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Polyandry and population growth in a historical Tibetan society

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Abstract

Despite considerable speculation virtually nothing is known about the empirical relationship between traditional Tibetan administrative systems, household processes, and demographic trends in historical Tibetan populations because indigenous data sources have never been systematically analyzed. This article examines a 1958 tax register from Kyirong, formerly a district-level political division in southern Tibet, and demonstrates the significance of such archival sources for population research. Indirect demographic methods are used in conjunction with retrospective interviews to estimate levels of marriage and fertility in Kyirong, a society where polyandry was the normative form of marriage. By linking fertility and the rate of population growth with ethnographic data on household processes, the study provides both a qualitative and quantitative perspective on the practice of polyandry in a traditional Tibetan setting, and thereby critiques previous assumptions about population dynamics within historical Tibetan populations.

Keywords: Tibet; Demography; Fertility; Polyandry; History

1. Introduction

Speculation about historical Tibetan populations[1] has focused on two issues: (1) a general trend of population decline from the 17th century (or earlier in the opinion of some) until the

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[1] In the context of this paper the term "historical Tibetan populations" refers to populations that existed before 1959, the year that all semblance of a traditional Tibetan administrative system were eliminated following a rebellion against Chinese rule and the flight of the Dalai Lama to India. Traditional Tibet and contemporary Tibet refer to pre-1959 and post-1959, respectively.

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1950s, and (2) the role of fraternal polyandry as a preventive check on population growth. The word ‘‘speculation’’ is used here intentionally—we know virtually nothing about demographic patterns and processes in historical Tibetan populations for the simple reason that indigenous data sources have never been systematically analyzed. Most statements made thus far represent conjecture rather than actuality.

The above caveat does not mean that historical demographic research on Tibetan populations is a fruitless endeavor. Just as recent works that draw upon historical source materials such as genealogies and population registers have cleared up many misconceptions about past population dynamics in China (e.g., Harrell, 1995; Lee & Campbell, 1997; Lee & Wang, 1999; Zhao, 1997), indigenous data sources can be used to better understand demographic outcomes in Tibetan societies. In this article a combination of ethnographic interviews and indirect demographic methods are used to estimate the level of fertility and the rate of population growth for a well-delineated population (Kyirong, Tibet) at a specific point in time (mid-20th century), and thereby to provide an empirical perspective on the practice of polyandry as it occurs in one particular context. Rather than dwelling on speculations that can never be substantiated, this study provides a starting point for constructing hypotheses about historical Tibetan population processes that are based on a methodologically explicit case study using a valid source of data.

2. Ambiguities of aggregation and assumptions of population decline

Speculations concerning Tibet’s imminent demographic demise have been based on various estimates of aggregate population, most of which are not very reliable (Ma, 1996; Martin, 1996). For example, Tang dynastic annals estimate the population of Tibet to have been 10 million in the 7th century (Anderson, 1981). In 1268, the Mongols undertook the first systematic census in areas of central and western Tibet. Based on the number of households, Petech (1980) estimated the total population to be 223,000. As Goldstein (1981) has pointed out, however, many areas inhabited by Tibetans were excluded from the census, as were landless people and monks. He concluded that the population of Tibet at the time might have been around one million. A later Mongol survey (1334) claimed the population to be closer to one million (Liang, 1991). Nearly 500 years later a Manchu census found a population of about 850,000 laypersons and 100,000 monks and nuns (Anderson, 1981; Liang, 1991), while another source from the same period mentions a population of 3.5 million Tibetans (Sun & Li, 1996). Closer to the present, the situation is obscured by a proliferation of estimates from British diplomats, Chinese officials, and Tibetan exiles (see Grunfeld, 1996, for an extensive list of references). The figures, all of which pertain to the late 19th and first half of the 20th centuries, range from one million to 15.4 million. Current sources from the People’s Republic of China (PRC) cite an optimistically precise figure of 2,775,622 Tibetans for all of China in 1953 (e.g., Guo, 1996), which is somewhat misleading since the Tibet Autonomous Region (TAR) was not included in China’s census before 1982. Meanwhile, Tibetan exiles based in India maintain that there were 6 million Tibetans in the mid-20th century (e.g., Planning Council, 2000), a figure that has never been convincingly verified

(Clarke, 1988). How is it possible for such a range of estimates to exist? More important, given the problematic nature of these estimates, how is it possible to make any inferences pertaining to long-term population trends?

Any attempt to delineate historical demographic trends among Tibetans is plagued by the conceptual problem of defining Tibet. Does the population of Tibet refer to the number of people in a well-delineated geographical area that conforms to the boundaries of a recognized political administration? Or does it refer to all those people who identify themselves as being ethnically Tibetan, who may live under separate yet contiguous polities? In current Chinese demographic writings, the "population in Tibet" specifies the inhabitants of the Tibet Autonomous Region (TAR), whereas "the Tibetan population" is a more inclusive term that refers to all those who consider themselves to be members of the Tibetan minority nationality (Chinese: *minzu*), only about half of whom live in the TAR (Guo, 1996). Although this distinction is useful with regard to the contemporary demographic situation, it does not help to clarify the past since the TAR is a recent administrative creation.

Historically the Tibetan Plateau (the geographical area where the majority of Tibetans have always lived) has undergone numerous political transformations from a unified empire (640–842) incorporating parts of what are now Nepal, India, Pakistan, and several provinces of China (Gansu, Xinjiang, Sichuan, Yunnan), to a collection of independent and sometimes antagonistic kingdoms and polities associated with various monasteries (842–1248), to a protectorate under the power of an expanding Mongol empire (1248–1368), back to a collection of independent and sometimes antagonistic kingdoms and polities associated with various monasteries (1368–1642), to a centralized state under the clerical administration of the Dalai Lamas (1642–1720), to a protectorate of the Manchu Qing Dynasty (1720–1911), and finally to a nation having de facto independence under the clerical administration of the Dalai Lamas (1911–1951). This grossly simplified overview of Tibetan history serves to illustrate the point that Tibet's administrative boundaries have expanded, contracted, fragmented, and been partially or wholly subsumed by external polities throughout the course of history. Even during times of unification under a centralized administration based in Lhasa (e.g., 1911–1951), many areas of the Tibetan Plateau remained autonomous or even independent.

Since Tibet's political boundaries have fluctuated through time, any comparison of Tibetan populations at different points in history that is based on such boundaries would have the daunting task of adjusting for shifts in territory. Otherwise, political as much as demographic processes would result in population growth or decline depending upon whether territory was gained or lost. If it is impossible to define Tibet as a stable geopolitical entity through time, then it is perhaps nonsensical to compare past population estimates referring to geographical areas that do not necessarily coincide.

3. Polyandry and assumptions of population decline

Polyandry has generated interest among Western scholars for nearly two centuries. Early accounts of the marriage practice came to the attention of Malthus, who commented, "It is

evident that this custom [polyandry], combined with the celibacy of such a numerous body of ecclesiastics, must operate in the most powerful manner as a preventive check to population'' (Malthus, 1958, p. 123). Nevertheless, no demographic studies were ever carried out in Tibet until after the traditional Tibetan administrative system—one that provided definite incentives to practice polyandry—had been irrevocably transformed by China (for recent demographic studies on contemporary Tibet, see Goldstein, Jiao, Beall, & Tsering, 2002; Ma, 1996; Zhang & Zhang, 1994).

The sole historical demographic study of a Tibetan population carried out thus far was Schuh's (1988) groundbreaking work using population registers from a monastery's archives. Unfortunately, the analysis is limited by the small size of the recorded population (roughly 400 individuals), the lack of contextual ethnographic information, and the limited use of demographic methods. Meanwhile, anthropological and demographic studies of Tibetan populations have mainly been conducted on the geographic fringes of Tibet, specifically in Himalayan regions of India (e.g., Attenborough, 1994; Elford, 1994; Wiley, 1998) and Nepal (Childs, 2001; Goldstein, 1976; Haddix, 2001; Levine, 1988; Ross, 1984; Schuler, 1987; Weitz, 1978). Significant results of such studies include the empirical validation of polyandry's role in reducing aggregate fertility (Goldstein, 1976; Ross, 1984), and several explanations of polyandry from sociocultural and evolutionary perspectives (for overviews, see Crook & Crook, 1994; Levine & Silk, 1997). Meanwhile, ethnographic research based on retrospective interviews has refined our understanding of administrative structures and family systems in traditional Tibetan societies (Aziz, 1978; Carrasco, 1959; Cassinelli & Ekvall, 1969; Dargyay, 1982; Goldstein, 1971a, 1971b, 1971c, 1978). These studies confirm the linkage between the traditional Tibetan administrative system and the practice of polyandry, but in the absence of demographic data are unable to demonstrate the aggregate impact of polyandry on fertility in a historical Tibetan setting.

Polyandry, among other factors (the harsh environment, a high rate of monastic celibacy, the lack of health care facilities, and inequities of the social system), is implicated by many scholars as a reason for the assumed historical population decline (Ekvall, 1972; Grunfeld, 1996; Guo, 1996; Ma, 1996; Sun & Li, 1996; Tucci, 1967; Zhang & Zhang, 1994). When polyandry is identified as a contributing factor, the application of incomplete logic often prevails. Polyandry can indeed result in a high frequency of female nonmarriage and thereby act as a restraint on aggregate fertility and population growth. However, marriage and childbearing are not mutually exclusive in a setting where illegitimacy is both common and accepted. Goldstein (1981), the only scholar to seriously question the population decline hypothesis, made this point. Using data from a Himalayan community of Nepal he demonstrated that a Tibetan population characterized by polyandry and a high level of female nonmarriage could indeed experience a moderate rate of growth. The keys are high marital fertility and births out of wedlock. More recent case studies reveal that similar Himalayan populations can increase in size when aggregate fertility is restrained by factors ranging from polyandry (Levine, 1988) to a high level of female religious celibacy (Childs, 2001). Nevertheless, because these studies rely on data from contemporary societies that are geographically and temporally removed from traditional Tibetan administrations, their findings are tangential when it comes to assessing population trends in historical Tibet.

Summarizing the situation to date, we are confronted with a problem of geographic and temporal disjuncture. Whereas studies of traditional Tibetan family life in relation to local administrative systems now exist, as well as microdemographic documentation of polyandrous Tibetan communities in Nepal and India, no study has assessed the quantitative impact of polyandry in a population living under a traditional Tibetan administrative system. According to Levine (1988), "In the absence of census data, it is impossible to come to any conclusions about population dynamics in traditional Tibet, and matters are complicated further by regional variations and variations between different occupational and social strata of the population" (p. 273). That state of affairs need no longer prevail.

4. The study site and the Tibetan administrative system

This study centers on Kyirong (sKyid-grong), formerly a district-level administrative unit under a central Tibetan government based in Lhasa. The main town and trade center, also called Kyirong, is situated in a relatively lush valley on the southern slope of the Himalayas, near the border with Nepal. In addition to the town center, numerous hamlets dot the landscape and range in size from a few households to several hundred people. The inhabitants of Kyirong pursued a subsistence strategy that combined farming (barley, buckwheat, maize, potatoes), the herding of large bovines (yaks, cows, and a variety of crossbreeds), and trade across the border with Nepal. As will be discussed below, most people did not own the land they farmed, but did hold heritable land leases from either the government or a monastery.

Since the middle of the 17th century, Tibet was organized into districts (*rdzong*) under the central authority of a government based in Lhasa and headed by the Dalai Lama. Arable land was held as government estates (*gzhung-gzhis*), monastic estates (*chos-gzhis*), or aristocratic estates (*sger-gzhis*). Those who did the actual farming held a land tenure document, known as a "tax basis" (*khral-rten*), issued by the controlling authority (e.g., the government, a monastery, or a lord). These people were known as "taxpayers" (*khral-pa*). Families incurred various tax obligations in labor and produce in exchange for the right to till the land (see Goldstein, 1971c; Surkhang, 1966, 1986). If tax obligations were met on an annual basis, that right could be passed on from one generation to the next. Taxpayer households have been described as corporate family units (Goldstein, 1971a) since taxation was assessed on a household basis and since, ideally, all brothers remained together with a common wife (fraternal polyandry) to avoid the partitioning of their land. In fact, the land tenure and taxation system provided incentives for the practice of polyandry in the agropastoral economy. The more adult brothers in the household, the easier it was to meet tax obligations and to diversify the household's economy through the pursuit of different productive activities.

In addition to taxpayers, a class of landless people known as "small householders" (*dud-chung-ba*; literally meaning "small smoke") existed. Small householders did not hold a tax basis and were considered lower in status than taxpayers. They subsisted on wage labor and on small plots of land that were occasionally available for lease. Status was either assigned at birth if a child's parents were small householders, or could be acquired later in life, as was the

case with spinsters who lived separately from their taxpayer brothers and with men who opted out of polyandrous marriages and thereby renounced their taxpayer status. Collectively, the taxpayers and small householders were known as subjects (*miser*) of the government, a monastery, or an aristocratic lord.

Each of the districts (*rdzong*) throughout Tibet was headed by a district commissioner (*rdzong-dpon*), who was culled from the aristocracy and dispatched from Lhasa for a 3-year term of duty. One of his primary functions was to administer government land and assure that taxes were collected in a timely fashion. Since each district was comprised of hundreds of households, the compilation of accurate records of government subjects was considered essential. Thus, at the completion of his term, the district commissioner was required to undertake a census (*sgo-khra*) of all those who held deeds to government lands.[2]

Kyirong District, the focus of this study, was divided into nine "units of one hundred [households]" (*brgya-tsho*), which despite the nomenclature varied considerably in size. Each unit of one hundred was headed by a locally appointed headman (*lding-dpon*; in military terms this was a leader of 25 men) who answered to the district commissioner. The position was held on a rotating basis with three others who were known as representatives (*'thus-mi*).[3] The district commissioner ordered the census, which was then carried out by the headman and representatives in their respective administrative divisions and villages. Accordingly, the headman would call heads of households in succession to his home where he would record the names and ages of all household members. The raw data were then collated at district headquarters by the secretary (*drung-yig*) of the district commissioner and recorded on a long scroll of paper that was passed along to the successor appointed from Lhasa. In this way the incoming commissioner had an accurate record of all those who were under government jurisdiction.

The procedure outlined above most likely took form during the 18th century through new land settlement initiatives and attempts to better organize the collection of government revenues (Surkhang, 1966; Tshul-khrims et al., 1989). The sheer quantity of data that existed in the past becomes evident when we consider that censuses of government taxpayers were undertaken every third year for over 200 years in each of the roughly 60 Tibetan districts. To date, this vast archive remains untapped, and in fact we do not even know how many such records survived the Cultural Revolution and other cataclysmic events that erased much of Tibet's heritage. Although these tax registers do not approximate the robust nature of European parish archives, they are nevertheless extremely useful for shedding light on historical population processes in Tibet (see Childs, 2000; Schuh, 1988).

Before the founding of the People's Republic of China (1949), administration at the local level was predominantly a Tibetan affair. That situation began to change in 1951 in what has been termed the "peaceful liberation" of Tibet by China. At first governmental affairs were left in the hands of the Tibetan administration headed by the Dalai Lama and his cabinet of

[2] Other landowners, such as monasteries and aristocrats, administered their landholdings separately from the government but within the same territory of the district. It is not known how regularly monasteries and aristocrats conducted similar censuses among their taxpayers.

[3] Terminology differed throughout Tibet. For example, the administrative equivalent of the *lding-dpon* in parts of central Tibet was known as *gtso-drag*, and the *'thus-mi* as *rgan-po* (Surkhang, 1966, p. 17).

ministers in Lhasa. In places such as Kyirong—remote from Lhasa and even farther from China—the full ramifications of the new system were never felt until 1959, when a rebellion in Central Tibet was quelled and the Dalai Lama departed for exile in India. Until that time the local administration of Kyirong was still in the hands of Tibetans who answered to Tibetans of higher authority in Lhasa. Afterward, an entirely new and radically different system of governance was established. The date of the transition, 1959, is important to point out here, for the source of data used in this article is from 1958, a time when the entire society was standing on the brink of dramatic and irrevocable change.

5. The data source

The "Earth-Dog Year [1958] household contract being a census [of land and people] in the nine divisions of Kyirong District" (*Sa-khyi-lo'i sKyid-grong rdzong rgya-dgu'i sgo-khra them-gan*)[4] was completed, witnessed, and sealed on 8 or 9 July 1958.[5] The structure of the text was straightforward. It commenced with a preamble in legal terminology detailing the rationale for the document and reiterating some of the powers held by the district commissioner. Afterward, every household possessing a government land lease (i.e., taxpayer household) was listed according to village. Each member's name was recorded, as well as his or her age and status within the household. Afterward, the small householders of the village were listed by name, age, relationship, and in some cases, according to the taxpayer household to which they were attached. A typical taxpayer household's entry read as follows:

> 1 and 1/3 *rkang* [the size of the taxable landholding]: Dorje, the holder of the lease (*'dzin-mi*) of Black Fort [mKhar-nag, the house name], age 60; Dawa the daughter (*bu-mo*), age 58; Dolkar the wife (*bza'-zla*), age 56; Dolma the daughter (*bu-mo*), age 23; Purbu the son (*bu*), age 19 (*sKyid-grong sgo-khra them-gan*, 1958).

Relationship terms offer important clues for determining household structures. In the above example, the 58-year-old "daughter," Dawa, is listed after the 60-year-old head of the household, Dorje. Dawa is obviously not Dorje's daughter, so we can assume that she is his sister who never married and remained in her natal household. If she had ever married, she would be listed as a wife (*bza'-zla*), bride (*mna'-ma*), or woman (*dman*) regardless of her marital status at the time of the census. A never-married woman, regardless of age, is always listed as "daughter" (*bu-mo*). The children of Dorje and his wife Dolkar are easily identifiable by their ages and relationship terms (son/daughter). More details about interpreting the document in light of relationship terminology will be presented below.

[4] The manuscript is housed in the Library of Tibetan Works and Archives (LTWA) in Dharamsala, India. A former political leader of the area brought it from Kyirong and deposited it at the LTWA for safekeeping.

[5] The date cited in the heading of the document is the 23rd day of the sixth month of the Earth-Dog Year. However, there were two 23rd days of that particular month and year (see Schuh, 1973, p. 235). The Tibetan lunar calendar frequently adds and omits days or even entire months. I was unable to determine whether the first or second 23rd (8 or 9 July) was the actual date of composition.

A total of 2846 names are listed. Because duplicate recordings were made for two people, the total enumerated population was 2844. The register records an estimated 75% of the entire population in Kyirong. Those who were not recorded include the following: (1) the district commissioner, his family, and entourage; (2) monks and nuns of various monasteries; (3) people who farmed and paid taxes on land belonging to those monasteries; (4) blacksmiths and butchers who occupied the lowest rung of the social hierarchy and were excluded from the tax system; and (5) Nepali citizens who resided in the area for commercial reasons. In this article "the population of Kyirong" refers exclusively to the 2844 government taxpayers listed in the 1958 tax document, since adequate data do not exist for those who were excluded from the register.

During the course of the research project, roughly 180 individuals from Kyirong who were either listed in the document or had lived in Kyirong but belonged to other estates (e.g., monastic) were located and interviewed.[6] The ethnographic interviews centered on verifying or reconstructing family structures found in the document, investigating the cultural ideals behind the family system, documenting actual cases of individual decisions regarding marriage and the dissolution of polyandrous marriages, and detailing the tax and administrative system. Through retrospective interviews direct data (from a member of that household) or indirect data (from a relative or former neighbor) were obtained for 70% of all the households listed in the 1958 census.

6. Age reporting, age reckoning, and data reliability

Village leaders (*lding-dpon* and *'thus-mi*) collected the raw data presented in the 1958 Kyirong census. Since most villages were small in size, ranging from 10 to 30 households, data recorders presumably had intimate, first-hand knowledge of their neighbors' families. In addition, the government officials who authored the 1958 census encouraged accuracy with a not so subtle insinuation of consequences for those who provided false or misleading statements. One section of the document's preamble reads as follows:

> As cited in the oral declarations by the local leaders below, every landholder in the nine divisions [of Kyirong] was included [in the document] without error. Heavy punishment will be levied to those persons who are found to throw blame onto others or who suppress facts of the smallest nature even to the size of a sesame seed. If any such misdeeds are found later, the persons involved will take full responsibility and everything will be exposed like a chronic disease diagnosed (*sKyid-grong sgo-khra them-gan*, 1958).

Regardless of such an ominous threat, the validity of this study rests on data accuracy that must be verified rather than assumed. To start, since the Tibetan manner of age reporting differs from our own, a few adjustments were required to make raw data amenable to

[6] Since I was unable to obtain permission to visit Kyirong, all the interviews were with refugees living in Nepal and India. A large proportion of the population left Kyirong during the Cultural Revolution, so I did not encounter a shortage of informants.

demographic analysis. The Tibetan calendar operates according to a 60-year cycle that consists of five (the number of elements) 12-year cycles (the number of animal signs). When asked, a Tibetan may not be sure of his precise age. This is because the number of years that have elapsed since birth is considered less important than the animal sign of his birth-year (*lo-rtags*). One's year of birth must be taken into account when making certain decisions in life, such as determining appropriate and inappropriate days of the week for initiating a venture or determining whom one can or cannot marry (Childs & Walter, 2000). To complicate matters, Tibetans consider themselves to be 1 year old at birth, and do not have birthdays. Everybody advances 1 year in age on the first day of the new lunar year. Thus, when gathering data for demographic analysis in a Tibetan context, the researcher must inquire about both the respondent's age and birth sign. The former is taken as a relative figure, whereas the latter can be converted more or less precisely into a Western equivalent.[7] For example, one woman from Kyirong stated in an October 2000 interview that she is 81 years old and was born in a bird year. If we relied exclusively upon her stated age, her birth year would be 1919. That, however, was a sheep year, whereas 1909, 1921, and 1933 were all bird years. Hence, her stated age helps us to identify the bird year of her birth, which was 1921.

The 1958 Kyirong census lists people's ages, not their birth signs. Nevertheless, birth signs elicited from living informants whose names and ages were recorded in the 1958 census can be used to assess data reliability. Returning to the above example, the woman who said she was 81 and was born in the bird year (1921) was recorded as being 38 years old in the tax document—precisely her age at that time, according to the Tibetan manner of reckoning. If 1 year is subtracted from the recorded age, then the adjusted age is 37, according to our own manner of reckoning. Of the 104 living informants (ranging in recorded age from 1 to 47 in 1958) for whom year-of-birth details were recently elicited, 70 (67.3%) were in perfect accord with their ages as recorded in the census and 20 (19.2%) were actually older in 1958 than their recorded ages. Nineteen were only 1 year older, and 1 was 4 years older. Fourteen individuals (13.5%) were actually younger in 1958 than their recorded ages: 11 were 1 year younger, 2 were 2 years younger, and 1 was 3 years younger. The recorded ages are fairly accurate, not perfect, but the discrepancies more or less balanced out. The importance of this finding should not be underestimated, since it confirms the validity of data found within such indigenous source materials.

7. The assumption of stability

If the population of Kyirong were stable over time, then it would be possible to apply indirect methods to the data source to estimate fertility and mortality. Stability implies a closed population experiencing constant birth and death rates over a sufficient period of time.

[7] Some discordance exists since the Tibetan New Year occurs anytime from mid-January to early March. For example, the recently completed Iron Dragon Year began on 6 February 2000, and ended on 23 February 2001. About 86% of the days of this Iron Dragon Year fell within calendar year 2000, so all births in the Iron Dragon Year can be reasonably assigned to 2000 for the purpose of age reckoning.

The result would be an unvarying age distribution and a constant rate of population growth or decline (Coale & Demeny, 1983). As small populations are notoriously unstable, the assumption requires some justification.

The last major disruptive event in Kyirong before 1958 was a border war with Nepal in 1855–1856 (Rose, 1971; Shakabpa, 1984). Although several monasteries and temples were sacked and looted, the extent of dislocation and death among the local population remains unclear. Since that time no invading armies has swept through the area. The border has remained calm.

According to informants, migration in and out of Kyirong was negligible before 1958. Occasionally marriages were arranged between the people of Kyirong and those of Tibetan descent living on the Nepali side of the border. In some cases brides were brought from Nepal to Kyirong; in other cases they were sent to Nepal. Whether more women ended up on the Nepal or Tibet side of the border is uncertain, but in all likelihood they cancelled each other out.

The proximity of the border also provided an escape opportunity for those who could not meet their tax obligations or who had incurred excessive debts. The introduction of the 1958 tax register refers to such migrations, stating:

> arrangements of marriages, entrance into religious life, and the exchange of subjects are not permitted without prior permission [of the district commissioner], [this applies] especially to those ignorant ones who flee to other lands thinking that they will be more secure and have a better life. Such persons making flimsy excuses to flee from the country must be stopped with tight security and the leaders and people have taken an oath that such incidents will not be allowed to occur . . . (*sKyid-grong sgo-khra them-gan*, 1958).

Those who fled to Nepal tended to take their entire families along. Once again, the level of such migration is impossible to estimate. However, since cases of individuals and families moving into Kyirong from other areas of Tibet have been documented, the low levels of immigration and emigration may have cancelled each other out. Furthermore, the abandonment of an estate provided an opportunity for a small householder to rise to the status of taxpayer by assuming the lease and its concomitant obligations. Therefore, at the very least the population of taxpayers remained stable.

Some people shifted between government and religious estates within Kyirong. For example, if a taxpayer belonging to a monastery took a bride from a government taxpayer's household, the woman would become a monastery taxpayer upon marriage. In the context of this study, such a movement represented out-migration, since the woman would no longer appear on the government's tax register. However, the loss of a taxpayer needed to be compensated through a "human exchange" (*mi-brjes*), an administrative procedure whereby a person was officially transferred from one estate to another. A document was drafted to formalize the exchange, such as the following one from Kyirong.

> Tsering Gyalmo, the sister of the government taxpayer Nyidön from Tsongdu [a village in Kyirong] was exchanged for Dawa, the daughter of Yudön who belongs to Samtenling [a monastery in Kyirong]. Dated 10 December 1947 (Schuh, 1988, p. 197 Findbuch 402).

Note that one woman was exchanged for another. Informants concur that most human exchanges involved the substitution of one marrying woman for another. For the purpose of this study, the net result was zero migration between government and monastic estates.

Birth rates in Kyirong probably remained more or less constant over time. Contraception was not introduced until the 1980s, and no traditional means for preventing pregnancies or births seem to have been used. Nevertheless, Goldstein (1976, p. 232) argues that aggregate birthrates can fluctuate in Tibetan populations in concurrence with strict or lax adherence to polyandry. According to this hypothesis, an increase in economic opportunities led to an increase in departures by men from polyandry and a concomitant increase in birthrates, as more women become reproductively active. A subsequent decrease in economic opportunities led to stricter adherence to polyandry and a reduction of aggregate fertility, as more women were excluded from marriage. If true and if such trends can be demonstrated over time, Goldstein's hypothesis invalidates the use of stable population assumptions in Kyirong.

Data from Kyirong households reveals that brothers were leaving polyandrous households fairly regularly as far back as the 1920s. In many cases their departures do not seem related to economic fluctuations, but were motivated by fraternal friction and the desire to form independent families. According to interview data, most men who left polyandrous households were younger brothers who sacrificed the economic security of a taxpaying household to realize the ambition of having their own wives and children. The Kyirong evidence supports the conclusion of Levine and Silk (1997) that economic factors were less important determinants of departures from polyandrous unions than birth order (younger brothers tended to leave), difference in age between cohusband and spouse (younger brothers tended to be younger than the shared wife), or the desire to have one's own family.

Past mortality trends are difficult to assess. The stability of small populations, especially in areas where modern health care and good sanitation are lacking, was vulnerable to recurrent epidemics. The oldest living informants expressed no recollection of a major epidemic that claimed the lives of an extraordinary number of people during the early part of the 20th century. To the contrary, they consistently claimed that Kyirong was a healthy place to live. Many practitioners of Tibetan medicine lived in Kyirong, their numbers bolstered by the presence of a training center just to the north at Dakar Taso (*Brag-dkar rTa-so*) Monastery. In addition, a family of renowned doctors had resided in Kyirong for centuries (see bKra-shis Tshe-ring, 1994, for a brief history of this family). The presence of medical practitioners undoubtedly affected the level of mortality, yet the magnitude of their effect is unknown. For the purpose of this study, we will assume that mortality remained constant over time, although in reality it probably fluctuated.

The above reasoning is used to justifies the use of a stable population model. In the spirit of full disclosure, it is important to point out that the following interpretations are subject to error since the assumptions themselves may not be entirely accurate. All conclusions derived from the analysis are thereby hypothetical. Nevertheless, the exercise of estimating fertility for Kyirong is a worthwhile endeavor, especially since no such calculation was ever made for any historical Tibetan population. Consider the following analysis and conclusions as a benchmark to be evaluated and refined in light of further evidence.

8. Application of the own-children method

Given the nature of the data—a single census—the best possibility for estimating age-specific fertility is the own-children method (Cho, Retherford, & Choe, 1986; United Nations, 1983), a reverse-survival technique that has been applied successfully in diverse settings including Nepal (Retherford & Thapa, 1998; Schroeder & Retherford, 1979), Iran (Abbasi-Shavazi, 2000), Korea (Retherford, Cho, & Kim, 1984), and the United States (Haines, 1989). Data requirements are the following: (1) all children (aged 0–14 whose mother is identified) classified by age and mother's age, (2) all children (aged 0–14 whose mother is not identified) classified by age, (3) all women (aged 15–64) classified by age, (4) an estimation of child survivorship, and (5) an estimation of female adult mortality. The primary advantage of the own-children method is that it can be used in the absence of a vital registration system, providing the children can be linked with their mothers. Disadvantages include possible distortion of the age pattern of fertility by age misreporting, and skewing of results by migration. As argued above, age reporting and migration are not major hindrances in this case.

On the one hand, the 1958 Kyirong tax register provides numerous clues that assist in identifying which children belonged to which mothers, while on the other hand, the text is riddled with ambiguity. The two examples here illustrate potential pitfalls in the assignment of children to mothers. Tables 1 and 2 summarize how members of these particular households are enumerated in the census.

In Table 1, two women (Tashi and Buti) are listed as brides within the household. When interviewed in 2000, Zangmo revealed that Tashi was the initial wife of the polyandrously married brother, Gyatso and Samten. Later Samten brought Buti home to be his own bride. Children are generally listed beneath their mother in the document, and indeed Puntsok was the son of Tashi. Based on this logic Zangmo, Lhakpa, and Gyalpo would be the children of Buti. However, Zangmo stated that Gyalpo was not her brother, but the illegitimate son of Gyatso and Tashi's daughter, Lhamo, who had subsequently married and left home. Gyalpo remained in his grandparents' and maternal uncles' household since, as an illegitimate male, he had no place in his mother's new marital household. (The husband of Gyalpo's mother was

Table 1
Enumerated Kyirong household, example 1

Name	Sex	Age	Relationship (Tibetan term)
Gyatso	M	61	man (*khyo*)
Samten	M	51	brother (*spun*)
Tashi	F	65	bride (*mna'-ma*)
Puntsok	M	27	son (*bu*)
Buti	F	47	bride (*mna'-ma*)
Zangmo	F	15	daughter (*bu-mo*)
Lhakpa	M	13	son (*bu*)
Gyalpo	M	15	son (*bu*)

Table 2
Enumerated Kyirong household, example 2

Name	Sex	Age	Relationship (Tibetan term)
Kunga	M	57	father (*pha*)
Tsering	M	44	son (*bu*)
Dolma	F	35	bride (*mna'-ma*)
Pasang	F	10	daughter (*bu-mo*)
Kunchok	M	0	son (*bu*)
Norbu	M	14	son (*bu*)
Gyalmo	F	17	daughter (*bu-mo*)

not his biological father). Thus, in the absence of direct information on relationships within this household, an erroneous assignment of Buti as Gyalpo's mother would have been made, and one fewer child would have been attributed to Lhamo, who was listed in the census under her nuptial household.

The relationships within the household detailed in Table 2 seem relatively straightforward. Judging by the small age difference between the men listed as father (Kunga) and son (Tsering), Kunga must have been the junior brother in a polyandrous household where the senior brother had passed away or departed. Tsering was the household's son and successor whose biological father would have been Kunga's older brother. Four children are listed beneath Dolma, Tsering's wife. Since children are usually listed beneath their mother in the document, one can assume that all four children belonged to Dolma. However, a former neighbor who was interviewed revealed that Dolma was actually the second wife brought into the household. The first, Dolma's elder sister, had died after giving birth to her second child, Norbu (Gyalmo being her first surviving child). Only Pasang and Kunchok were Dolma's own children.

The two examples illustrate the indispensable nature of the interviews for assigning children to their mothers. As mentioned above, direct or indirect information was obtained about 70% of all households listed in the census. Judgments based on observed patterns of well-documented households were made in those cases where information was lacking.

The underenumeration of children must also be considered when applying the own-children method. Kyirong was home to several small monasteries where celibate monks and nuns resided. Parents generally made the decision to give a child to the institution when the child was between ages 8 and 10. At that point the child ceased to be classified as a government taxpayer and would, therefore, not be recorded in the census. To compensate for monastic residence of children, an underenumeration factor was introduced into the analysis. Based on indirect estimates, a factor of 1.05 was used for ages 8 to 14, representing a disappearance from the census of 5% of children in that age group.

The next task was to estimate the level of mortality. Since no mortality data exists for Kyirong, model life tables were employed. Clues from other ethnically Tibetan areas could be used to establish some basic parameters. To start with, many travelers, scholars, and

missionaries commented on the high incidence of infant mortality in Tibet before the 1950s. Their anecdotal evidence is given empirical reality by demographic studies of Tibetan populations living in Himalayan areas of Nepal and India. Specifically, from 1967–1977, the infant mortality rate was between 209 and 230 per 1000 in various villages of Humla, Nepal (Levine, 1987, p. 289); 200/1000 during the 1970s in Limi, Nepal (Goldstein, 1981, p. 725); 158/1000 for the Sherpas of Khumbu, Nepal during the 1970s (Weitz et al., 1978, p. 185); 200–220/1000 during the 1990s in villages of Nubri, Nepal (Childs, 2001, p. 1105); 90/1000 and 190/1000 for two small villages in Zangskar, India, in the 1980s (Attenborough, 1994; Elford, 1994); and 182/1000 in Ladakh, India, during the 1980s (Wiley, 1997, p. 286). Recent work in Tibet has revealed an infant mortality rate of 142/1000 in 1990 in the Tibet Autonomous Region of China (Zhang & Zhang, 1994, p. 58), a figure that has probably been reduced from historical times due to improvements in health care. The suspect claim that Tibet's infant mortality rate was 430/1000 before the 1950s (e.g., Sun & Li, 1996, p. 226; Zhang & Zhang, 1994, p.58) should be discarded unless it can be substantiated.

Using the above evidence as a guideline, model life tables were chosen to represent mortality trends in Kyirong. Excluding the outliers, the figures listed above cluster around 200/1000. The South pattern of mortality (Coale & Demeny, 1983) best represents what we know about mortality in Tibetan populations, namely, high death rates in infancy, early childhood, and old age. Thus, a range of ${}_1q_0$ in the South model life tables used here reflects infant mortality levels between 161/1000 and 246/1000.

Table 3 displays total fertility rates (TFRs, the average number of births to each woman if age-specific fertility rates remain constant) calculated under different assumptions of mortality using model life tables in conjunction with the own-children method. The women's age range for this calculation was age 15 to 49.

These fertility estimates, spanning four to five births per woman, are somewhat low for a natural fertility population, yet they do fit within the range of TFRs recorded in other Tibetan populations. For example, based on 1980 census data, the TFR for Ladakh, India was 3.25, considered an underestimate since births to unmarried women were not recorded (Wiley, 1998, p. 467). Zhang and Zhang (1994, pp. 54–55) report that the TFR in Tibet ranged from 3.2 to around 5.7 between 1950 and 1989, and hovered around 4.0 from 1950 to 1958. They attributed the rise in fertility after the 1960s to the decline of polyandry and

Table 3
Infant mortality and total fertility rates by different mortality levels in south model life table

South level	${}_1q_0$	TFR
4	246	4.99
5	229	4.77
6	213	4.57
7	199	4.41
8	185	4.26
9	173	4.14
10	161	4.02

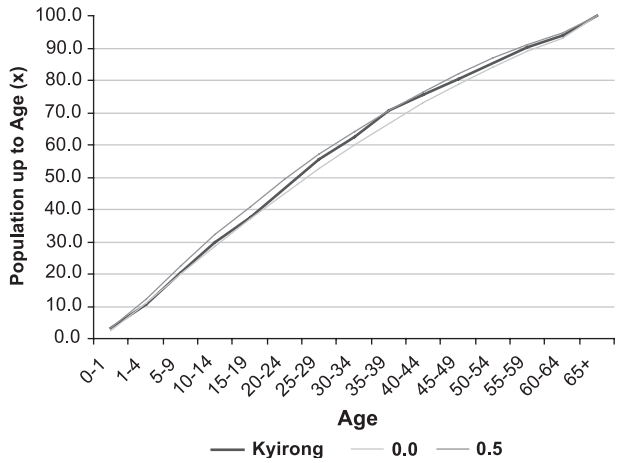

Fig. 1. Comparison of age distributions in Kyirong and South Level 7 model life table according to different levels of population growth (0.0% and 0.5% per year).

reductions in the number of males living celibate lives as clerics. In Nubri, which is closer to Kyirong both ecologically and geographically but where polyandry was not nearly as common, TFRs ranged from 5.3 to 7.0 according to village during the 1990s (Childs, 2001). The question remains, was the fertility rate in Kyirong sufficient to generate population growth?

Estimating population growth can be accomplished by comparing known parameters of the Kyirong population with those found in stable population models. Once again the South model life tables are used with mortality levels from 4 to 10. Parameters for determining the most appropriate levels of growth include the female age distribution, average age (29.4 years), the percentage aged 15 to 44 (45.9), the ratio of those aged 0 to 4 to those aged 15 to 44 (0.23), and the dependency ratio (0.66). To illustrate how the parameters were fit with the models, Fig. 1 plots the age distribution for Kyirong females against age distributions found in South Level 6 stable populations according to two rates of population growth (0.0% and 0.5% per year).

Note how the Kyirong age distribution fits well between the two. The other parameters also fit fairly well (average age = 30.8–28.7 vs. 29.4; percentage aged 15–44 = 44.3–44.5 vs. 45.9;

Table 4
Life expectancy and population growth by different mortality levels in south model life tables

South level	e_0	Population growth
4	27.5	0
5	30.0	≥0
6	32.5	0<5.0
7	35.0	≤5.0
8	37.5	5.0
9	40.0	≥5.0
10	42.5	5.0<10.0

ratio of those aged 0 to 4 to those aged 15–44 = 0.24–0.28 vs. 0.23; and the dependency ratio = 0.65–0.70 vs. 0.66). The conclusion from this particular exercise is that, if the Kyirong level of mortality conforms to the South Level 6 level of mortality, then the population growth rate was greater than zero but less than 0.5% per annum. Table 4 summarizes the population growth rates under different levels of mortality in stable populations.

All scenarios, except the one coinciding with the highest level of mortality (South Level 4), indicate a pattern of population growth. Based on the data and analysis, one can reasonably conclude that the population of Kyirong was experiencing growth during the middle of the 20th century.

9. Marriage, nonmarriage, and fertility

Polyandry was by all accounts the normative form of marriage in Kyirong. If on average two men take a single wife, and if the sex ratio is balanced (97.0 in Kyirong, 1958, so it favored women slightly), then many women should be excluded from marriage. The logical conclusion is that polyandry acts as a restraint on population growth by creating a marriage squeeze. However, out-of-wedlock births can mitigate the negative impact of nonmarriage on aggregate fertility. The key to unraveling quantitative dimensions of the impact lies in distinguishing ever-married from never-married women in the tax register, and then calculating their respective fertility rates. Here, ever-married women are those who had married within taxpayer households, whereas never-married women are those who did not marry into taxpayer households but who may have been informally married to men having small householder status (more on this distinction below).

Relationship terms within the 1958 tax register were used in conjunction with interviews to determine who was ever-married and who had never married. The pattern was unmistakable. All women listed as "bride/daughter-in-law" (*mna'-ma*), "woman" (*dman*), "spouse" (*za-zla*, sic. *bza'-zla*), "wife" (*za-zla dman*, sic. *bza'-zla dman*), and "mother" (*ma*) were either currently or had at one time been married. Regardless of age or maternal status, most women who were labeled "daughter" (*bu-mo*) had never been formally married within a taxpayer household. The only women labeled "daughter" who were actually married were heiresses in households with no male successors. In such cases the daughter of the household brought home a spouse who was clearly designated in the document by the synonymous terms *go-mag* or *mag-pa* (matrilocally resident husband). Table 5 presents the data on female marriage and nonmarriage by age.

One result of the high frequency of nonmarriage was a high singulate mean age at marriage (29.4 years), resembling the elevated levels found in some historical European populations where marriage was delayed for economic reasons and many women remained spinsters. The implication for aggregate fertility seems obvious when we focus on the highest fertility cohort (25–29) wherein 71 of 124 women (57.3%) were not formally married. Based on this evidence alone, it is reasonable to conclude that polyandry acted as a powerful preventive check on population growth through the marriage squeeze. Which women were the most affected?

Table 5
Marriage and nonmarriage by age in Kyirong

Age	% Never married (*n*)	% Ever married (*n*)
15–19	96.5 (110)	3.5 (4)
20–24	81.1 (107)	18.9 (25)
25–29	57.3 (71)	42.7 (53)
30–34	49.5 (51)	50.5 (52)
35–39	35.1 (40)	64.9 (74)
40–44	31.1 (23)	68.9 (51)
45–49	28.6 (20)	71.4 (50)
Total	57.7 (422)	42.3 (309)

People in Kyirong considered it inappropriate for a younger sibling to marry before her elder sisters. Sisters therefore tended to marry according to birth order. Since there were not enough taxpayer households into which women might marry, high parity daughters were less likely than their low parity siblings to marry. A unique cultural convention for naming girls reflects the perceived undesirability of having many daughters. Many women listed in the 1958 census bear names such as Sumchog (gSum-chog; Three is Enough), Zhichog (bZhi-chog; Four is Enough), or Ngachog (1Nga-chog; Five is Enough). The presence of many daughters in the household meant that some might remain unmarried and give birth to illegitimate children. High parity daughters could get married, and many did. Nevertheless, the naming convention was an explicit appeal to higher powers to prevent subsequent female births, since such daughters were difficult to marry off. Unmarried daughters and any children they might bear were relegated to the status of small householder.

An unmarried woman often resided within an "adjunct house" (*zur-khang*), a small structure that was economically and sometimes physically linked with her parents' or brothers' household. The timing of her movement from the main house was dictated by the arrival of a bride for her brothers. Afterward it was considered inappropriate for an unmarried woman to remain within her natal household due to the potential for conflict with the bride, whose status was enhanced by her becoming the mother of the household's successors. An unmarried woman living in an adjunct house was lexically distinguished as a "solitary woman" (*mo-hreng*). Although living alone, she often bore illegitimate children.[8] Some women cohabited in the adjunct house with a man who was of small householder status (*dud-chung-ba*) since birth, and therefore had neither a land deed nor a claim on the assets of a taxpayer household. In other cases a woman lived with a man who voluntarily exchanged his economic security and membership in a polyandrous taxpayer household for the lower, small householder status and the opportunity to live monogamously with his own

[8] The people of Kyirong use specific terms to distinguish legitimate from illegitimate children. The terms *nyelu* (from *nyal-bu*) and *arken* (proper spelling and etymology unsure) refer to children who were born to unmarried mothers in cases where paternity was not recognized, or to married mothers who had extramarital affairs. Illegitimate children stood no chance of inheritance and therefore were automatically relegated to small householder status.

Table 6
Total fertility rates for all women (TFR), ever-married women (TEMFR), and never-married women (TNMFR)

South level	TFR	TEMFR	TNMFR
6	4.57	6.44	2.23
7	4.41	6.21	2.15
8	4.26	6.01	2.09
9	4.14	5.83	2.03

partner and children. In either circumstance, the cohabiting couple did not undergo a formal marriage ceremony, and therefore the woman was still listed as "daughter" (*bu-mo*) in the census. Their children were considered legitimate providing the relationship was stable and paternity was recognized. In the agropastoral economy where labor was in constant demand, the couple could support themselves and their children through wage labor on taxpayer fields, and by occasionally leasing small plots of land.

Table 6 compares fertility rates for ever-married (n=461) and never-married women (n=371), confirming that marriage and childbearing were far from being mutually exclusive. Technically a reverse survival technique such as the own-children method cannot be used to calculate marital and nonmarital fertility since a woman's marital status can change over time. I would like to thank the anonymous reviewer of another paper for pointing this out. In the context of this analysis the TEMFR represents the level of fertility experienced by all those women who had married at some point prior to the census, but who may have given birth prior to marriage or after the dissolution of a marriage through divorce or spousal death. The TNMFR, on the other hand, is a measure of the fertility of all those women who had never married since the relationship terms in the document would have indicated if they had ever entered into marriage at any time in the past. All of their children are therefore born out-of-wedlock. The widespread occurrences of childbirth within the context of informal, long-term, cohabiting relationships meant that women who did not marry into taxpayer households still gave birth to more than two children on average. Therefore, the effect of polyandry-induced

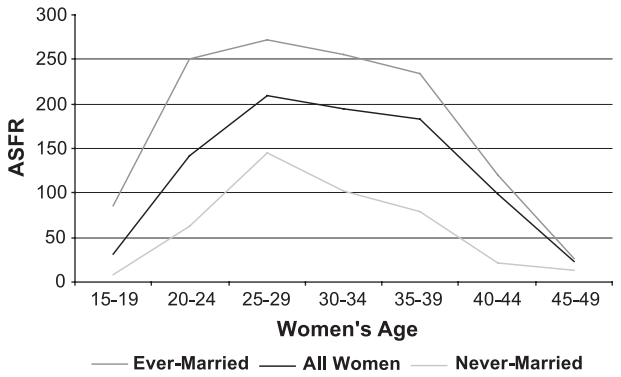

Fig. 2. Age specific fertility pattern according to marital status.

nonmarriage on aggregate fertility was tempered by the fact that never-married women bore children, albeit not as many as those who managed to marry within taxpayer households.

Fig. 2 contrasts age-specific fertility rates at South Level 7 for women according to marital status. The pattern is indicative of a natural fertility population whereby deliberate, parity-dependent birth control is not evident (Wood, 1990). Surprisingly, the pattern is similar for both groups, reaching a peak among the age cohort 25–29 before leveling off. The conclusion from Table 6 and Fig. 2 is that marital status affected the overall level of fertility, since married women bore more children, but it did not have a major impact on the commencement of childbearing.

10. Conclusions

Polyandry did indeed act as a preventive check on population growth in Kyirong. After all, those women who married all the brothers within taxpayer households gave birth to far more children on average than those who were excluded from marriage and remained as spinsters or lived in informal relationships with men who opted out of polyandry. If we assume that formal marriage was a prerequisite for childbearing in this particular Tibetan society, then a high level of nonmarriage could result in population decline. However, the ethnographic evidence reveals otherwise. The inability of a woman to marry within a taxpayer household was not necessarily an impediment to childbearing. To gauge the extent of involvement of nonmarried Kyirong women in reproduction and population growth, let us assume they bore no children at all. If we remove their children from the calculations, the resulting TFR at South Level 7 would be 3.45—quite a bit lower than the figure of 4.41 calculated above and enough to shift the population dynamic from growth to decline. The demographic evidence clearly shows that the contribution to aggregate fertility by nonmarried women was significant.

The most likely estimates point to a population in Kyirong that was growing at a slow but steady rate of around 0.5% per annum, representing a doubling time of roughly 140 years. The Kyirong case thereby provides evidence of growth in one particular historical Tibetan population and supports Goldstein's (1981) hypothesis that Tibetan populations who lived at high altitudes, experienced high levels of infant mortality, and whose practice of polyandry was engendered in part by the unique administrative system, could indeed increase over time. Because we are dealing with a small population that was susceptible to periodic fluctuations, it is possible, if not probable, that the rate of growth was a bit slower and the doubling time somewhat longer than 140 years. The crucial point is that the population of Kyirong most certainly contained the potential to increase. Whether this actually happened cannot be answered beyond the shadow of a doubt due to the absence of direct means for verification.

The above deductions cannot be generalized to cover all geographic and temporal dimensions of population trends in Tibet. Nevertheless, the recognition that Tibetans were quite capable of gathering reliable data that is amenable to demographic analysis diminishes the need to rely on conjecture when investigating historical Tibetan population processes. More important, the above analysis justifies the following working hypothesis: some Tibetan populations were increasing during the early and middle part of the 20th century. Such a

hypothesis, albeit quite conservative, is certainly preferable to previous assumptions of population decline that were made in the absence of supporting empirical documentation. The question remains: Do enough similar data sources exist so that comparisons between Kyirong and other areas can be made? If so, then this contribution represents the first tentative step in the investigation of Tibetan historical demography.

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