the matrilineage (6.7%) than in the patrilineage (1.5%). They were also

likely to stay with their in-laws (11.7%), in their former husband compound in most cases, whereas this situation hardly existed for the men.

Male and female widowed and divorced persons also had different living arrangements. Men usually staid in their own compound, whereas only a few women staid as the head of the compound. As for ever-married persons, women living outside their own family tended to be more likely to live at their children's compound, whereas in a similar situation the men would be considered as staying in their own compound hosting their children. In other cases, women were also more likely to stay in their matrilineage than in their patrilineage (as for ever married women living outside), and likewise for the men (here contrary to the case of ever married men living outside). Here again, only women were likely to stay with in-laws.

9) Basic relationships

Sereer households are based on complex structures, with five elements: an alliance (husband/wife), possibility of polygyny, direct descent (parents/children), hosting married children (brothers and sisters), and hosting a uterine nephew (usually the daughter's husband). Figure 2 shows that these basic living arrangements cover most relationships found in the census, with the exception of higher degree cousins and unrelated individuals, which account only for less than 2% of relationships found in the census.

A few examples will explain how the system works in practice. As the structure is displayed, B and C are wives of A; D is the uterine nephew and E his wife, K and L their children; G and H are sons of A, F is the wife of G; C the second wife of A has two children. If A dies, G is likely to become the new head of household. In this case H will be his brother, D his brother in law, B his mother, C the mother's co-wife and I and J half brothers and sisters. If H dies, N will be with his paternal nephew. If H and G die, at the next generation M and N will be paternal cousins, and L and M maternal cousins. Assume that B is still alive when E dies, she will be the grandmother of M looking after her. If K, M and N stay together, at the next generation their children will be cousins of higher degree, either paternal or maternal. These situations cover most situations found in a Sereer household.

A breakdown of the fundamental relationships, distinguishing between the sexes of the index person and the person he or she is related to is displayed in table 8. The so-called kinship atoms (parents/children, husband/wife, uncle-aunt/nephew-niece, brother/sister and half brother/half sister account for 94,6% of relationships found in a Sereer household. Other close relationships: grand-parents/grand-children, in-law parent/child, in-law brother and sister, accounted for an additional 2,9% and higher degree cousins and relatives for 2,5%, whereas non-kin relations were negligible.

Table 8 also underlines the major gender asymmetry of household relationships. Sons are more likely than daughters to be staying with their father (that is without mother present), and with their mother at older ages, since daughter will move away for marrying. Polygyny is obviously a major

source of asymmetry between men and women. In general, outside of parents/children and husband/wife, relations are 6.5 times more frequent with a male parent, since males are more likely to be head of households and compounds. Leading relationships with a male elder are with uncles, brothers, half brothers, grandfather and cousins. They are usually more frequent for male index cases, though there are more females living with a male relative of higher degree, with a brother in-law, or with a father in-law, and about the same number living with a grand-father. Leading relationships with a female elder are basically with grandmothers, aunts and mother in-law. Some combinations are very rare or non-existent: males staying with a sister, a half-sister, a sister in-law, or another female relative. To pursue Levi-Strauss's comparison with atoms, brother/sister relationship and sister/sister relationships appear negatively loaded, that is repulsive in terms of living arrangement, whereas brother/brother relationship appear positively loaded, that is attractive in terms of living arrangement.

Discussion

Sereer households, among the largest in the world, could be deconstructed into a series of nuclear units and various dependents. This underlines the fact that the basic structure of the family remains the couple and children, even when the average size is large. Large size of compounds and households is primarily made of the juxtaposition of nuclear units, organized in vertical structures (parents, children, grand children), in horizontal structures (brothers and sisters, often who staid together once parents passed away), and original oblique structures (uncle/uterine nephew in particular) which are typical of societies with some matrilineal descent.

Large size of households and complex structures require a number of conditions. In the case of the Sereer, restricted access to land due to high population density and patrilineal land devolution were key elements to understand compound and household structures. When land is scarce, male children have to wait a long time, usually working for their father or their maternal uncle, until they can inherit land and become household head. As a consequence, when life expectancy is increasing, age at inheritance is increasing too, and mean size of household tends to increase unless compensated by massive outmigration. Among the Sereer, the structure is further complicated by the kinship system, where children of a man's brother are classificatory children, and where uterine nephews add up since they are likely to marry the man's daughter.

In addition to restricted access to land, restricted access to wives is the main factor of polygyny and another major factor of large size of compounds. The power structure makes it difficult for young men to marry, therefore they have to work hard and postpone their marriage. This provides a wide range of opportunities for wealthier older men to marry younger women. Note that the recent increase in population growth made the age structure even more favorable to polygyny by increasing the proportion of young women eligible to marriage relative to the proportion of older men. Having

more and more dependent men working for them, older men could also increase their wealth, which gives them more power to marry young women.

The power system also has an effect of household structures. The weak correlation between household structure and the head's age was already noted. From direct observations, it appears that complex structures of very large households can hold only if the head bears some kind of charisma and is respected or feared by the younger men. When he dies, either one of the younger men can replace him with similar powers, or the large compound splits in smaller independent households. This occurs usually in the middle ages for the new head or heads, when the father dies, and this is probably why the mean age is quite similar for the heads of smaller household and the heads of larger compounds.

Imbalance between genders has been noted by anthropologists for a long time. The most important imbalance deals with headship: although females can become head of compound and household among the Sereer, they are exceedingly rare. The second imbalance deals with virilocal residence for married women, which implies in most cases a change in residence and no residential ties with the family of origin. These fundamental imbalances explain a large number of relationships biased towards the males in census-based relationships. In the case of the Sereer, the picture was further complicated by the bilinear system, and by "breast preference", that is the preference for raising children, especially females, in a maternal family. This could in particular explain why they were more female children staying with their grandmother than male children, more unmarried young women staying with their mother, and more unmarried young women not living with their parents staying in the matrilineage.

Compared to large European households in the past, quoted by Shorter (1973) and Flandrin (1976), the Sereer households appear very reluctant to host non-kin members. Those accounted for a tiny minority (0,04%), whereas they accounted for a significant share of large European households in the past. This is probably due to the much less developed cash economy among the Sereer until the present time. Domestic slaves have existed in the past among the Sereer, but have disappeared about a century ago at time of abolition (1904). The rare cases where non-kins were hosted by a Sereer family were cases of non-kin daily laborers during the rainy season (called *Surgas*), though most *Surgas* tend to be kins, and cases of foreigners, primarily single men, hosted for a variety of reasons (this happened for instance for the fieldworkers of the demographic surveillance system). The situation is quite different in Senegalese towns and cities, where non-kins are relatively frequent for a variety of reasons: domestic servants, who are very frequent among wealthier urban households; single persons renting rooms; and formal or informal employees of family businesses, and other peculiar cases.

Detailed studies of complex household structures using census data are rare in Africa, partly because of a lack of detailed data, and partly because of a lack of analysis, which this virtual conference aims at resolving. Our system of data collection was quite original compared to most censuses. It consisted in avoiding to try to link each individual to the head of the household, which

anyway would have been too complicated in large households. A typology based on direct links would have led to dozens of categories, and would have been useless. On the contrary, we tried to reconstruct the biological units, and to link them together. This ended-up to be a powerful tool for analyzing household structures. In fact, we have used only three types of basic links: linking children to their mother or caretaker; linking wives to husbands; linking other adults to the head of household or compound. This was enough for our purpose, and enabled us to deconstruct the basic structures. This can be done in a single shot, like a census, and does not require detailed genealogies. Of course, it requires care in asking questions, in particular in distinguishing biological brothers and sisters from classificatory brothers and sisters. This however was done without any major difficulty in the field in Niakhar.

Of course, this method of coding relationships could be improved. For instance, in Agincourt, South Africa, relationships were detailed by reconstructing partial genealogies, that is detailing the closest relationship, as anthropologists normally do, using only husband/wife, mother/father, son/daughter, brother/sister, and their combinations (see paper by Madhavan et al. in this conference). This procedure is slightly longer, though still possible in a census, and more precise. If applied to Niakhar, it would have allowed us to detail the other parents, and probably to be more accurate in the assessment of cousins. However, this is still a single relationship, which will not allow to study multiple relationships, which are very common in endogamous societies.

Only detailed genealogies provide the full picture of complex household relationships. This is rarely done in demographic censuses, never to our knowledge in national censuses. This has been done successfully in population observatories, such as the Amizmiz study in Southern Morocco, where detailed genealogies were taken on a population of about 10 000 people (Baali et al. 1996). This process is however very time consuming, and will be limited to relatively small populations. Genealogies were collected in Niakhar in a few villages, in particular in Ngayokheme, Sob and Kalome, where more intense work was conducted on land tenure and production systems. Time never allowed to complete genealogies for the 25 000 people living in the study area. Full genealogies would also permit to study the full-scale system of wife exchange in this very geographically endogamous society.

Taking a census always imply some arbitrary definition of who is resident, and who is not. In Niakhar, one estimated that about 1% of the population was miscounted. Furthermore, to the average number of residents in a compound (14 persons) one could add or delete one person on the average during the rainy season, that is the floating population of circulatory migrants, often young adults, sometimes with children. Whatever the definition of residence, the basic structures are likely to be the same or very similar, since this floating population originates from the same family.

This study has focused on the census, with a static perspective, that is a snapshot of the society at one point in time. Of course, the structure of a compound is the product of a series of demographic processes: birth, death, migrations, marriages and breaking unions, and a dynamic analysis would have

provided another view. Since this virtual conference focused on the census, it was beyond the scope of this paper to investigate the dynamics of household structures. However, one has seen several times in the analysis that current status could be explained by a normal process of re-composition of the household after the death of the head. This underlines the value of understanding the processes underlying the construction and destruction of households and compounds. The structural analysis here again proved to be more useful than a tedious typology of households and compounds.

With respect to gender asymmetry, the current status reflects well the various gender specific residence rules reported by anthropologists. The summary provided by the census was also a powerful tool to expose these rules.

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Table 1: Distribution of compounds by type, Niakhar 1983

Type	Dependents						Total
	None	Children only	Children and				
			Nephew, Niece	Other single	Other married	Mixed pattern	
Monogam, single	19	3	4	0	3	0	29
Monogam, nuclear	7	132	14	18	19	8	198
Monogam, vertical	6	176	42	33	16	24	297
Monogam, horizontal	0	31	5	6	4	6	52
Monogam, oblique	1	18	2	3	0	0	24
Mono, V+H	3	60	19	19	7	23	131
Mono, V+O	1	14	9	6	6	10	46
Mono, O+H	0	11	5	0	1	1	18
Mono, V+O+H	0	13	5	6	4	13	41
Polygam, single	0	1	0	0	0	0	1
Polygam, nuclear	3	65	13	9	6	8	104
Polygam, vertical	1	119	34	16	20	32	222
Polygam, horizontal	0	25	11	8	6	4	54
Polygam, oblique	0	8	3	0	3	2	16
Poly, V+H	0	66	35	14	11	34	160
Poly, V+O	0	40	13	2	8	18	81
Poly, O+H	0	4	4	1	2	3	14
Poly, V+O+H	0	23	25	8	10	46	112
Total	41	809	243	149	126	232	1600

Table 2: Distribution of the population, by type of compound, Niakhar 1983

Type	Dependents						Total
	None	Children only	Children and				
			Nephew, Niece	Other single	Other married	Mixed pattern	
Monogam, single	21	10	13	0	8	0	52
Monogam, nuclear	14	735	76	108	137	59	1129
Monogam, vertical	15	1434	352	240	162	278	2481
Monogam, horizontal	0	264	63	61	47	60	495
Monogam, oblique	3	130	20	28	0	0	181
Mono, V+H	12	785	319	238	88	369	1811
Mono, V+O	3	154	111	69	90	155	582
Mono, O+H	0	142	67	0	17	21	247
Mono, V+O+H	0	237	59	89	105	339	829
Polygam, single	0	5	0	0	0	0	5
Polygam, nuclear	7	559	121	80	80	88	935
Polygam, vertical	5	1441	502	170	317	658	3093
Polygam, horizontal	0	304	133	101	73	76	687
Polygam, oblique	0	94	43	0	34	29	200
Poly, V+H	0	1283	654	310	278	1063	3588
Poly, V+O	0	684	327	36	175	450	1672
Poly, O+H	0	62	88	25	43	77	295
Poly, V+O+H	0	605	746	239	383	1650	3623
Total	80	8928	3694	1794	2037	5372	21905

Table 3: Mean size of compounds, by type of compound, Niakhar 1983

Type	Dependents						Total	Mean age of head
	None	Children only	Children and			Mixed pattern		
			Nephew, Niece	Other single	Other married			
Monogam, single	1,0	3,3	3,3		2,7		1,8	59.4
Monogam, nuclear	2,0	5,6	5,4	6,0	7,2	7,4	5,7	50.1
Monogam, vertical	2,5	8,1	8,4	7,3	10,1	11,6	8,4	50.1
Monogam, horizontal		8,5	12,6	10,2	11,8	10,0	9,5	50.2
Monogam, oblique	3,0	7,2	10,0	9,3			7,5	53.9
Mono, V+H	4,0	13,1	16,8	12,5	12,6	16,0	13,8	51.0
Mono, V+O	3,0	11,0	12,3	11,5	15,0	15,5	12,7	51.6
Mono, O+H		12,9	13,4		17,0	21,0	13,7	54.1
Mono, V+O+H		18,2	11,8	14,8	26,3	26,1	20,2	56.4
Polygam, single		5,0					5,0	68.0
Polygam, nuclear	2,3	8,6	9,3	8,9	13,3	11,0	9,0	52.9
Polygam, vertical	5,0	12,1	14,8	10,6	15,9	20,6	13,9	62.1
Polygam, horizontal		12,2	12,1	12,6	12,2	19,0	12,7	54.7
Polygam, oblique		11,8	14,3		11,3	14,5	12,5	55.6
Poly, V+H		19,4	18,7	22,1	25,3	31,3	22,4	58.6
Poly, V+O		17,1	25,2	18,0	21,9	25,0	20,6	64.0
Poly, O+H		15,5	22,0	25,0	21,5	25,7	21,1	56.8
Poly, V+O+H		26,3	29,8	29,9	38,3	35,9	32,3	64.6
Total	2,0	11,0	15,2	12,0	16,2	23,2	13,7	55.3

Table 4 : Results from the linear regression linking to size of compounds to the number of units, by type, Niakhar 1983

	Raw coefficient	Standard error	Standardized Coefficient	T-test	P-value
Constant	4,227	0,163		25,979	0,000
Nb of polygamous men	4,011	0,157	0,317	25,599	0,000
Nb of vertical units	3,014	0,095	0,394	31,601	0,000
Nb of horizontal units	3,456	0,126	0,317	27,356	0,000
Nb of oblique units	3,799	0,170	0,261	22,377	0,000

Table 5: Relationship of heads of households with the head of the compound, Niakhar 1983

Type	Relationship	Total	Male	Female
Horizontal	Brother, sister	334	305	29
Vertical	Son, daughter	97	97	0
	Mother, Grand-mother	4	0	4
Oblique	Paternal nephew	165	163	2
	Maternal nephew	85	79	6
	Paternal cousin	50	50	0
	Maternal cousin	30	28	2
	Other cousin	63	49	14
	Uncle, Aunt	15	9	6
Allied	Wife	33	0	33
	In-laws	14	0	14
Other	Not kin	2	2	0
	Total	892	782	110
<i>Summary</i>	<i>By lineage</i>			
	Bilinear	431	402	29
	Paternal	225	220	5
	Maternal	134	109	25
	Undetermined	63	49	14
	Allied, not kin	39	2	37
	Total	892	782	110

Table 6: Proportion of co-residence among married couple, Niakhar 1983

Women		Men		
Type of union	% husband coresident	Type of union	% of wives co-resident	% first wife co-resident
Monogamic	87,9%	Monogamic	93,4%	93,4%
Polygamic, 1st	86,7%			
Polygamic, 2nd	71,8%	Polygamic, 2 wives	82,6%	94,3%
Polygamic, 3rd	37,7%	Polygamic, 3 wives	69,4%	89,2%
Polygamic 4+th	27,5%	Polygamic 4+ wives	55,4%	85,3%

Table 7: Gender asymmetry in compound structures, Niakhar 1983

Criteria	Age group	Gender		Difference	P	Signif
		Male	Female			
Head of compound	Adults, 40+ years	59,5%	1,4%	58,1%	0,000	*
Head of household	Adults, 40+ years	80,4%	5,2%	75,2%	0,000	*
Family nucleus	Adults, 15-24 years	9,2%	67,3%	-58%	0,000	*
	Adults, 25-34 years	67,4%	95,3%	-28%	0,000	*
	Adults, 35-44 years	88,7%	96,2%	-8%	0,000	*
	Adults, 45-54 years	91,3%	92,2%	-1%	0,518	NS
	Adults, 55+ years	93,6%	80,4%	13%	0,000	*
Residence with mother (never married children)	Children, 0-2 years	97,6%	97,2%	0,4%	0,523	NS
	Children, 3-7 years	89,5%	85,7%	3,8%	0,000	*
	Children, 8-17 years	76,0%	78,0%	-2,0%	0,124	NS
	Single, 18-29 years	66,3%	74,0%	-7,7%	0,009	*
Residence with father (never married children)	Children, 0-2 years	86,9%	86,3%	0,5%	0,680	NS
	Children, 3-7 years	84,9%	80,3%	4,6%	0,000	*
	Children, 8-17 years	75,7%	72,7%	2,9%	0,032	*
	Single, 18-29 years	63,0%	61,4%	1,6%	0,613	NS
Never married children not living with both parents						
% resident in matrilineage	Children, 0-11 years	68,8%	74,1%	-5,3%	0,023	*
	Children, 12-29 years	56,8%	65,6%	-8,9%	0,003	*
Ever married adults Global	Own compound	41,2%	0,5%	40,7%	0,000	*
	Husband	0,0%	80,5%	-80,5%	0,000	*
	Other cases	58,8%	19,0%	39,8%	0,000	*
Ever married adults Living outside own family	Own family (parents)	73,9%	33,7%	40,2%	0,000	*
	Patrilineage	12,7%	1,5%	11,2%	0,000	*
	Matrilineage	8,5%	6,7%	1,7%	0,088	NS
	Children / Grand children	0,3%	38,0%	-37,6%	0,000	*
	Other relatives	4,2%	8,4%	-4,1%	0,000	*

	In-laws	0,1%	11,7%	-11,6%	0,000	*
	Not related	0,3%	0,0%	0,3%	0,014	*
Widowed or divorced	Own compound	33,2%	2,2%	31,0%	0,000	*
Global	Other cases	66,8%	97,8%	-31,0%	0,000	*
Widowed or divorced	Family nucleus	73,3%	27,5%	45,9%	0,000	*
Living outside own	Paternal lineage	8,9%	2,2%	6,7%	0,008	*
family	Maternal lineage	13,3%	8,1%	5,2%	0,097	NS
	Children / Grand children	3,0%	47,8%	-44,8%	0,000	*
	Other relative	1,5%	6,9%	-5,4%	0,000	*
	In-laws	0,0%	7,5%	-7,5%	0,000	*
	Not relative	0,0%	0,0%	0,0%	1,000	NS

Table 8: Basic relationships in households and compounds, Niakhar 1983.

Relationship	Sex of parent / Sex of index				Total	Cumulated
	M/M	M/F	F/M	F/F		
Parents / children	748	243	6931	4870	12792	63,0%
Husband / Wife, cowife		4163		4	4167	83,5%
Uncle- Aunt / Nephew -Niece	696	205	102	93	1096	88,9%
Brother / Sister	613	219	5	7	844	93,1%
Grand-parent / Grand-child	114	108	83	113	418	95,1%
Relatives of higher degree	130	169	4	10	313	96,7%
Half brother / Half sister	267	36	0	2	305	98,2%
Cousins (2nd degree)	160	21	1	3	185	99,1%
In-law Parent / Child	0	20	57	11	88	99,5%
In-law Brother / Sister	4	73	6	1	84	99,9%
Co-parents / Co-children	1	0	4	0	5	99,9%
Not related	6	1	1	0	8	100%
Total	2739	5258	7194	5114	20305	

NB: co-mother is the co-wife of the mother, and co-father is a new husband of mother.

Figure 1: Concentration curves of paternal and maternal names

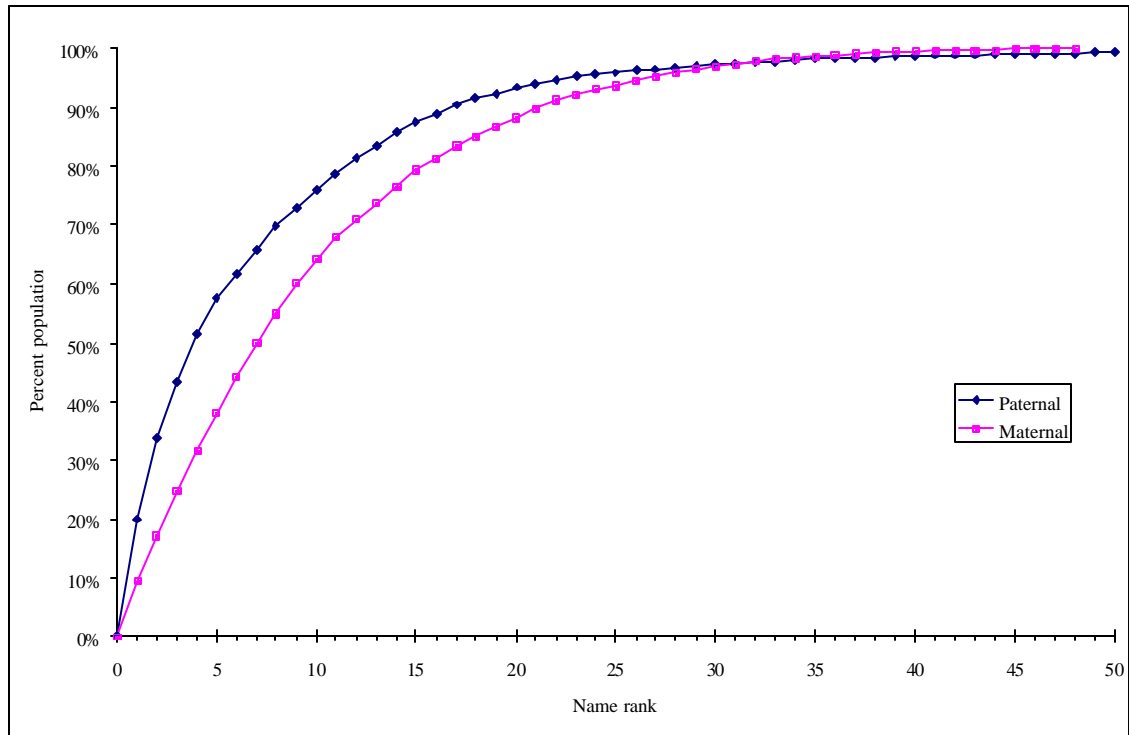
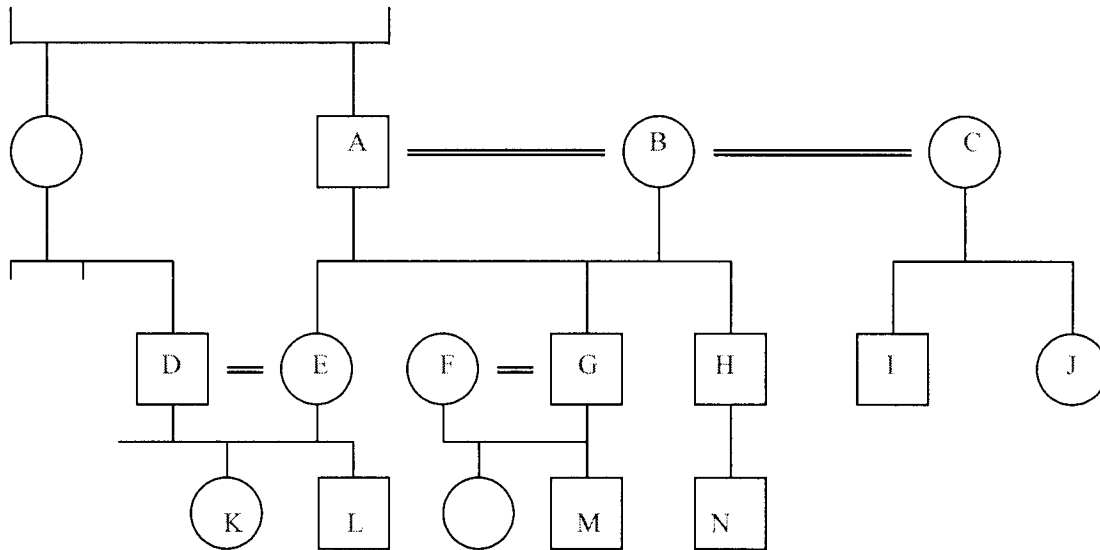


Figure 2: Basic structures of Sereer households



Basic relationships found in a census:

- A-B Husband / wife
- B-C Co-wives
- A-G,E Father / Son, daughter
- B-G,E Mother / Son, daughter
- G-H Brothers
- E-G Sister / Brother
- D-A Uterine nephew / maternal uncle
- M-H Agnatic nephew / paternal uncle
- L-M Maternal cousins
- M-N Paternal cousins
- A-K,L Grandfather / Grandson, Granddaughter
- B-K,L Grandmother / Grandson, Granddaughter
- H-I,J Half brothers, brother and sister
- F-H Sister in-law / Brother in-law
- D,F-B Son, daughter in-law / Mother in-law
- F-A daughter in-law / Father in-law
- G-C Mother's co-wife

Relations de parenté élémentaires dans une concession Sereer:

Personnes	Code	Relation
A-B	EP	Conjoint / épouse
B-C	-	Co-épouse
A-G	PR/FL	Père / Fils
B-G	MR/FL	Mère / fils
A-E	PR/FL	Père / Fille
B-E	MR/FL	Mère / fille
G-H	FR/FR	Frères
E-G	SR/FR	Frère et sœur
	SR/SR	Soeurs
D-A	NM/OM	Neveu maternel / oncle maternel
M-H	NP/OP	Neveu paternel / oncle paternel
L-M	CM	Cousins maternels (M-M / M-F / FF)
M-N	CP	Cousins paternels
A-L	GP/FF	Grand-père / Petit fils
A-K		Grand-père / Petite fille
B-L	GM/FF	Grand-mère / Petit fils
B-K		Grand-mère / Petite fille
H-I	DF	Demi-frères
H-J	DF/DS	Demi frères et sœurs
F-H	BF/BS	Beau frère / belle sœur
D-B	BF/BM	Beau fils / belle mère
G-C	KM	Co-épouse de la mère